

### **1180 nm GaInNAs quantum well based high power DBR laser diodes**

We report state-of-the-art results for 1180nm (narrow linewidth) laser diodes based on GaInNAs quantum wells and show results for ridge waveguide DBR laser diode including its reliability tests. Manuscript demonstrates 500 mW output power in continuous-wave operation at room temperature, wide single mode tuning region and narrow linewidth operation. Devices reached narrow linewidth operation (>250 kHz) across their operation band.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Optoelectronics Research Centre, Tampere University of Technology

Contributors: Viheriälä, J., Aho, A., Virtanen, H., Koskinen, M., Dumitrescu, M., Guina, M.

Number of pages: 6

Publication date: 24 Feb 2017

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Publisher: SPIE

Editor: Zediker, M. S.

Article number: 100860K

#### **Publication series**

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ASJC Scopus subject areas: Physics and Astronomy (miscellaneous)

Keywords: DBR laser, dbr, 1180nm, 1178nm, 1154nm, SHG

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<http://urn.fi/URN:NBN:fi:tuni-201912197004>

#### **Bibliographical note**

INT=fot,"Koskinen, Mervi"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **1180nm VECSEL with 50 W output power**

We report on the development of a high-power vertical-external-cavity surface-emitting laser (VECSEL) emitting around 1180 nm. The laser emitted 50 W of output power when the mount of the gain chip was cooled to -15°C. The output power was measured using a 97% reflective cavity end-mirror. The VECSEL was arranged to form an I-shaped cavity with a length of ~100 mm; the gain chip and a curved dielectric mirror (RoC=150) acting as cavity end mirrors. The gain chip was grown by molecular beam epitaxy (MBE) and incorporated 10 GaInAs/GaAs quantum wells. For efficient heat extraction, the chip was capillary bonded to a diamond heat spreader which was attached to a TEC-cooled copper mount. The maximum optical-to-optical conversion efficiency of 28% was achieved for 42 W of output power and -15°C mount temperature.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, Frontier Photonics

Contributors: Kantola, E., Leinonen, T., Ranta, S., Tavast, M., Penttinen, J., Guina, M.

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of SPIE - The International Society for Optical Engineering

Volume: 9349

Publisher: SPIE

Article number: 93490U

ISBN (Print): 9781628414394

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: continuous wave, frequency doubling, heat management, high power, infrared, power scaling, SDL, VECSEL  
DOIs:

10.1117/12.2079480

Source: Scopus

Source ID: 84925666801

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **1.3µm U-bend traveling wave SOA devices for high efficiency coupling to silicon photonics**

We present a U-bend design for traveling wave III-V gain devices, such as semiconductor optical amplifiers and laser diodes. The design greatly simplifies the butt-coupling between the III-V chip and silicon-on-insulator photonic circuit by bringing the I/O ports on one facet. This removes the need for precise dimension control otherwise required for 2-side coupling, therefore increasing the yield of mounted devices towards 100%. The design, fabrication and characterization of the U-bend device based on Euler bend geometry is presented. The losses for a bend with a minimum bending radius of 83 µm are 1.1 dB. In addition, we present an analysis comparing the yield and coupling losses of the traditionally cleaved devices with the results that the Euler bend approach enable, with the final conclusion that the yield is improved by several times while the losses are decreased by several dB.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, VTT Technical Research Centre of Finland

Contributors: Viheriälä, J., Tuorila, H., Zia, N., Cherchi, M., Aalto, T., Guina, M.

Publication date: 2019

#### **Host publication information**

Title of host publication: Silicon Photonics XIV

Publisher: SPIE, IEEE

Editors: Reed, G. T., Knights, A. P.

Article number: 109230E

ISBN (Electronic): 9781510624887

#### **Publication series**

Name: Proceedings of SPIE - The International Society for Optical Engineering

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ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Coupling losses, Hybrid integration, III-V, Semiconductor optical amplifiers, Silicon-on-insulator

DOIs:

10.1117/12.2505935

#### **Bibliographical note**

jufoid=71479

Source: Scopus

Source ID: 85065404814

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **1.55-µm wavelength wafer-fused OP-VECSELs in flip-chip configuration**

Optically-pumped vertical external cavity surface emitting lasers (VECSELs) based on flip-chip gain mirrors emitting at the 1.55-µm wavelength range are reported. The gain mirrors employ wafer-fused InAlGaAs/InP quantum well heterostructures and GaAs/AlAs distributed Bragg reflectors, which were incorporated in a linear and a V-cavity configurations. A maximum output power of 3.65 W was achieved for a heatsink temperature of 11°C and employing a 2.2% output coupler. The laser exhibited circular beam profiles for the full emission power range. The demonstration represents more than 10-fold increase of the output power compared to state-of-the-art flip-chip VECSELs previously demonstrated at the 1.55-µm wavelength range, and opens a new perspective for developing practical VECSEL-based laser system for applications such as LIDAR, spectroscopy, communications and distributed sensing.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, CRPP, LakeDiamond SA

Contributors: Mereuta, A., Nechay, K., Caliman, A., Suruceanu, G., Gallo, P., Guina, M., Kapon, E.

Publication date: 2019

### Host publication information

Title of host publication: Vertical External Cavity Surface Emitting Lasers (VECSELs) IX  
Publisher: SPIE, IEEE  
Editor: Keller, U.  
Article number: 1090103  
ISBN (Electronic): 9781510624443

### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering  
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ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering  
Keywords: Optically-pumped VECSELs, Semiconductor lasers, Wafer-Fusion  
DOIs:  
10.1117/12.2508342

### Bibliographical note

jufoid=71479  
Source: Scopus  
Source ID: 85066636665  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## 1800-luvun Helsingin kadonneiden konserttitilojen akustiikan mallintaminen

### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Civil Engineering, Research group: Building Acoustics, A-Insinöörit Suunnittelu Oy, Helsinki City Museum  
Contributors: Niemi, H., Kylliäinen, M., Jäppinen, J., Lindqvist, M.  
Number of pages: 6  
Pages: 77-82  
Publication date: 1 Sep 2015

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Place of publication: Kuopio

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ASJC Scopus subject areas: Acoustics and Ultrasonics  
URLs:  
[http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015\\_Paperin\\_palautus\\_8.pdf](http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015_Paperin_palautus_8.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

## 2D Video Coding of Volumetric Video Data

Due to the increased popularity of augmented and virtual reality experiences, the interest in representing the real world in an immersive fashion has never been higher. Distributing such representations enables users all over the world to freely navigate in never seen before media experiences. Unfortunately, such representations require a large amount of data, not feasible for transmission on today's networks. Thus, efficient compression technologies are in high demand. This paper proposes an approach to compress 3D video data utilizing 2D video coding technology. The proposed solution was developed to address the needs of 'tele-immersive' applications, such as virtual (VR), augmented (AR) or mixed (MR) reality with Six Degrees of Freedom (6DoF) capabilities. Volumetric video data is projected on 2D image planes and compressed using standard 2D video coding solutions. A key benefit of this approach is its compatibility with readily available 2D video coding infrastructure. Furthermore, objective and subjective evaluation shows significant improvement in coding efficiency over reference technology.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Signal Processing, Nokia Technologies  
Contributors: Schwarz, S., Hannuksela, M. M., Fakour-Sevom, V., Sheikhi-Pour, N.

Number of pages: 5  
Pages: 61-65  
Publication date: 5 Sep 2018

#### Host publication information

Title of host publication: 2018 Picture Coding Symposium, PCS 2018 - Proceedings  
Publisher: IEEE  
Article number: 8456265  
ISBN (Print): 9781538641606  
ASJC Scopus subject areas: Signal Processing, Media Technology  
DOIs:  
10.1109/PCS.2018.8456265

#### Bibliographical note

INT=sgn,"Sheikhi-Pour, Nahid"  
Source: Scopus  
Source ID: 85053915056  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### 360 panorama super-resolution using deep convolutional networks

We propose deep convolutional neural network (CNN) based super-resolution for 360 (equirectangular) panorama images used by virtual reality (VR) display devices (e.g. VR glasses). Proposed super-resolution adopts the recent CNN architecture proposed in (Dong et al., 2016) and adapts it for equirectangular panorama images which have specific characteristics as compared to standard cameras (e.g. projection distortions). We demonstrate how adaptation can be performed by optimizing the trained network input size and fine-tuning the network parameters. In our experiments with 360 panorama images of rich natural content CNN based super-resolution achieves average PSNR improvement of 1.36 dB over the baseline (bicubic interpolation) and 1.56 dB by our equirectangular specific adaptation.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Signal Processing, Nokia Technologies  
Contributors: Fakour-Sevom, V., Guldogan, E., Kämäräinen, J.  
Number of pages: 7  
Pages: 159-165  
Publication date: 2018

#### Host publication information

Title of host publication: VISIGRAPP 2018 - Proceedings of the 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications  
Volume: 4  
Publisher: SCITEPRESS  
ISBN (Electronic): 9789897582905  
ASJC Scopus subject areas: Computer Vision and Pattern Recognition, Computer Graphics and Computer-Aided Design, Artificial Intelligence  
Keywords: Deep convolutional neural network, Equirectangular panorama, Super-resolution, Virtual reality  
DOIs:  
10.5220/0006618901590165

#### Bibliographical note

EXT="Guldogan, Esin"  
Source: Scopus  
Source ID: 85047846712  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### 405-nm pumped Ce<sup>3+</sup>-doped silica fiber for broadband fluorescence from cyan to red

A pure Ce-doped silica fiber is fabricated using modified chemical vapor deposition (MCVD) technique. Fluorescence characteristics of a Ce-doped silica fiber are experimentally investigated with continuous wave pumping from 440 nm to 405 nm. Best pump absorption and broad fluorescence spectrum is observed for ~ 405 nm laser. Next, the detailed analysis of spectral response as a function of pump power and fiber length is performed. It is observed that a-10dB spectral width of ~ 280 nm can be easily achieved with different combinations of the fiber length and pump power. Lastly, we present, for the first time to the best of our knowledge, a broadband fluorescence spectrum with-10dB spectral width of 301 nm, spanning from ~ 517.36 nm to ~ 818 nm, from such fibers with non-UV pump lasers.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Aston University, Fiber Optics Research Center of the Russian Academy of Sciences, Russian Academy of Sciences

Contributors: Yadav, A., Chichkov, N. B., Gumenyuk, R., Zherebtsov, E., Melkumov, M. A., Yashkov, M. V., Dianov, E. M., Rafailov, E. U.

Publication date: 2019

#### Host publication information

Title of host publication: Optical Components and Materials XVI

Publisher: SPIE, IEEE

Editors: Digonnet, M. J. F., Jiang, S.

Article number: 1091406

ISBN (Electronic): 9781510624702

#### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering

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ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science

Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Broadband spectrum, Ce-doped fiber, Ce-ion, Rare earth doped

DOIs:

10.1117/12.2509599

#### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85066046508

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### 50 W VECSEL emitting at 1180 nm

We report a 50 W VECSEL emitting at 1180 nm. The gain chip was grown by MBE and TEC-cooled. The maximum power was measured for a mount temperature of  $-15^{\circ}\text{C}$ .

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Kantola, E., Leinonen, T., Penttinen, J., Tavast, M., Ranta, S., Guina, M.

Publication date: 2015

#### Host publication information

Title of host publication: 2015 Conference on Lasers and Electro-Optics Europe - European Quantum Electronics Conference, 21.-25.6. Munich, Germany : CB\_3\_1

Publisher: OSA

ISBN (Print): 978-1-4673-7475-0

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CB\\_3\\_1](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CB_3_1)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### 73-fs SESAM mode-locked Tm,Ho:CNGG laser at 2061 nm

Tm,Ho co-doped disordered calcium niobium gallium garnet (CNGG) crystals are investigated as a novel gain medium for mode-locked lasers near  $2\ \mu\text{m}$ . With a GaSb-based semiconductor saturable absorber mirror (SESAM) and chirped mirrors for dispersion compensation such a laser is mode-locked at a repetition rate of 89.3 MHz. For a 5% output coupler, a maximum average output power of 157 mW is obtained with a pulse duration of 170 fs (28-nm broad spectrum centered at  $2.075\ \mu\text{m}$ , leading to a time-bandwidth product of 0.331). With a 0.5% output coupler, 73-fs pulses are generated at  $2.061\ \mu\text{m}$  with a spectral width of 62 nm (time-bandwidth product of 0.320) and an average output power of 36 mW.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: ORC, Physics, Max Born Institute, Ruhr-Universität Bochum, Jiangsu Normal University, China Academy of Engineering Physics, Hefei Institutes of Physical Sciences Chinese Academy of Sciences, Université de Caen Normandie, Universitat Rovira i Virgili, Fujian Institute of Research on the Structure of Matter

Contributors: Wang, Y., Zhao, Y., Pan, Z., Suomalainen, S., Härkönen, A., Guina, M., Griebner, U., Wang, L., Loiko, P., Mateos, X., Chen, W., Petrov, V.  
Publication date: 2020

#### Host publication information

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Publisher: SPIE  
Editors: Clarkson, W. A., Shori, R. K.  
Article number: 1125929  
ISBN (Print): 9781510632813  
ISBN (Electronic): 9781510632820

#### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering  
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ISSN (Print): 0277-786X  
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ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering  
Keywords: Disordered garnets, Femtosecond pulses, Holmium lasers, Mode-locked lasers, Semiconductor saturable absorber mirror (SESAM), Solid-state lasers, Thulium lasers  
DOIs:  
10.1117/12.2548180

#### Bibliographical note

jufoid=71479  
Source: Scopus  
Source ID: 85085246577  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### 8th Nordic Conference on Construction Economics and Organization

#### General information

Publication status: Published  
MoE publication type: C2 Edited books  
Organisations: Department of Civil Engineering, Research area: Construction Management and Economics, Research group: Digitalization in the real estate and construction sector, Research group: Capacity Development of Water and Environmental Services CADWES, Research group: Real estate development  
Contributors: Kähkönen, K. (ed.)  
Publication date: 2015  
Peer-reviewed: Yes

#### Publication information

Journal: Procedia Economics and Finance  
Volume: 21  
ISSN (Print): 2212-5671  
Original language: English  
Research output: Contribution to journal > Special issue > Scientific > peer-review

#### A 1.5-W frequency doubled semiconductor disk laser tunable over 40 nm at around 745 nm

1.5 W of output power was obtained in the challenging wavelength range between 700 and 800 nm by frequency doubling a wafer-fused 1.49- $\mu\text{m}$  semiconductor disk laser pumped with 980-nm diodes. A bismuth borate crystal was used for doubling the frequency. A total optical-to-optical efficiency of 8.3 % was achieved. The laser was tunable from 720 to 764 nm with an intracavity birefringent plate. The beam quality parameter M2 remained below 1.5 at all power levels. The laser is attractive for biomedical applications such as photodynamic therapy that benefit from the low absorption of light in tissue in this spectral range.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Optoelectronics Research Centre, Research group: Ultrafast and intense lasers, Research group: Semiconductor Technology and Applications, Optoelectronics Research Centre, Tampere University of Technology, Ecole Polytech Fed Lausanne, Ecole Polytechnique Federale de Lausanne, Lab Phys Nanostruct  
Contributors: Saarinen, E. J., Lyytikäinen, J., Ranta, S., Rantamäki, A., Saarela, A., Sirbu, A., Iakovlev, V., Kapon, E., Okhotnikov, O. G.

Number of pages: 8  
Publication date: 2016

#### Host publication information

Title of host publication: Proceedings of SPIE : Vertical External Cavity Surface Emitting Lasers (VECSELs) VI  
Volume: 9734  
Publisher: SPIE  
Article number: 97340P-8

#### Publication series

Name: Spie conference proceedings  
Publisher: SPIE  
ISSN (Electronic): 0277-786X  
DOIs:  
10.1117/12.2209384

#### Bibliographical note

INT=orc,"Saarela, Antti"  
JUFOID=71479

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### A Batteryless Semi-Passive RFID Sensor Platform

Semi-passive RFID sensor possesses longer interrogation distance and advanced functionalities compared with the fully passive ones. Utilizing the wireless energy harvesting, we present a semi-passive RFID sensor platform without the reliance on the external battery. We outline the sensor system development and conduct the wireless measurement of the prototype to demonstrate its performance and functionality.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: BioMediTech, Research group: Wireless Identification and Sensing Systems Research Group, Heriot-Watt University  
Contributors: Ma, S., Pournoori, N., Sydänheimo, L., Ukkonen, L., Björninen, T., Georgiadis, A.  
Number of pages: 3  
Pages: 171-173  
Publication date: 1 Sep 2019

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Title of host publication: 2019 IEEE International Conference on RFID Technology and Applications (RFID-TA)  
Publisher: IEEE  
ISBN (Print): 978-1-7281-0590-1  
ISBN (Electronic): 978-1-7281-0589-5  
Keywords: semi-passive RFID, UHF RFID, temperature sensor, RF energy harvesting  
DOIs:  
10.1109/RFID-TA.2019.8892176  
Source: Bibtex  
Source ID: 8892176  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### A bibliometric study on authorship trends and research themes in knowledge management literature

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial and Information Management, Research group: Business Data Research Group, Research group: Business Ecosystems, Networks and Innovations, Research group: Knowledge and Learning Research Center, University of Exeter, Lappeeranta University of Technology  
Contributors: Jussila, J. J., Mustafee, N., Aramo-Immonen, H., Menon, K., Hajikhani, A., Helander, N.  
Number of pages: 9  
Pages: 389-397  
Publication date: 7 Jun 2017

#### Host publication information

Title of host publication: 12th International Forum on Knowledge Asset Dynamics, St. Petersburg, Russia 7-9 June 2017 : Knowledge Management in the 21th Century: Resilience, Creativity and Co-creation

Volume: 12

Place of publication: St. Petersburg, Russia

ISBN (Electronic): 978-88-96687-10-9

Keywords: bibliometrics

URLs:

<http://www.ifkad.org/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Abstracting Application Development for Resource Constrained Wireless Sensor Networks**

Ubiquitous computing is a concept whereby computing is distributed across smart objects surrounding users, creating ambient intelligence. Ubiquitous applications use technologies such as the Internet, sensors, actuators, embedded computers, wireless communication, and new user interfaces. The Internet-of-Things (IoT) is one of the key concepts in the realization of ubiquitous computing, whereby smart objects communicate with each other and the Internet. Further, Wireless Sensor Networks (WSNs) are a sub-group of IoT technologies that consist of geographically distributed devices or nodes, capable of sensing and actuating the environment.

WSNs typically contain tens to thousands of nodes that organize and operate autonomously to perform application-dependent sensing and sensor data processing tasks. The projected applications require nodes to be small in physical size and low-cost, and have a long lifetime with limited energy resources, while performing complex computing and communications tasks. As a result, WSNs are complex distributed systems that are constrained by communications, computing and energy resources. WSN functionality is dynamic according to the environment and application requirements. Dynamic multitasking, task distribution, task injection, and software updates are required in field experiments for possibly thousands of nodes functioning in harsh environments.

The development of WSN application software requires the abstraction of computing, communication, data access, and heterogeneous sensor data sources to reduce the complexities. Abstractions enable the faster development of new applications with a better reuse of existing software, as applications are composed of high-level tasks that use the services provided by the devices to execute the application logic.

The main research question of this thesis is: What abstractions are needed for application development for resource constrained WSNs? This thesis models WSN abstractions with three levels that build on top of each other: 1) node abstraction, 2) network abstraction, and 3) infrastructure abstraction. The node abstraction hides the details in the use of the sensing, communication, and processing hardware. The network abstraction specifies methods of discovering and accessing services, and distributing processing in the network. The infrastructure abstraction unifies different sensing technologies and infrastructure computing platforms.

As a contribution, this thesis presents the abstraction model with a review of each abstraction level. Several designs for each of the levels are tested and verified with proofs of concept and analyses of field experiments. The resulting designs consist of an operating system kernel, a software update method, a data unification interface, and all abstraction levels combining abstraction called an embedded cloud.

The presented operating system kernel has a scalable overhead and provides a programming approach similar to a desktop computer operating system with threads and processes. An over-the-air update method combines low overhead and robust software updating with application task dissemination. The data unification interface homogenizes the access to the data of heterogeneous sensor networks. A unification model is used for various use cases by mapping everything as measurements. The embedded cloud allows resource constrained WSNs to share services and data, and expand resources with other technologies. The embedded cloud allows the distributed processing of applications according to the available services. The applications are implemented as processes using a hardware independent description language that can be executed on resource constrained WSNs. The lessons of practical field experimenting are analyzed to study the importance of the abstractions. Software complexities encountered in the field experiments highlight the need for suitable abstractions.

The results of this thesis are tested using proof of concept implementations on real WSN hardware which is constrained by computing power in the order of a few MIPS, memory sizes of a few kilobytes, and small sized batteries. The results will remain usable in the future, as the vast amount, tight integration, and low-cost of future IoT devices require the combination of complex computation with resource constrained platforms.

### **General information**

Publication status: Published

MoE publication type: G5 Doctoral dissertation (article)

Organisations: Department of Pervasive Computing, Research area: Computer engineering

Contributors: Laukkarinen, T.

Number of pages: 104

Publication date: 4 Sep 2015



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Original language: English

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Publisher: Tampere University of Technology  
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ISSN (Print): 1459-2045  
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laukkarinen\_1306  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3567-3>

### Bibliographical note

Awarding institution: Tampere University of Technology  
Version: 16.12.2015  
Research output: [Book/Report](#) > [Doctoral thesis](#) > [Collection of Articles](#)

### A Capacity Bound for mmWave-based Channel Access in Ultra-Dense Wearable Deployments

In this paper, we address mmWave (millimeter-wave) channel access protocols operating in extremely high frequency bands. We argue that the anticipated mass use of wearable wireless devices over such protocols is likely to soon produce ultra-dense personal network deployments, especially in commuter scenarios. To this end, this work primarily focuses on a specific area of interest, where wearable devices all hear each other. By introducing an adequate mmWave-based protocol abstraction model, we are interested in characterizing the system capacity bound for the entire class of possible channel access schemes. In particular, we establish a lower bound on system operation by thoroughly investigating a decentralized random-access model. Given that its asymptotic behavior is determined by a simple and elegant expression, the obtained performance estimate may serve as a useful reference for subsequent performance optimization. Therefore, our results constitute an important building block, which allows accounting for more realistic directional antenna patterns, as well as aids in future protocol design.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, International Institute for Advanced Aerospace Technologies of St. Petersburg State University of Aerospace Instrumentation, Intel Corporation  
Contributors: Galinina, O., Turlikov, A., Pyattaev, A., Johnsson, K., Andreev, S., Koucheryavy, Y.  
Number of pages: 7  
Pages: 298-304  
Publication date: 2015

### Host publication information

Title of host publication: 2015 7th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)  
Publisher: IEEE  
ISBN (Print): 978-1-4673-9282-2  
DOIs:  
[10.1109/ICUMT.2015.7382446](https://doi.org/10.1109/ICUMT.2015.7382446)  
Research output: [Chapter in Book/Report/Conference proceeding](#) > [Conference contribution](#) > [Scientific](#) > [peer-review](#)

### Accessible Games for Blind Children, Empowered by Binaural Sound

Accessible games have been researched and developed for many years, however, blind people still have very limited access and knowledge of them. This can pose a serious limitation, especially for blind children, since in recent years electronic games have become one of the most common and wide spread means of entertainment and socialization. For our implementation we use binaural technology which allows the player to hear and navigate the game space by adding localization information to the game sounds. With our implementation and user studies we provide insight on what constitutes an accessible game for blind people as well as a functional game engine for such games. The game engine developed allows the quick development of games for the visually impaired. Our work provides a good starting point for future developments on the field and, as the user studies show, was very well perceived by the visually impaired children that tried it.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Science For You, N.P.C. - SciFY, Ionian University  
Contributors: Drossos, K., Zormpas, N., Giannakopoulos, G., Floros, A.  
Number of pages: 8  
Pages: 5:1-5:8  
Publication date: Jul 2015

### Host publication information

Title of host publication: Proceedings of the 8th ACM International Conference on Pervasive Technologies Related to Assistive Environments  
Place of publication: New York, NY, USA  
Publisher: Association for Computing Machinery (ACM)  
ISBN (Print): 978-1-4503-3452-5

### Publication series

Name: PETRA '15  
Publisher: ACM  
Keywords: audio only games, auditory interface, binaural processing, games for the visually impaired  
DOIs:  
10.1145/2769493.2769546  
Source: Bibtex  
Source ID: urn:898885533f4d5f18cc8f061fc07b3ceb  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Accurate depth estimation from a sequence of monocular images supported by proprioceptive sensors

This paper describes an extended Kalman filter based algorithm for fusion of monocular vision measurements, inertial rate sensor measurements, and camera motion. The motion of the camera between successive images generates a baseline for range computations by triangulation. The recursive estimation algorithm is based on extended Kalman filtering. The depth estimation accuracy is strongly affected by mutual observer and feature point geometry, measurement accuracy of observer motion parameters and line of sight to a feature point. The simulation study investigates how the estimation accuracy is affected by the following parameters: linear and angular velocity measurement errors, camera noise, and observer path. These results draw requirements to the instrumentation and observation scenarios. It was found that under favorable conditions the error in distance estimation does not exceed 2% of the distance to a feature point.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Automation Science and Engineering, Research area: Dynamic Systems, Research area: Measurement Technology and Process Control, Research group: Positioning  
Contributors: Davidson, P., Raunio, J. P., Piché, R.  
Number of pages: 9  
Pages: 249-257  
Publication date: 2016

### Host publication information

Title of host publication: 23rd Saint Petersburg International Conference on Integrated Navigation Systems, ICINS 2016 - Proceedings  
Publisher: State Research Center of the Russian Federation  
ISBN (Electronic): 9785919950370  
ASJC Scopus subject areas: Computer Networks and Communications, Signal Processing, Electrical and Electronic Engineering, Information Systems  
Keywords: Computer vision, Gyroscope, IMU, Odometer, Structure from motion  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84979573597&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus  
Source ID: 84979573597  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Accurate impedance model of grid-connected inverter for small-signal stability assessment in high-impedance grid

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed

Organisations: Electrical Engineering, Research area: Power engineering, Research group: Power electronics, Automation Technology and Mechanical Engineering, Research group: Automation and Systems Theory  
Contributors: Messo, T., Roinila, T., Aapro, A., Luhtala, R.  
Number of pages: 9  
Pages: 488-496  
Publication date: 2019  
Peer-reviewed: Yes

#### Publication information

Journal: IEEJ JOURNAL OF INDUSTRY APPLICATIONS

Volume: 8

Issue number: 3

ISSN (Print): 2187-1094

Ratings:

Scopus rating (2019): CiteScore 3.1 SJR 0.43 SNIP 1.076

Original language: English

DOIs:

10.1541/ieejia.8.488

Research output: Contribution to journal › Article › Scientific › peer-review

#### A Co-creation Centre for University–Industry Collaboration – A Framework for Concept Development

Abstract It is argued in general that future success in effective innovation creation is built on the ability to connect and manage talent, partnerships and related practical innovation processes. This makes it challenging for a university to develop an ecosystem of knowledge creation. The full benefit from a university can only be obtained if the university and society are organically linked together. The needs of society have to be at the centre of a university's activities, and flexible adjustment to changing needs is necessary but often lacking. Campus management has a major role in the facilitation of multidisciplinary interaction between students, scientists, entrepreneurs and other industry partners that inspire each other with different perspectives on the same subject. One significant tool to support open innovation with diverse stakeholders is to provide supportive spaces with relevant services. This paper aims to identify the requirements of a Co-creation Centre as a concept serving the third role of a university. The literature review was conducted and, based on the result, this paper proposes a conceptual framework for capturing the key requirements for developing a multiuser Co-creation Centre. The framework consists of the requirements on the demand and supply sides of campus management. The main findings in this paper are that different modes of knowledge conversion have different capabilities to support knowledge co-creation requirements. Knowledge co-creation process requirements in the multiuser Co-creation Centre for university–industry collaboration are best supported by originating “Ba”, which means the place where individuals share feelings, emotions, experiences, and mental models and the place where the knowledge-creation process begins. The results contribute to the concept development in campus management and provide a starting point for evaluating the success of multidisciplinary and multi-actor innovation environments.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering

Contributors: Huhtelin, M., Nenonen, S.

Pages: 137 - 145

Publication date: 2015

Peer-reviewed: Yes

#### Publication information

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

Keywords: spaces and services.

DOIs:

10.1016/S2212-5671(15)00160-4

Source: Bibtex

Source ID: urn:eaca1c4af451146bd5fea3acaaa20e86

Research output: Contribution to journal › Article › Scientific › peer-review

#### A computationally feasible optimization approach to inverse SAR translational motion compensation

The traditional approach to inverse synthetic aperture radar translational motion compensation is to solve the problem in the two distinct parts of range alignment and autofocus. In this paper, we follow this practice and propose an approach based on the global range alignment and contrast optimization autofocus methods. The proposed range alignment procedure parametrizes the track as a spline polynomial and minimizes the loss function determined by the sum of the

squared envelope differences. The necessary numerical global optimization is performed with the differential evolution algorithm. The solution of the autofocus problem is produced with first order numerical optimization, as we solve it by using an expression derived for the gradient of the loss function. In this paper, we consider the back-projection case but the proposed approach is easily extended to other reconstruction techniques. We use simulated inverse synthetic aperture radar data to demonstrate the proposed approach and to illustrate its computational efficiency.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: MMDM, Finnish Defence Research Agency

Contributors: Vehmas, R., Jylhä, J., Väilä, M., Kylmälä, J.

Number of pages: 4

Pages: 17-20

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the 12th European Radar Conference (EuRAD 2015)

Publisher: IEEE

ISBN (Print): 978-2-87487-041-5

DOIs:

10.1109/EuRAD.2015.7346226

#### Bibliographical note

EXT="Kylmälä, Jarkko"

EXT="Vehmas, Risto"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### A continuum based macroscopic unified low- and high cycle fatigue model

In this work, an extension of a previously developed continuum based high-cycle fatigue model is enhanced to also capture the low-cycle fatigue regime, where significant plastic deformation of the bulk material takes place. Coupling of the LCF and HCF-models is due to the damage evolution equation. The high-cycle part of the model is based on the concepts of a moving endurance surface in the stress space with an associated evolving isotropic damage variable. Damage evolution in the low-cycle part is determined via plastic deformations and endurance function. For the plastic behaviour a non-linear isotropic and kinematic hardening J2-plasticity model is adopted. Within this unified approach, there is no need for heuristic cycle-counting approaches since the model is formulated by means of evolution equations, i.e. incremental relations, and not changes per cycle. Moreover, the model is inherently multiaxial and treats the uniaxial and multiaxial stress histories in the same manner. Calibration of the model parameters is discussed and results from some test cases are shown.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Structural Mechanics, Lund University, Wärtsilä, University of Oulu

Contributors: Frondelius, T., Holopainen, S., Kouhia, R., Ottosen, N. S., Ristinmaa, M., Vaara, J.

Number of pages: 8

Publication date: 2 Dec 2019

Peer-reviewed: Yes

#### Publication information

Journal: MATEC Web of Conferences

Volume: 300

Article number: 16008

ISSN (Print): 2274-7214

Ratings:

Scopus rating (2019): CiteScore 0.8 SJR 0.166 SNIP 0.714

Original language: English

Electronic versions:

matecconf\_icmff1218\_16008

DOIs:

10.1051/matecconf/201930016008

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202001091131>

Research output: Contribution to journal > Conference article > Scientific > peer-review

### **A continuum damage model for creep fracture and fatigue analyses**

In this paper a thermodynamically consistent formulation for creep and creep-damage modelling is given. The model is developed for isotropic solids by using proper expressions for the Helmholtz free energy and the complementary form of the dissipation potential, and can be proven to fulfill the dissipation inequality. Also the coupled energy equation is derived. Continuum damage model with scalar damage variable is used to facilitate simulations with tertiary creep phase. The complementary dissipation potential is written in terms of the thermodynamic forces dual to the dissipative variables of creep strain-rate and damage-rate. The model accounts for the multiaxial stress state and the difference in creep rupture time in shear and axial loading as well as in tensile and compressive axial stress. In addition, the model is simple and only four to eight material model parameters are required in addition to the elasticity parameters. A specific version of the proposed model is obtained when constrained to obey the Monkman-Grant relationship between the minimum creep strain-rate and the creep rupture time. The applicability of the Monkman-Grant hypothesis in the model development is discussed. The proposed 3D-model is implemented in the ANSYS finite element software by the USERMAT subroutine. Material parameters have been estimated for the 7CrMoVTiB10-10 steel (T24) for temperatures ranging from 500 to 600 degrees of celcius. Some test cases with cyclic thermal fatigue analysis are presented.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, Valmet Technologies Oy, P.O. Box 109, FI-33101 Tampere, Finland

Contributors: Kauppila, P., Kouhia, R., Ojanperä, J., Saksala, T., Sorjonen, T.

Number of pages: 8

Pages: 887–894

Publication date: 2016

#### **Host publication information**

Title of host publication: 21st European Conference on Fracture, ECF21, 20-24 June 2016, Catania, Italy

#### **Publication series**

Name: Procedia Structural Integrity

Volume: 2

ISSN (Print): 2452-3216

DOIs:

10.1016/j.prostr.2016.06.114

URLs:

<http://www.sciencedirect.com/science/article/pii/S2452321616301196>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **A coordination-based brokerage architecture for multi-cloud resource markets**

With an increasing number of service providers in the cloud market, the competition between these is also increasing. Each provider attempts to attract customers by providing a high quality service with lowest possible cost and at the same time trying to make profit. Often, cloud resources are advertised and brokered in a spot market style, i.e., traded for immediate delivery. This paper proposes an architecture for a brokerage model specifically for multi-cloud resource spot markets that integrates the resource brokerage function across several cloud providers. We use a tuple space architecture to facilitate coordination. This architecture supports specifically multiple cloud providers selling unused resources in the spot market. To support the matching process by finding the best match between customer requirements and providers, offers are matched with regard the lowest possible cost available for the customer in the market at the time of the request. The key role of this architecture is to provide the coordination techniques built on a tuple space, adapted to the cloud spot market.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Dublin City University, Free University of Bolzano-Bozen, School of Computing Edinburgh Napier University Edinburgh

Contributors: Aldawood, S., Fowley, F., Pahl, C., Taibi, D., Liu, X.

Number of pages: 8

Pages: 7-14

Publication date: 14 Oct 2016

#### **Host publication information**

Title of host publication: Proceedings - 2016 4th International Conference on Future Internet of Things and Cloud Workshops, W-FiCloud 2016

Publisher: Institute of Electrical and Electronics Engineers Inc.

ISBN (Electronic): 9781509039463

ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Information Systems

Keywords: Cloud Brokerage Architecture, Cloud Resources Market, Resource Brokerage, Spot Market, Tuple Space  
DOIs:

10.1109/W-FiCloud.2016.19

Source: Scopus

Source ID: 85009829349

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Acquisition of E5 Galileo signals in Matlab

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Research group: Wireless Communications and Positioning, Department of Electronics and Communications Engineering, Wireless Communications and Positioning (WICO)

Contributors: Stepanova, E., Kudryavtsev, I., Lohan, E.

Number of pages: 7

Pages: 36-42

Publication date: 2015

Peer-reviewed: Yes

### Publication information

Journal: Procedia Engineering

Volume: 104

ISSN (Print): 1877-7058

Ratings:

Scopus rating (2015): CiteScore 0.9 SJR 0.239 SNIP 0.566

Original language: English

DOIs:

10.1016/j.proeng.2015.04.094

Research output: Contribution to journal > Article > Scientific > peer-review

## A Cross-Cultural and Gender-Based Perspective for Online Security: Exploring Knowledge, Skills and Attitudes of Higher Education Students.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Pervasive Computing, Research area: Information security, University of Tampere, Department of Computer Science and Information Systems, University of Jyväskylä, Department of Computer Engineering and Information Technology of College of Information and Communication Technology at the University of Dar Es Salaam, Beijing Institute of Petrochemical Technology, University of Patras

Contributors: Chaudhary, S., Zhao, Y., Berki, E., Valtanen, J., Li, L., Helenius, M., Mystakidis, S.

Pages: 57-71

Publication date: 2015

Peer-reviewed: Yes

### Publication information

Journal: IADIS International Journal on WWW/Internet

Volume: 13

Issue number: 1

ISSN (Print): 1645-7641

Original language: English

Research output: Contribution to journal > Article > Scientific > peer-review

## Action and power efficiency in self-organization: The case for growth efficiency as a cellular objective in escherichia coli

Complex systems of different nature self-organize using common mechanisms. One of those is increase of their efficiency. The level of organization of complex systems of different nature can be measured as increased efficiency of the product of time and energy for an event, which is the amount of physical action consumed by it. Here we apply a method developed in physics to study the efficiency of biological systems. The identification of cellular objectives is one of the central topics in the research of microbial metabolic networks. In particular, the information about a cellular objective is needed in flux balance analysis which is a commonly used constrained-based metabolic network analysis method for the prediction of

cellular phenotypes. The cellular objective may vary depending on the organism and its growth conditions. It is probable that nutritionally scarce conditions are very common in the nature, and, in order to survive in those conditions, cells exhibit various highly efficient nutrient-processing systems like enzymes. In this study, we explore the efficiency of a metabolic network in transformation of substrates to new biomass, and we introduce a new objective function simulating growth efficiency. We are searching for general principles of self-organization across systems of different nature. The objective of increasing efficiency of physical action has been identified previously as driving systems toward higher levels of self-organization. The flow agents in those networks are driven toward their natural state of motion, which is governed by the principle of least action in physics. We connect this to a power efficiency principle. Systems structure themselves in a way to decrease the average amount of action or power per one event in the system. In this particular example, action efficiency is examined in the case of growth efficiency of *E. coli*. We derive the expression for growth efficiency as a special case of action (power) efficiency to justify it through first principles in physics. Growth efficiency as a cellular objective of *E. coli* coincides with previous research on complex systems and is justified by first principles in physics. It is expected and confirmed outcome of this work. We examined the properties of growth efficiency using a metabolic model for *Escherichia coli*. We found that the maximal growth efficiency is obtained at a finite nutrient uptake rate. The rate is substrate dependent and it typically does not exceed 20 mmol/h/gDW. We further examined whether the maximal growth efficiency could serve as a cellular objective function in metabolic network analysis and found that cellular growth in batch cultivation can be predicted reasonably well under this assumption. The fit to experimental data was found slightly better than with the commonly used objective function of maximal growth rate. Based on our results, we suggest that the maximal growth efficiency can be considered a plausible optimization criterion in metabolic modeling for *E. coli*. In the future, it would be interesting to study growth efficiency as an objective also in other cellular systems and under different cultivation conditions.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: BioMediTech, Wireless Innovation Laboratory at Worcester Polytechnic Institute, Assumption College, Tufts University, Complex Systems Center, University of Vermont

Contributors: Georgiev, G. Y., Aho, T., Kesseli, J., Yli-Harja, O., Kauffman, S. A.

Number of pages: 16

Pages: 229-244

Publication date: 2019

### Host publication information

Title of host publication: Evolution, Development and Complexity - Multiscale Evolutionary Models of Complex Adaptive Systems

Publisher: Springer

Editors: Flores Martinez, C. L., Georgiev, G. Y., Smart, J. M., Price, M. E.

ISBN (Print): 9783030000745

### Publication series

Name: Springer Proceedings in Complexity

ISSN (Print): 2213-8684

ISSN (Electronic): 2213-8692

ASJC Scopus subject areas: Applied Mathematics, Modelling and Simulation, Computer Science Applications

Keywords: Action efficiency, Constraint-based modeling, Metabolism, Microorganism, Principle of least action

DOIs:

10.1007/978-3-030-00075-2\_8

### Bibliographical note

jufoid=84878

Source: Scopus

Source ID: 85071889407

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Action recognition using the 3D dense microblock difference

This paper describes a framework for action recognition which aims to recognize the goals and activities of one or more human from a series of observations. We propose an approach for the human action recognition based on the 3D dense micro-block difference. The proposed algorithm is a two-stage procedure: (a) image preprocessing using a 3D Gabor filter and (b) a descriptor calculation using 3D dense micro-block difference with SVM classifier. At the first step, an efficient spatial computational scheme designed for the convolution with a bank of 3D Gabor filters is present. This filter intensifies motion using a convolution for a set of 3D patches and arbitrarily-oriented anisotropic Gaussian. For preprocessed frames, we calculate the local features such as 3D dense micro-block difference (3D DMD), which capture the local structure from the image patches at high scales. This approach is processing the small 3D blocks with different scales from frames which capture the microstructure from it. The proposed image representation is combined with fisher vector method and linear SVM classifier. We evaluate the proposed approach on the UCF50, HMDB51 and UCF101 databases. Experimental results demonstrate the effectiveness of the proposed approach on video with a stochastic textures background with comparisons of the state-of-The-Art methods.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Don State Technical University, Moscow State University of Technology 'Stankin', Beijing Jiaotong University

Contributors: Voronin, V., Pismenskova, M., Zelensky, A., Cen, Y., Nadykto, A., Egiazarian, K.

Publication date: 2018

### Host publication information

Title of host publication: Counterterrorism, Crime Fighting, Forensics, and Surveillance Technologies II

Publisher: SPIE

Article number: 1080200

ISBN (Electronic): 9781510621879

### Publication series

Name: Proceedings of SPIE

Volume: 10802

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: 3D Gabor filter., Action recognition, Micro-block difference, Texture

DOIs:

10.1117/12.2326801

### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85057423236

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Active corrosion phase as a service life extension of concrete facades

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures, Research area: Structural Engineering

Contributors: Köliö, A., Lahdensivu, J., Pentti, M.

Publication date: 2015

### Host publication information

Title of host publication: Proceedings of the Eurocorr 2015, European corrosion congress

Publisher: Austrian Society for Metallurgy and Materials (ASMET); EFC; DECHEMA

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

## Actors' agency in the routines of innovation project portfolio management

Innovation project portfolio management (IPPM) is carried out through various routines of assessing, prioritizing, selecting and coordinating projects. Empirical research increasingly suggests that the official routines are not necessarily used, but personnel use agency, i.e., individual situation-specific judgment in their practice of IPPM. This agency perspective is not sufficiently understood, so far. The purpose of this study is to explore different actors' agency in implementing IPPM, covering managers, personnel and external stakeholders. The goal is increased knowledge on implementing IPPM in dynamic contexts and development of propositions for better IPPM frameworks that account for different actors' agency. The qualitative case study with two innovative project-based firms reveals different approaches to IPPM agency across four different actor categories. The nature of the innovation project portfolios is discussed especially in terms of uncertainty and the maturity of the IPPM routines as situation-specific factors relevant in enabling and restraining project actors' agency in IPPM. The results contribute by proposing agency as a novel perspective to IPPM research, showing evidence of it in highly innovative contexts, and thereby enabling the theorization of situation-specific practice of IPPM.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial Engineering and Management, Research group: Center for Research on Project and Service Business (CROPS)

Contributors: Martinsuo, M., Vuorinen, L.

Number of pages: 26



Publication date: 26 Jun 2019

#### **Host publication information**

Title of host publication: Proceedings of the EURAM European Academy of Management Conference 2019 : 26-28 June 2019, Lisbon, Portugal  
Publisher: European Academy of Management, EURAM  
ISBN (Electronic): 978-2-9602195-1-7

#### **Publication series**

Name: EURAM conference  
ISSN (Print): 2466-7498  
URLs:

<http://www.euramonline.org/annual-conference-2019/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Adapting service-based working culture as the key driver for organisational creativity and innovation**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Information Management and Logistics  
Contributors: Ketonen-Oksi, S.  
Publication date: 10 Jun 2016

#### **Host publication information**

Title of host publication: Towards a new architecture of knowledge : Big Data, culture and creativity : IFKAD 2016-11th International Forum on Knowledge Asset Dynamics, Dresden 15-17.6.2016, Germany  
ISBN (Print): 978-88-96687-09-3  
URLs:

<http://10times.com/ifkad>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Adaptive Feedback in Local Coordinates for Real-time Vision-Based Motion Control Over Long Distances**

We studied the differences in noise-effects, depth-correlated behavior of sensors, and errors caused by mapping between coordinate systems in robotic applications of machine vision. In particular, the highly range-dependent noise densities for semi-unknown object detection were considered. An equation is proposed to adapt estimation rules to dramatic changes of noise over longer distances. This algorithm also benefits the smooth feedback of wheels to overcome variable latencies of visual perception feedback. Experimental evaluation of the integrated system is presented with/without the algorithm to highlight its effectiveness.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Automation and Hydraulic Engineering, Research group: Innovative Hydraulic Automation, Signal Processing, Cargotec Corporation  
Contributors: M. Aref, M., Astola, P., Vihonen, J., Tabus, I., Ghabcheloo, R., Mattila, J.  
Number of pages: 6  
Publication date: 2018

#### **Host publication information**

Title of host publication: International Conference on Robotics and Mechantronics : (ICRoM 2017)  
Volume: 320  
Publisher: IOP Publishing Ltd.  
Article number: 012009

#### **Publication series**

Name: IOP conference series : materials science and engineering  
ISSN (Print): 1757-8981  
ISSN (Electronic): 1757-899X  
Electronic versions:

[Aref\\_2018\\_IOP\\_Conf.\\_Ser.\\_Mater.\\_Sci.\\_Eng.\\_320\\_012009](#)

DOIs:

[10.1088/1757-899X/320/1/012009](https://doi.org/10.1088/1757-899X/320/1/012009)

URLs:

### **Bibliographical note**

EXT="Vihonen, Juho"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Adaptive fuzzy inference system based directional median filter for impulse noise removal**

Noise filtering in presence of important image detail information is considered as challenging task in imaging applications. Use of fuzzy logic based techniques is capturing more focus since last decade to deal with these challenges. In order to tackle conflicting issues of noise smoothing and detail preservation, this paper presents a novel approach using adaptive fuzzy inference system for random valued impulse noise detection and removal. The proposed filter uses the intensity based directional statistics to construct adaptive fuzzy membership functions which plays an important role in fuzzy inference system. Fuzzy inference system constructed in this way is used by the noise detector for accurate classification of noisy and noise-free pixels by differentiating them from edges and detailed information present in an image. After classification of pixels, noise adaptive filtering is performed based on median and directional median filter using the information provided by the noise detector. Simulation results based on well known quantitative measure i.e., peak-signal-to-noise ratio (PSNR) show the effectiveness of proposed filter.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, International Islamic University Islamabad

Contributors: Habib, M., Hussain, A., Rasheed, S., Ali, M.

Number of pages: 9

Pages: 689-697

Publication date: 1 May 2016

Peer-reviewed: Yes

### **Publication information**

Journal: AEU International Journal of Electronics and Communication

Volume: 70

Issue number: 5

ISSN (Print): 1434-8411

Ratings:

Scopus rating (2016): CiteScore 2.5 SJR 0.32 SNIP 0.973

Original language: English

ASJC Scopus subject areas: Electrical and Electronic Engineering

Keywords: Adaptive threshold, Fuzzy inference system, Noise detection, Noise removal, Random-valued impulse noise

DOIs:

10.1016/j.aeue.2016.02.005

### **Bibliographical note**

INT=elt,"Ali, Mubashir"

Source: Scopus

Source ID: 84959549053

Research output: Contribution to journal > Article > Scientific > peer-review

### **Advanced coatings by novel high-kinetic thermal spray processes**

Thermal spraying includes a group of coating processes in which metallic and non-metallic materials are spray deposited as fine particles in a molten or semi-molten condition, or even in fully solid state to form a coating. Thermal spraying allows deposition of relatively thick coatings, from some tens of micrometers up to several millimeters in thickness. Thermally sprayed coatings are used in different applications including protective and functional coatings in mechanical engineering, energy technology, biomedical, steel, automotive and aerospace technologies and in many other industrial sectors. Novel high-kinetic spray processes, e.g., the high velocity air-fuel (HVOF) technology are the latest developments in the area and therefore they are actively studied in the framework of the Hybrid Materials research program in collaboration with Finnish industrial and research partners. Novel multifunctional coatings are under development for specific industrial applications.

### **General information**

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Materials Science, Research group: Surface Engineering

Contributors: Matikainen, V., Koivuluoto, H., Milanti, A., Vuoristo, P.

Number of pages: 5

Pages: 46-50

Publication date: 9 Feb 2015

Peer-reviewed: Unknown

### Publication information

Journal: *Materia*

Volume: 73

Issue number: 1

ISSN (Print): 1459-9694

Original language: English

ASJC Scopus subject areas: Surfaces, Coatings and Films

Keywords: thermal spraying, HVOF, HVOF

Electronic versions:

M1-15 s 46-50 Matikainen, Koivuluoto, Milanti, Vuoristo

URLs:

<http://urn.fi/URN:NBN:fi:ty-201705191417>

<http://www.vuorimiesyhdistys.fi/sites/default/files/materia/pdf/Materia%201-2015.pdf>

Research output: Contribution to journal › Article › Professional

### Advanced Treatments of Aramid Fibers for Composite Laminates

Aramid fibers form an important group of fibers for composite applications. These applications range through light-weight shell structures, protective structures in ballistic applications such as helmets and various shields, protective clothing, and car tires, for instance. For structural applications, the composites of aramid fibers and high performance resins must form integral and strong parts. Therefore, the fiber-matrix interface places a significant role. Numerous surface treatments and fiber modifications have been applied over the years to adjust aramid fibers. On the way to improve and optimize these interfaces, various test methods have been applied. The recent studies apply microtesting, e.g., in the form of microdroplet tests. Furthermore, the material properties of the resin, fiber, and interface are used to create numerical models. However, the current challenge is to collect statistically reliable data as well as the necessary parameters to validate the simulations on different length scales.

### General information

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Materials Science and Environmental Engineering, Research group: Plastics and Elastomer Technology

Contributors: Kanerva, M.

Number of pages: 12

Publication date: 2020

### Host publication information

Title of host publication: Fiber Composites

Place of publication: London, UK

Publisher: InTech Open Access Publisher

Editor: Ngo, T.

ISBN (Electronic): 978-1-78985-461-9

Electronic versions:

Advanced Treatments of Aramid Fibers 2020

DOIs:

[10.5772/intechopen.90816](https://doi.org/10.5772/intechopen.90816)

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202003192764>

URLs:

<https://www.intechopen.com/online-first/advanced-treatments-of-aramid-fibers-for-composite-laminates> (Chapter link)

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### Advocator, jester, spokesperson, provocateur and boundary spanner? Exploring different communication styles at twitter

Purpose – The recent development of digital communication technologies, and of social media in particular, have enhanced more direct communications between companies and their customers. Among many other things, the use of social media has become considerably popular in customer services. However, communicating with different types of customers is not easy. More profound understanding is needed about how to succeed in communicating with the customers in the increasingly impersonal, yet often emotionally sensitive online environments.

Design/methodology/approach – Based on an extensive empirical data from Twitter discussions on climate change and energy industry, the analysis will follow the ideas and concepts of research on personalities and motivation in the context of social media.

Originality/value – By theorising the impacts of human personality traits to a person's communication style in social media, in accordance with the person's own choices of roles and motivations to communicate in social media, this study will provide companies new insight on how to approach their customers in online environments.

Practical implications – This study offers significant information for any company that wants to improve their customer service through social media. That is, by presenting the early phase taxonomy for different social media communication styles used in Twitter, this study will provide companies with both new insight and practical advice on how to better share information and manage discussions on their social media channels, considering the different communications styles of their customers.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Turku University of Applied Science

Contributors: Ketonen-Oksi, S., Jalonen, H.

Publication date: 6 Jun 2017

#### **Host publication information**

Title of host publication: 12th Conference proceedings of IFKAD2017 : St.Petersburg, Russia, 7-9 June 2017

ISBN (Print): 978-88-96687-10-9

#### **Publication series**

Name: Proceedings IFKAD

ISSN (Print): 2280-787X

Keywords: Social Media, Uses and Gratifications Theory, Twitter, Big Five

URLs:

[http://www.harrijalonen.fi/files/files/IFKAD%20final%20209\\_4\\_2017\\_ok\\_ok.pdf](http://www.harrijalonen.fi/files/files/IFKAD%20final%20209_4_2017_ok_ok.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **A dynamical quality model to continuously monitor software maintenance**

Context: several companies, particularly Small and Medium Sized Enterprises (SMEs), often face software maintenance issues due to the lack of Software Quality Assurance (SQA). SQA is a complex task that requires a lot of effort and expertise, often not available in SMEs. Several SQA models, including maintenance prediction models, have been defined in research papers. However, these models are commonly defined as "one-size-fits-All" and are mainly targeted at the big industry, which can afford software quality experts who undertake the data interpretation tasks. Objective: in this work, we propose an approach to continuously monitor the software operated by end users, automatically collecting issues and recommending possible fixes to developers. The continuous exception monitoring system will also serve as knowledge base to suggest a set of quality practices to avoid (re)introducing bugs into the code. Method: first, we identify a set of SQA practices applicable to SMEs, based on the main constraints of these. Then, we identify a set of prediction techniques, including regressions and machine learning, keeping track of bugs and exceptions raised by the released software. Finally, we provide each company with a tailored SQA model, automatically obtained from companies' bug/issue history. Developers are then provided with the quality models through a set of plug-ins for integrated development environments. These suggest a set of SQA actions that should be undertaken, in order to maintain a certain quality level and allowing to remove the most severe issues with the lowest possible effort. Conclusion: The collected measures will be made available as public dataset, so that researchers can also benefit of the project's results. This work is developed in collaboration with local SMEs and existing Open Source projects and communities.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Free University of Bolzano-Bozen, Università degli Studi Dell'Insubria, Former organisation of the author

Contributors: Lenarduzzi, V., Stan, A. C., Taibi, D., Tosi, D., Venters, G.

Number of pages: 11

Pages: 168-178

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 11th European Conference on Information Systems Management, ECISM 2017

Publisher: Academic Conferences and Publishing International Limited

ISBN (Electronic): 9781911218524

ASJC Scopus subject areas: Computer Science Applications, Information Systems, Management Information Systems

Keywords: Dynamic Software Measurement, Software Maintenance, Software Quality

URLs:

<http://www.scopus.com/inward/record.url?scp=85029853227&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85029853227

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A dynamic paper machine simulator for testing of model predictive control applications**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Measurement Technology and Process Control

Contributors: Yli-Fossi, T., Kuusisto, R.

Number of pages: 6

Pages: 1-6

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of AutomaatioXXI seminaari

Publisher: Suomen Automaatioseura ry

ISBN (Print): 978-952-5183-46-7

#### **Publication series**

Name: SAS julkaisusarja

No.: 42

ISSN (Print): 1455-6502

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Affective experiences and student engagement in higher education**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, Language Centre, Managing digital industrial transformation (mDIT), Tampere University of Applied Science

Contributors: Helander, N., Boedeker, M., Hellsten, P., Jussila, J., Myllärniemi, J., Tukiainen, M.

Publication date: 13 Sep 2016

#### **Host publication information**

Title of host publication: 44th Annual Conference Of The European Society For Engineering Education : 12-15 September 2016, Tampere, Finland

Place of publication: Tampere

ISBN (Print): 9782873520144

ASJC Scopus subject areas: Education

Keywords: Affective experience, Higher Education

URLs:

[http://www.sefi.be/conference-2016/papers/Engineering\\_Skills/helander-affective-experiences-and-student-engagement-in-higher-education-178\\_a.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Skills/helander-affective-experiences-and-student-engagement-in-higher-education-178_a.pdf)

URLs:

<http://www.tut.fi/en/sefi-annual-conference-2016/index.htm>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A follow-up case study of the relation of PLM Architecture, Maturity and Business processes**

This paper presents findings of two research projects, which study current PLM practices and future PLM challenges of global manufacturing companies. This study focuses on maturity of PLM adoption, PLM system architectures and integrations between the tools and seeks a better understanding of a real business phenomenon by comparing case companies to models presented in literature. Data was collected by interviews and benchmarking sessions in six plus three companies in two projects. The companies are categorized by using a four level PLM maturity model. This research indicates that the PLM adoption maturity and architecture models are related to the effectiveness of PLM usage. Service and project businesses seem to be challenging aspects. This is because PLM systems are mainly used in beginning of life activities of the product. In the future also the end of life and middle of life activities should receive more support from the tools and software.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Life-cycle Management

Contributors: Vainio, V. V., Pulkkinen, A.

Number of pages: 7

Pages: 867-873

Publication date: 2016

### Host publication information

Title of host publication: Product Lifecycle Management in the Era of Internet of Things : 12th IFIP WG 5.1 International Conference, PLM 2015, Doha, Qatar, October 19-21, 2015, Revised Selected Papers

Publisher: Springer New York LLC

ISBN (Print): 9783319331102

### Publication series

Name: IFIP Advances in Information and Communication Technology

Volume: 467

ISSN (Print): 1868-4238

ASJC Scopus subject areas: Information Systems and Management

Keywords: PLM maturity, PLM systems architecture, Product lifecycle management

DOIs:

10.1007/978-3-319-33111-9\_79

Source: Scopus

Source ID: 84964911364

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Agency relationships in global project business

Project-based firms (PBFs) serving global markets rely on local agents throughout the project life-cycle. In particular, agents are frequently used to support the PBFs efforts in project marketing, project implementation, and in provisioning of services to customers operating the delivered solutions. The purpose of this paper is to analyse principal-agent relationships in global project business from an agency perspective in order to provide further clarity to their salient characteristics, and to identify mechanisms through which agency problems can be mitigated. Based on our analysis of earlier literature, it appears that PBFs' principal-agent relationships with local actors during project front-end and operations phases are predominantly explorative in their nature whilst relationships during project implementation can be characterized as exploitative. Respectively, relationships of the former kind are governed by complex combinations of contractual and noncontractual mechanisms, while in relationships of the latter kind, rather simple contractual mechanisms are favoured by PBFs. Our findings imply that PBFs need to consider both the project life-cycle phase, as well as the characteristics and goals of individual agents, when designing mechanisms for governing their agency relationships.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Center for Research on Operations Projects and Services, Research group: Center for Research on Operations Projects and Services

Contributors: Ahola, T., Stähle, M., Martinsuo, M.

Number of pages: 38

Publication date: Jun 2018

### Host publication information

Title of host publication: Proceedings of EURAM18 European Academy of Management conference 2018

Publisher: European Academy of Management, EURAM

ISBN (Electronic): 978-2-9602195-0-0

### Publication series

Name: EURAM conference

ISSN (Print): 2466-7498

Keywords: Global project business, agency theory, local agents, project marketing, project implementation, service provisioning

URLs:

<http://www.euramonline.org/130-2018-conference.html>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Agile methods in performance management system development process

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Cost Management Center, Managing digital industrial transformation (mDIT)

Contributors: Stormi, K., Laine, T., Korhonen, T.

Publication date: 2016

### Host publication information

Title of host publication: 10th Conference On New Directions In Management Accounting, Brussels, Belgium, December 14-16, 2016

URLs:

[http://www.eiasm.org/frontoffice/event\\_announcement.asp?event\\_id=1162#4483](http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=1162#4483)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Air pressure difference between indoor and outdoor or staircase in multi-family buildings with exhaust ventilation system in Finland

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Life Cycle Effectiveness of the Built Environment (LCE@BE), Research group: Concrete and Bridge Structures, Research area: Structural Engineering, Department of Civil Engineering, Research group: Building Physics, Natl Inst Hlth & Welf, Finland National Institute for Health & Welfare, Dept Environm Hlth

Contributors: Leivo, V., Kiviste, M., Aaltonen, A., Turunen, M., Haverinen-Shaughnessy, U.

Number of pages: 6

Pages: 1218-1223

Publication date: 2015

Peer-reviewed: Yes

### Publication information

Journal: Energy Procedia

Volume: 78C

Article number: 78C

ISSN (Print): 1876-6102

Ratings:

Scopus rating (2015): CiteScore 1.2 SJR 0.359 SNIP 0.562

Original language: English

Electronic versions:

Air pressure difference between indoor and outdoor

DOIs:

[10.1016/j.egypro.2015.11.188](https://doi.org/10.1016/j.egypro.2015.11.188)

URLs:

<http://urn.fi/URN:NBN:fi:ty-201605023900>

Research output: Contribution to journal > Article > Scientific > peer-review

## ÄKK-hankkeen suositukset tulevaisuuden ääneneristysmääräyksiä koskien

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Building Acoustics, University of Turku, Finnish Institute of Occupational Health, Indoor Environment Laboratory

Contributors: Hongisto, V., Kylliäinen, M., Hyönä, J.

Number of pages: 6

Pages: 561-566

Publication date: 22 Oct 2015

### Host publication information

Title of host publication: Rakennusfysiikka 2015

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

ISBN (Print): 978-952-15-3580-2

ASJC Scopus subject areas: Civil and Structural Engineering, Acoustics and Ultrasonics

Keywords: acoustics, sound insulation, airborne sound insulation, impact sound insulation, psychoacoustics

URLs:

<http://www.tut.fi/cs/groups/public/@I912/@web/@p/documents/liit/x124266.pdf>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Alipaineistetun tuulettuvan ryömintätilan rakennusfysikaaliset FEM-simuloinnit**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Civil Engineering, Research group: Building Physics, Tampere University of Technology, Laboratory of Civil Engineering

Contributors: Salo, J., Huttunen, P., Vinha, J.

Number of pages: 11

Pages: 413-422

Publication date: 24 Oct 2017

#### **Host publication information**

Title of host publication: Rakennusfysiikka 2017. Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut : 24-26.10.2017, Tampere

Volume: 2

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, Rakennustekniikka, Rakennusfysiikka

Editors: Vinha, J., Kivioja, H.

ISBN (Print): 978-952-15-4023-3

#### **Publication series**

Name: Tampereen teknillinen yliopisto. Rakennustekniikka. Rakennusfysiikka.

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@I102/@web/@p/documents/liit/x229155.pdf](http://www.tut.fi/cs/groups/public_news/@I102/@web/@p/documents/liit/x229155.pdf)

#### **Bibliographical note**

INT=RAK, "Salo, Juha"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Alkyl thiophene vinylene electropolymerization in C8mimPF6, potential use in solar cells**

We report the electrosynthesis of a novel semiconductor polymer based on alkyl vinylthiophene derivative in the presence of an ionic liquid (IL). The polymerization was performed under galvanostatic conditions and the polymer was studied as potential donor component of a multilayer heterojunction organic solar cell (OSC). The monomer used was (E)-1,2-di-(3-octyl-2-thienyl) vinylene (OTV) and the IL used for the electropolymerization was 1-octyl-3-methylimidazole hexafluorophosphate C8mimPF6. Optical properties, stability and morphology of the polymer were analyzed using FT-IR, UV-vis, Raman and XPS spectroscopy. Voltammetry analysis and scanning electron microscopy (SEM-EDX) were also performed on the polymer. The OSC assembled with the polymer of OTV was used as electro donor and C60 as acceptor. Molybdenum trioxide (MoO<sub>3</sub>) and bathocuproine (BCP) were used as buffer layer between anode and cathode respectively. I-V curves, in the dark and under AM 1.5 solar simulator were performed to measure its efficiency.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Chemistry and Bioengineering, Research group: Supramolecular photochemistry, Research group: Chemistry & Advanced Materials

Contributors: Rojas, V., Martinez, F., Bernede, J. C., Guenadez, L. C., Efimov, A., Lemmetyinen, H.

Number of pages: 13

Pages: 405-417

Publication date: May 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: Materials Sciences and Applications

Volume: 8

Issue number: 5

ISSN (Print): 2153-117X

Original language: English

Electronic versions:

2017-martinez-MSA



DOIs:

10.4236/msa.2017.85013

URLs:

<http://urn.fi/URN:NBN:fi:tty-201706151598>

Research output: Contribution to journal › Article › Scientific › peer-review

### All-fiber mode-locked laser at 0.98 $\mu\text{m}$

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics

Contributors: Aleshkina, S. S., Lipatov, D. S., Velmiskin, V. V., Kochergina, T. A., Fedotov, A., Gumenyuk, R., Kotov, L. V., Temyanko, V. L., Bubnov, M. M., Guryanov, A. N., Likhachev, M. E.

Pages: 184 - 189

Publication date: 2020

#### Host publication information

Title of host publication: Fiber Lasers XVII: Technology and Systems

Publisher: SPIE

Editor: Dong, L.

#### Publication series

Name: Proceedings of SPIE

Volume: 11260

ISSN (Print): 0277-786X

Keywords: all-fiber laser, Yb-doped fiber, ring doping, amplifier at 0.98  $\mu\text{m}$ , mode-locked laser at 0.98  $\mu\text{m}$

DOIs:

10.1117/12.2542299

#### Bibliographical note

jufoid=71479

Source: Bibtex

Source ID: 10.1117/12.2542299

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Alpha radiation induced luminescence in solar blind spectral region

Intense luminescence in the solar blind spectral region is produced by modifying the gas atmosphere around an alpha emitter. This enables standoff detection of alpha radiation under daylight conditions.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Photonics, Helsinki Institute of Physics

Contributors: Kerst, T., Toivonen, J.

Publication date: 2018

#### Host publication information

Title of host publication: CLEO : Applications and Technology, CLEO\_AT 2018

Publisher: OSA - The Optical Society

ISBN (Electronic): 9781557528209

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Mechanics of Materials

Electronic versions:

alpha\_radiation\_induced\_luminescence\_in\_solar\_blind\_spectral\_region

DOIs:

10.1364/CLEO\_AT.2018.ATh4O.8

URLs:

<http://urn.fi/URN:NBN:fi:tty-201908232002>

Source: Scopus

Source ID: 85049133557

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Aluetehokkuuden kustannusvaikutukset

### General information

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Department of Civil Engineering, Aalto University  
Contributors: Nisula, J., Saari, A.  
Number of pages: 6  
Pages: 102-107  
Publication date: 2015

### Host publication information

Title of host publication: Nollaa parempi – Townhouse energiatehokkaassa asuinrakentamisessa  
Publisher: Aalto-yliopisto  
ISBN (Print): 978-952-60-6409-3  
ISBN (Electronic): 978-952-60-6410-9

### Publication series

Name: Aalto University publication series Crossover  
No.: 9/2015  
ISSN (Print): 1799-4950  
ISSN (Electronic): 1799-4969  
Research output: Chapter in Book/Report/Conference proceeding > Chapter > Scientific > peer-review

### Älykäs kaupunkilogistiikka – CityLog

During the spring of 2014 Transport Research Centre Verne from the Tampere University of Technology carried out an urban logistics study, where the current challenges and future development needs of city logistics was studied. In the study, this problem is approached from the perspective of shops and services located into the city centre. A part of the inner city centre of Tampere was chosen as a case area of the study. The main research methods were survey and expert interviews.

According to the results, the biggest challenges in the city logistics from the perspective of shop and service office owners are narrow loading and unloading areas, problems related on delivery time schedules and minor possibilities to affect logistics actions. In general, lack of communication and the sharing of information are seen be poorly used in the city logistics. However, retailers and service carries do not see logistics as their weakness nor their main business area. According to the findings, in future the development of city logistics should be done more with a close relationship with transportation companies and the public sector. The future research and development needs should focus on communication between transport companies and their customers, optimization of loading and unloading areas and the impacts of rapidly increasing e-commerce. Highly automated and real-time communication solutions could offer significant benefits for unconsciousness in delivery times for example. Also the potential of underground logistics connections should be studied together with loading and unloading optimization.

### General information

Publication status: Published  
MoE publication type: D4 Published development or research report or study  
Organisations: Department of Information Management and Logistics  
Contributors: Nykänen, L., Kallionpää, E., Liimatainen, H.  
Number of pages: 20  
Publication date: Sep 2015

### Publication information

Publisher: Tampereen teknillinen yliopisto. Liikenteen tutkimuskeskus Verne.  
ISBN (Electronic): 978-952-15-3588-8  
Original language: Finnish

### Publication series

Name: Tampereen teknillinen yliopisto. Liikenteen tutkimuskeskus Verne. Tutkimusraportti  
ISSN (Print): 2242-3486  
ASJC Scopus subject areas: Engineering(all)  
Keywords: city logistics, urban logistics, intelligent transport system, e-commerce, future transport system  
Electronic versions:  
alykas\_kaupunkilogistiikka\_citylog

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3588-8>

### Bibliographical note

Lupa ja versio kunnossa 12.1.2016 /KK

Research output: Book/Report > Commissioned report > Professional

### Älylaitteet ja stressi: Aiheuttajat, seuraukset ja hallintakeinot

#### General information

Publication status: Published

MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material

Organisations: Information and Knowledge Management, Jyväskylän yliopisto

Contributors: Salo, M., Pirkkalainen, H.

Number of pages: 12

Pages: 79-90

Publication date: 2019

#### Host publication information

Title of host publication: Lapset, nuoret ja älylaitteet - Taiten tasapainoon

Publisher: KUSTANNUS OY DUODECIM

Editors: Kosola, S., Moisala, M., Ruokoniemi, P.

Research output: Chapter in Book/Report/Conference proceeding > Chapter > Professional

### A membrane external-cavity surface-emitting laser (MECSEL) with emission around 825 nm

A MECSEL emitting around 825nm is reported. With a tuning range from 807nm to 840 nm, the MECSEL extends the coverage of high beam quality semiconductor based lasers in the short 8XXnm region and opens new perspectives for scanning ground-based water-vapor differential absorption lidar. 1.4W maximum output power has been achieved at room temperature operation and at 12.5W absorbed power using a 532 nm emitting pump laser. The beam quality has been investigated by  $M^2$  measurements at different pump power. The effect from a growing pump mode and thermal lensing has been observed as the beam divergence angle decreases and the beam waist radius enlargens with increasing pump power.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Research group: ORC

Contributors: Hung, H. M., Kahle, H., Penttinen, J., Rajala, P., Ranta, S., Guina, M.

Publication date: 2020

#### Host publication information

Title of host publication: Vertical External Cavity Surface Emitting Lasers (VECSELs) X

Publisher: SPIE

Editor: Hastie, J. E.

Article number: 112630H

ISBN (Print): 9781510632899

ISBN (Electronic): 9781510632905

#### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering

Volume: 11263

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: GaInAsP, MECSEL, Semiconductor laser, Short 8XXnm region, SiC heatspreaders, Thermal lensing, VECSEL

DOIs:

10.1117/12.2545980

#### Bibliographical note

INT=phys,"Rajala, Patrik"

jufoid=71479

Source: Scopus

Source ID: 85082694209

### **A mixed-integer linear programming approach for global discrete size optimization of frame structures**

This paper proposes a method to solve discrete size optimization problems of frame structures to global optimality. Global optimality is guaranteed by reformulating the optimization problem as a mixed-integer linear program (MILP) and solving it with the branch-and-bound method. The presented mixed variable formulation extends the existing mixed variable formulation for size and topology optimization of truss structures. The MILP is obtained by adopting the simultaneous analysis and design approach. The variables consist of binary decision variables to select a profile section from the catalog, and state variables representing the member end forces. The equilibrium equations and member stiffness relations are included as constraints. The displacement and stress constraints are formulated such that for each member limit values are imposed at predefined locations along the member. The proposed method is applied to a three-bay three-story frame.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Metal and Light-wight structures, KU Leuven

Contributors: Van Mellaert, R., Mela, K., Tiainen, T., Heinisuo, M., Lombaert, G., Schevenels, M.

Number of pages: 14

Pages: 3395-3408

Publication date: 2016

#### **Host publication information**

Title of host publication: ECCOMAS Congress 2016 - Proceedings of the 7th European Congress on Computational Methods in Applied Sciences and Engineering : Crete; Greece; 5 June 2016 through 10 June 2016

Volume: 2

Publisher: National Technical University of Athens

ISBN (Electronic): 9786188284401

ASJC Scopus subject areas: Artificial Intelligence, Applied Mathematics

Keywords: Discrete optimization, Frame structures, Global optimization, Mixed-integer linear programs, Size optimization

URLs:  
<http://www.scopus.com/inward/record.url?scp=84995387507&partnerID=8YFLogxK> (Link to publication in Scopus)

<https://www.eccomas2016.org/>

Source: Scopus

Source ID: 84995387507

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A model based analysis of the measurement errors in inductively coupled passive resonance sensors**

A lumped element model was used to predict the measurement results of an inductively coupled resonance sensor. Errors related to the inductive coupling and the reader coil self-resonance were studied. The model was compared with measurements made with a physical circuit.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Microsystems, Research area: Measurement Technology and Process Control, Integrated Technologies for Tissue Engineering Research (ITTE)

Contributors: Salpavaara, T., Lekkala, J.

Number of pages: 4

Publication date: 2015

#### **Host publication information**

Title of host publication: IMEKO XXI World Congress, Proceedings, August 30 - September 4, 2015, Prague, Czech Republic

Editor: Holub, J.

ISBN (Print): 978-80-01-05793-3

Keywords: passive resonance sensor, inductive coupling, lumped element model, measurement error

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A model for anisotropic magnetostriction**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, Lund University, Aalto University  
Contributors: Belahcen, A., Kouhia, R., Rasilo, P., Ristinmaa, M.  
Number of pages: 3  
Pages: 201-203  
Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the XII Finnish Mechanics Days  
Publisher: Rakenteiden Mekaniikan Seura ry  
ISBN (Print): 978-952-93-5608-9  
ISBN (Electronic): 978-952-93-5609-6

#### Bibliographical note

EXT="Rasilo, Paavo"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### A model for profiling information and knowledge management in the public sector

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial Engineering and Management, Information and Knowledge Management, Research group: Operations and Supply Chain Group (OSCG)  
Contributors: Jääskeläinen, A., Sillanpää, V., Helander, N.  
Publication date: 2019

#### Host publication information

Title of host publication: Proceedings of 14th IFKAD 2019 conference : Matera, Italy, 5-7 June.  
ISBN (Electronic): 978-88-96687-12-3

#### Publication series

Name: Proceedings IFKAD  
ISSN (Electronic): 2280-787X  
URLs:

<https://www.ifkad.org/previous-editions/ifkad-2019/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### An accurate small-signal model of a three-phase VSI-based photovoltaic inverter with LCL-filter

Three-phase photovoltaic inverters are usually equipped with an LCL-type output filter to reduce cost and size of the converter compared to a simple L-type output filter. The LCL-filter has an inherent resonance which has to be damped by a passive or active method to avoid instability. This paper presents an accurate full-order small-signal model of the three-phase VSI-based photovoltaic inverter with LCL-type output filter. The model is developed in the dq-domain, where the steady-state operating point can be solved. The developed small-signal model has been verified by extracting frequency responses from a scaled-down prototype. The model is shown to give accurate predictions on the shape of inverter transfer functions such as control loop gains and output impedance. Thus, the model can be used for control design, impedance shaping and impedance-based stability analysis.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)  
Contributors: Aapro, A., Messo, T., Suntio, T.  
Number of pages: 8  
Pages: 2267-2274  
Publication date: 2015

#### Host publication information

Title of host publication: 9th International Conference on Power Electronics and ECCE Asia (ICPE-ECCE Asia)  
ISBN (Print): 978-89-5708-254-6  
DOIs:

10.1109/ICPE.2015.7168092

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Analysis of Cognitive Cooperative Networks with Best Relay Selection and Diversity Reception**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Department of Telecommunications Engineering, HoChiMinh City University of Technology

Contributors: Ho-Van, K., Sofotasios, P. C., Que Son, V., Thanh Tra, L., Hong Lien, P.

Number of pages: 6

Pages: 651-656

Publication date: 2015

### **Host publication information**

Title of host publication: 2015 International Conference on Advanced Technologies for Communications (ATC)

Publisher: IEEE

ISBN (Print): 978-1-4673-8374-5

DOIs:

10.1109/ATC.2015.7388412

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## **Analysis of Crowdsensed WiFi Fingerprints for Indoor Localization**

Crowdsensing is more and more used nowadays for indoor localization based on Received Signal Strength (RSS) fingerprinting. It is a fast and efficient solution to maintain fingerprinting databases and to keep them up-to-date. There are however several challenges involved in crowdsensing RSS fingerprinting data, and these have been little investigated so far in the current literature. Our goal is to analyse the impact of various error sources in the crowdsensing process for the purpose of indoor localization. We rely our findings on a heavy measurement campaign involving 21 measurement devices and more than 6800 fingerprints. We show that crowdsensed databases are more robust to erroneous RSS reports than to malicious fingerprint position reports. We also evaluate the positioning accuracy achievable with crowdsensed databases in the absence of any available calibration.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Automation and Hydraulic Engineering, Research group: Positioning, Tampere University of Technology

Contributors: Peng, Z., Richter, P., Leppäkoski, H., Lohan, E.

Number of pages: 10

Pages: 268-277

Publication date: Nov 2017

### **Host publication information**

Title of host publication: Proceedings of the 21st Conference of Open Innovations Association FRUCT

Place of publication: Helsinki, Finland

Publisher: FRUCT

ISBN (Electronic): 978-952-68653-2-4

Electronic versions:

CrowdsensedFingerprints03

URLs:

<http://urn.fi/URN:NBN:fi:tty-201801171105>

<https://www.fruct.org/publications/fruct21/files/Pen.pdf>

### **Bibliographical note**

INT=elt,"Peng, Zhe"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## **Analysis of outdoor and indoor propagation at 15 GHz and millimeter wave frequencies in microcellular environment**

The main target of this article is to perform the multidimensional analysis of multipath propagation in an indoor and outdoor environment at higher frequencies i.e. 15 GHz, 28 GHz and 60 GHz, using "sAGA" a 3D ray tracing tool. A real world outdoor Line of Sight (LOS) microcellular environment from the Yokusuka city of Japan is considered for the analysis. The simulation data acquired from the 3D ray tracing tool includes the received signal strength, power angular spectrum and the power delay profile. The different propagation mechanisms were closely analyzed. The simulation results show the difference of propagation in indoor and outdoor environment at higher frequencies and draw a special attention on the impact of diffuse scattering at 28 GHz and 60 GHz. In a simple outdoor microcellular environment with a valid LOS link

between the transmitter and a receiver, the mean received signal at 28 GHz and 60 GHz was found around 5.7 dB and 13 dB inferior in comparison with signal level at 15 GHz. Whereas the difference in received signal levels at higher frequencies were further extended in an indoor environment due to higher building penetration loss. However, the propagation and penetration loss at higher frequency can be compensated by using the antenna with narrow beamwidth and larger gain.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electrical Engineering, Research group: Laboratory of Radio Network Planning, Research group: Wireless Communications and Positioning

Contributors: Sheikh, M. U., Lempiainen, J.

Number of pages: 8

Pages: 160-167

Publication date: 2018

Peer-reviewed: Yes

#### **Publication information**

Journal: Advances in Science, Technology and Engineering Systems

Volume: 3

Issue number: 1

ISSN (Print): 2415-6698

Ratings:

Scopus rating (2018): CiteScore 0 SNIP 0.297

Original language: English

ASJC Scopus subject areas: Engineering (miscellaneous), Management of Technology and Innovation, Physics and Astronomy (miscellaneous)

Keywords: 3D ray tracing, 5G, Microcellular, Millimeter wave frequencies, Multipath propagation, System performance

DOIs:

10.25046/aj030120

Source: Scopus

Source ID: 85061718805

Research output: Contribution to journal › Article › Scientific › peer-review

#### **Analysis of Real Mobility Records in Urban and Suburban Environments**

The long-term motion of vehicles and people is of great interest for many sectors of our society, such as urban planning, traffic forecasting, medicine, retail economy and public transport.

This paper analyzes the parameters of multiple mobility data sets obtained from real-field measurement campaigns. The mobility records show how the target vehicles use the street network in different geographical areas (old city center, suburban areas and highways). The records are obtained from Global Navigation Satellite System receivers mounted on the targets.

This study is useful for smart city scenarios for assessing the feasibility and the performance of metropolitan transport networks.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Wireless Communications and Positioning (WICO), Ministry of National Education. University Politehnica of Bucharest

Contributors: Alexandru, R. C., Lohan, E.

Pages: 0688-0692

Publication date: 2016

#### **Host publication information**

Title of host publication: 26TH DAAAM International Symposium on Intelligent Manufacturing and Automation

Publisher: DAAAM International

ISBN (Print): 978-3-902734-07-5

DOIs:

10.2507/26th.daaam.proceedings.094

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Analysis of the aircraft operational reliability research series: From statistical models to avionics data monitoring**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Research group: Käyttövarmuuden suunnittelu ja kunnossapito

Contributors: Laitinen, J., Niemi, A.

Number of pages: 15

Publication date: 2015

### **Host publication information**

Title of host publication: Proceedings of the 9th World congress on engineering asset management (WCEAM 2014), Pretoria, South Africa 28-31 Oct, 2014

ISBN (Print): 978-3-319-15536-4

### **Bibliographical note**

siirretään 2015<br/>Contribution: organisation=mei,FACT1=1<br/>Portfolio EDEND: 2015-01-14<br/>publication\_forum:73368

Source: researchoutputwizard

Source ID: 19

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Analysis of upconversion nanoparticles as an active medium for upconversion light sources**

In the presented work, we investigated the optical and thermal stability of upconversion nanoparticles based on the three widely used matrices (NaYF<sub>4</sub>, Y<sub>2</sub>O<sub>3</sub>, LaF<sub>3</sub>). Analysis of the upconversion emission as a function of pump power density in a wide range revealed a multi-stage functional dependence. The stages of linear growing, saturation and degradation with both reversible and irreversible characters were discovered. For matrices of nanoparticles with low-temperature stability (NaYF<sub>4</sub>), the dependence proves to be irreversible that could cause by a change in the structure and chemical composition of the matrix. Reversible dependence occurs in matrices with high-temperature stability (Y<sub>2</sub>O<sub>3</sub> and LaF<sub>3</sub>) and is caused by multiphonon nonradiative relaxation, which can be temperature-stimulated because of self-heating and low air-cooling of the crystal matrixes with low thermal conductivity.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Research group: Nanophotonics, A. M. Prokhorov General Physics Institute, Russian Academy of Sciences, Institute of Physics, University of Tartu

Contributors: Fedotov, A., Pominova, D., Orlovskaya, E., Orlovskii, Y., Niemi, T., Gumenyuk, R.

Number of pages: 9

Publication date: 1 Mar 2019

### **Host publication information**

Title of host publication: Proceedings of SPIE : Optical Components and Materials XVI

Volume: 10914

Publisher: S P I E - International Society for Optical Engineering

Article number: 109140R

ISBN (Print): 9781510624702

### **Publication series**

Name: Proceedings of SPIE : the International Society for Optical Engineering

Publisher: SPIE, The International Society for Optical Engineering

Volume: 10914

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

Keywords: upconversion, nanoparticles, luminescence, erbium, ytterbium, light sources

Electronic versions:

Analysis of upconversion nanoparticles as an active medium for upconversion light sources

DOIs:

10.1117/12.2507599

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review



### **Analysis of User Exploration Patterns during Scene Cuts in Omnidirectional Videos**

Omnidirectional video can be comprised of several scenes joined together. A scene in a video can change within the same semantic content due to switching to a different camera position (e.g., in a multi-camera sport event), referred to as intra-scene transition; in other situations, a scene in a video can change between different semantic content, referred to as inter-scene transition (e.g., a scene cut from a movie). — In this paper an attempt is made to 1) find the user exploration behavior in terms of the exploration range, angular speed and acceleration metrics; 2) Investigate whether there is any exploration behavioral change in the watching patterns between intra- and inter-scene transitions. — We find that there is an increase in the exploratory behavior for all the above-mentioned metrics, and show that there is a delay (reaction time) between the scene transition and the start of the exploration. Finally, we also show that the exploratory behavior is higher in inter-scene transitions compared to intra-scene transitions.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: Multimedia Research Group - MRG, Nokia Technologies

Contributors: Monakhov, D., Naik, D., Curcio, I. D. D., Toukoma, H.

Number of pages: 20

Publication date: Oct 2018

#### **Host publication information**

Title of host publication: SMPTE 2018

Publisher: SMPTE

ISBN (Print): 978-1-61482-960-7

Keywords: Omnidirectional video, 360 Degrees video, Exploration range, Scene transitions, Watching patterns, Scene cuts, Viewport dependent streaming

DOIs:

10.5594/M001845

Source: Bibtex

Source ID: urn:c98a31d3ee60d03894118df511ce8868

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Analysis on bus travel time through traffic light intersection**

As the number of vehicles grows, cities around the world face serious road traffic congestion problems. One solution is the introduction of bus traffic with intelligent traffic light control. Travel time in an urban area consists of driving time and dwelling time. To analyze the effect of traffic light, data was collected from two sources: GPS bus locations and traffic light system. Travel time in an intersection depends on the arrival time on the traffic light sequence and other traffic. The traffic light on the selected segment utilizes bus priority. Comparisons with bus priority and without were carried out. Bus priority in the intersection causes a slight decrease on travel time and removes some of the larger waiting times. Bus arrival time on the traffic light sequence is random. In this paper travel time of buses through an intersection with bus priority is analyzed.

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Signal Processing, Research group: MMDM, Research area: Information Technology for Biology and Health, Research area: Intelligence in Machines, Research area: Signal and Information Processing, University of Tampere

Contributors: Kerminen, R., Wang, C., Visa, A.

Number of pages: 10

Publication date: 2015

#### **Host publication information**

Title of host publication: ITS World Congress 2015 Proceedings : Towards Intelligent Mobility – Better Use of Space

Article number: EU-ITS-2051

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

### **An anisotropic continuum damage model for concrete**

In this paper, a thermodynamic formulation for modelling anisotropic damage of elastic brittle materials based on Ottosen's 4-parameter failure surface is proposed. The model is developed by using proper expressions for Gibb's free energy and the complementary form of the dissipation potential. The formulation predicts the basic characteristic behaviour of concrete well and results in a realistic shape for the damage surface.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, VTT  
Tech Res Ctr Finland, VTT Technical Research Center Finland, Aalto University  
Contributors: Yaghoubi, S. T., Hartikainen, J., Kolari, K., Kouhia, R.  
Number of pages: 56  
Pages: 51  
Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the XII Finnish Mechanics Days : Suomen XII mekaniikkapäivien esitelmät  
Publisher: Rakenteiden Mekaniikan Seura ry  
Editors: Kouhia, R., Mäkinen, J., Pajunen, S., Saksala, T.  
ISBN (Print): 978-952-93-5608-9  
ISBN (Electronic): 978-952-93-5609-6  
URLs:  
[http://rmseura.tkk.fi/smp\\_proceedings/SMP12\\_Proceedings.pdf](http://rmseura.tkk.fi/smp_proceedings/SMP12_Proceedings.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### An approval of MPPT based on pv cell's simplified equivalent circuit during fast-shading conditions

The partial shading conditions significantly affect the functionality of solar power plants despite the presence of multiple maximum power point tracking systems. The primary cause of this problem is the presence of local maxima in the power–current and/or power–voltage characteristic curves that restrict the functionality of the conventional maximum power point tracking systems. The present article proposes a modified algorithm based on the simplified equivalent circuit of solar cells to improve the functionality of traditional maximum power point tracking systems. This algorithm provides a method for regularly monitoring the photo-current of each solar module. The upper and lower boundaries of the regulating parameter such as current or voltage are decided very precisely, which is helpful to find the location of the global maximum. During a sequential search, the control system accurately determines the lower and upper boundaries of the global maximum. Simultaneously, the maximum power point tracking system increases the photovoltaic current up to one of these boundaries and applies one of the conventional algorithms. Additionally, the control system regularly monitors the photovoltaic characteristics and changes the limits of regulating parameter concerning any change in global maximum location. This proposed method is fast and precise to locate the global maximum boundaries and to track global maximum even under fast-changing partial shading conditions. The improved performance and overall efficiency are validated by simulation study for variable solar irradiance.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Automation Technology and Mechanical Engineering, Ariel University Center of Samaria  
Contributors: Rajput, S., Averbukh, M., Yahalom, A., Minav, T.  
Number of pages: 14  
Publication date: 1 Sep 2019  
Peer-reviewed: Yes

#### Publication information

Journal: Electronics (Switzerland)  
Volume: 8  
Issue number: 9  
Article number: 1060  
ISSN (Print): 2079-9292  
Ratings:  
Scopus rating (2019): CiteScore 1.9 SJR 0.303 SNIP 1.088  
Original language: English  
ASJC Scopus subject areas: Control and Systems Engineering, Signal Processing, Hardware and Architecture, Computer Networks and Communications, Electrical and Electronic Engineering  
Keywords: Equivalent circuit, Global maximum, Maximum power point tracking, Partial shading, Photovoltaic system, Solar module  
Electronic versions:  
[electronics-08-01060-v2](#)  
DOIs:  
[10.3390/electronics8091060](https://doi.org/10.3390/electronics8091060)  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-201912126797>  
Source: Scopus  
Source ID: 85075081647  
Research output: Contribution to journal › Article › Scientific › peer-review

### **A new generation sweating thermal manikin for the evaluation of the thermal comfort of protective clothing in Arctic Conditions**

Working or staying in cold conditions set high demands for the garments to sustain the thermal comfort of the wearer. The high thermal insulation needed in cold conditions, like in Arctic areas, can cause heat stress when working in high intensity and post exercise chill while the remaining moisture in the clothing layers due to sweating increases heat loss. The thermoregulatory properties of textiles from material level to garment level can be determined with a wide selection of test methods. Hot plates, water vapour permeability tests and a sweating thermal cylinder are used for planar textiles to determine thermal comfort properties on material level to be able to select the most suitable candidates for the garments for the required end use conditions. For garment level testing, the non-movable or movable thermal or sweating thermal manikins offer the most sophisticated objective methods. They simulate human body heat and sweat production and body movements in controlled ambient conditions for determining the thermal comfort properties either of a piece of garment or the whole clothing systems. The effect of garment design can be determined in addition to material properties.

#### **General information**

Publication status: Published  
MoE publication type: B2 Part of a book or another research book  
Organisations: Department of Materials Science, Research group: Fibre Materials  
Contributors: Varheenmaa, M.  
Number of pages: 7  
Pages: 154-161  
Publication date: 2015

#### **Host publication information**

Title of host publication: Arctic Wears - Perspectives on Arctic Clothing  
Publisher: Lapland University of Applied Sciences  
Editors: Konola, S., Kähkönen, P.  
ISBN (Print): 978-952-316-085-9  
ISBN (Electronic): 978-952-316-086-6

#### **Publication series**

Name: Liiketoiminta ja yrittäjyys Sarja B. Raportit ja selvitykset 10/2015  
Publisher: Lapland University of Applied Sciences  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific

### **A new method to calculate natural convection heat transfer from a non-isothermal fin array**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics,  
Research group: Lämpö- ja virtaustekniikka  
Contributors: Lampio, K., Karvinen, R.  
Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the 7th Baltic Heat Transfer Conference, August 24-26 2015, Tallinn Estonia  
Place of publication: Tallinn  
Publisher: Tallinn University of Technology  
Editors: Neshumayev, D., Sunden, B.  
ISBN (Print): 978-9949-23-817-0

#### **Publication series**

Name: Baltic Heat Transfer Conference BHTC  
Publisher: Tallinn University of Technology

#### **Bibliographical note**

ei ut-numeroa 26.4.2014<br/>Contribution: organisation=epr,FACT1=1  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A new waveguiding mechanism based upon geometric phase**

We demonstrate light guiding in a locally twisted anisotropic medium in the absence of a refractive index gradient. The transverse phase modulation required to compensate diffraction is provided by the Pancharatnam-Berry phase.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research group: Nonlinear Optics, Research area: Optics, Univ Porto, Universidade do Porto, Fac Ciencias, Ctr Fis Porto, Univ Naples Federico II, Commonwealth Scientific & Industrial Research Organisation (CSIRO), University of Naples Federico II, Dipartimento Fis, Complesso Univ Monte St Angelo, Consiglio Nazionale delle Ricerche (CNR), CNR, SPIN

Contributors: Alberucci, A., Pannian, J. C., Slussarenko, S., Piccirillo, B., Santamato, E., Marrucci, L., Assanto, G.

Publication date: 2016

### Host publication information

Title of host publication: Frontiers in Optics 2016

Publisher: Optical Society of America (OSA)

Article number: FF3H.3

ISBN (Print): 978-1-943580-19-4

URLs:

<https://www.osapublishing.org/abstract.cfm?uri=FiO-2016-FF3H.3>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### An example of scenario-based evaluation of military capability areas An impact assessment of alternative systems on operations

The concept of military capabilities is often used in strategic planning of defense. This study describes an example of scenario-based evaluation of military capability areas using alternative systems. The study concentrates on three capability areas: protection, awareness and engagement. Evaluations of new systems in realistic but future-oriented scenarios may reveal new possibilities to utilize collaboration of different systems or to replace existing systems with new ones. The study indicates how the combination of UAVs and satellites is the most prominent system compared to UAV or satellite systems to enhance protection, engagement and awareness capability, especially in the 10-year span. Technology development may reveal unexpected synergies in the utilization of the combination of these two systems. Further work will focus on the application of the methodology in other areas and on the collection of data to analyze the effect of the technology development to the capability areas.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: System-on-Chip for GNSS, Wireless Communications and Cyber-Physical Embedded Computing, Department of Electronics and Communications Engineering, Wireless Communications and Positioning (WICO), Information Technology Division, Finnish Defence Research Agency

Contributors: Suojanen, M., Kuikka, V., Nikkarila, J. P., Nurmi, J.

Number of pages: 7

Pages: 601-607

Publication date: 2 Jun 2015

### Host publication information

Title of host publication: 9th Annual IEEE International Systems Conference, SysCon 2015 - Proceedings

Publisher: The Institute of Electrical and Electronics Engineers, Inc.

ISBN (Print): 9781479959273

ASJC Scopus subject areas: Computer Networks and Communications, Control and Systems Engineering

Keywords: impact assessment, military capability, scenario, systems, technology forecasting

DOIs:

10.1109/SYSCON.2015.7116817

Source: Scopus

Source ID: 84941308805

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### An experimental and numerical study of the dynamic Brazilian disc test on Kuru granite

This paper deals with numerical modeling of the dynamic tensile strength of Kuru granite and corresponding experiments with the dynamic Brazilian Disc (BD) tests using the Split Hopkinson Pressure Bar apparatus (SHPB). It was found that the indirect tensile strength of the Kuru granite increased from the static value of 13 MPa to 36 MPa when the impact velocity reached 20 m/s. A numerical method was developed for simulations of these tests. The method includes a material model based on the rate-dependent isotropic compliance damage and embedded discontinuity concepts for rock and an FEM based explicit time marching technique for simulating the dynamics of the SHPB apparatus. Simulation results are in decent agreement with the experiments.

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Materials Science, Research group: Materials Characterization, Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics

Contributors: Mardoukhi, A., Saksala, T., Hokka, M., Kuokkala, V.

Number of pages: 6

Pages: 210-215

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the XII Finnish Mechanics Day

ISBN (Print): 978-952-93-5608-9

ISBN (Electronic): 978-952-93-5609-6

Keywords: Dynamic Brazilian Disc test, Split Hopkinson Pressure Bar, FEM, rock fracture

URLs:

[http://rmseura.tkk.fi/smp\\_proceedings/SMP12\\_Proceedings.pdf](http://rmseura.tkk.fi/smp_proceedings/SMP12_Proceedings.pdf)

#### Bibliographical note

ORG=mol,0.5

ORG=mei,0.5

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### An Initial Homophily Indicator to Reinforce Context-Aware Semantic Computing

The vast increase of personal sensor information is driving the rise in popularity of context-aware applications. Users crave and very often expect tailored services that are based on the users' context or personal preferences. The users themselves, using forms, often provide such information. An inference solution typically addresses this problem. In this paper, we present and show by way of a real-world example, the first step towards incorporating information of the user's social networking behavior in the inference task. We define an initial indicator of a particular social phenomenon, called Homophily, and describe how the indicator measures the presence of homophily at certain moments, also capturing the degree to which it is present. Different from existing indicators, ours lends itself to indicating the presence of homophily in a way that is easier to comprehend, so that it may be easily integrated into and reinforce context-aware semantic computing.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mathematics, Research group: MAT Intelligent Information Systems Laboratory

Contributors: Rivero-Rodriguez, A., Pileggi, P., Nykänen, O.

Number of pages: 5

Pages: 89-93

Publication date: 2015

#### Host publication information

Title of host publication: 7th International Conference on Computational Intelligence, Communication Systems and Networks (CICSyN)

Place of publication: Riga

Publisher: IEEE

ISBN (Print): 9781467370165

#### Publication series

Name: International Conference on Computational Intelligence, Communications and Networks

Electronic versions:

Homophily\_indicator

DOIs:

10.1109/CICSyN.2015.26

URLs:

<http://urn.fi/URN:NBN:fi:tty-201604293889>

<http://www.mendeley.com/research/initial-homophily-indicator-reinforce-contextaware-semantic-computing>

Source: Mendeley

Source ID: 6f091d3c-7f8d-366f-ac71-f59b685fbff9

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### A NLOS-robust TOA positioning filter based on a skew-t measurement noise model

A skew-t variational Bayes filter (STVBF) is applied to indoor positioning with time-of-arrival (TOA) based distance measurements and pedestrian dead reckoning (PDR). The proposed filter accommodates large positive outliers caused by

occasional non-line-of-sight (NLOS) conditions by using a skew-t model of measurement errors. Real-data tests using the fusion of inertial sensors based PDR and ultra-wideband based TOA ranging show that the STVBF clearly outperforms the extended Kalman filter (EKF) in positioning accuracy with the computational complexity about three times that of the EKF.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research group: Positioning, Wireless Communications and Positioning (WICO)

Contributors: Nurminen, H., Ardeshiri, T., Piche, R., Gustafsson, F.

Number of pages: 7

Pages: 1-7

Publication date: 1 Oct 2015

#### Host publication information

Title of host publication: 2015 International Conference on Indoor Positioning and Indoor Navigation (IPIN)

Publisher: IEEE

ISBN (Print): 978-1-4673-8402-5

Keywords: Approximation methods, Computational modeling, Distance measurement, Gaussian distribution, Measurement errors, Noise measurement, Position measurement, NLOS, TOA, UWB, indoor positioning, robust filtering, skew t, skewness, variational Bayes

Electronic versions:

IPIN2015\_postprint

DOIs:

10.1109/IPIN.2015.7346786

URLs:

<http://urn.fi/URN:NBN:fi:tty-201603183702>

Source: Bibtex

Source ID: urn:e960458d3c3e7f01508ed799f1f96d

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Anomaly Detection and Diagnostics of a Wheel Loader Using Dynamic Mathematical Model and Joint Probability Distributions

In this paper, we present anomaly detection and diagnostics for articulated frame steered hydraulic wheel loader. The presented methodology is based on the analysis and comparison of the responses of a dynamic mathematical model and a real wheel loader using a joint probability distribution of correlation coefficients of multiple variables. The behaviour of an undamaged machine is modelled by probability density functions of the correlation coefficients using histograms and test how well the future behaviour fits the model. First, the time series data of multiple variables are segmented into segments of the same length. Correlation coefficients are then calculated for each segment and the distributions of the correlation coefficients are estimated by computing probability density functions using histograms. Finally, the joint probabilities that the correlations in the data segments of the time series data are observed are calculated using the already computed histograms. The diagnostics is based on the combination of static threshold and threshold based on mean value of joint probabilities. The dynamic mathematical model of the wheel loader is presented with verification results. A jammed flushing valve of the hydrostatic transmission was used as an anomaly to study the changes in the joint probability values. Finally, the efficiency of the presented method is presented

with good results regarding detection of anomalies and diagnostics of the wheel loader.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Fluid power automation in mobile machines, Research group: Field robotics and control

Contributors: Krogerus, T., Hyvönen, M., Backas, J., Huhtala, K.

Number of pages: 14

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the Fourteenth Scandinavian International Conference on Fluid Power, SICFP15. May 20-22, 2015. Tampere, Finland

Publisher: Tampere University of Technology. Department of Intelligent Hydraulics and Automation

ISBN (Electronic): 978-952-15-3530-7

#### Publication series

Name: The Scandinavian International Conference on Fluid Power

ISSN (Electronic): 2342-2726

Keywords: Diagnostics, Time series, Anomaly detection, Joint probability, Correlation coefficients, Simulation, Dynamic mathematical model, Wheel loader, Hydraulics

Electronic versions:

SICFP15\_Krogerus\_manuscript

URLs:

<http://urn.fi/URN:NBN:fi:tty-201603143631>

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3530-7> (SICFP15 Proceedings)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Anticancer activity of THMPP: Downregulation of PI3K/ S6K1 in breast cancer cell line**

Breast cancer is the most common cancer that majorly affects female. The present study is focused on exploring the potential anticancer activity of 2-((1, 2, 3, 4-Tetrahydroquinolin-1-yl) (4 methoxyphenyl) methyl) phenol (THMPP), against human breast cancer. The mechanism of action, activation of specific signaling pathways, structural activity relationship and drug-likeness properties of THMPP remains elusive. Cell proliferation and viability assay, caspase enzyme activity, DNA fragmentation and FITC/Annexin V, AO/EtBr staining, RT-PCR, QSAR and ADME analysis were executed to understand the mode of action of the drug. The effect of THMPP on multiple breast cancer cell lines (MCF-7 and SkBr3), and non-tumorigenic cell line (H9C2) was assessed by MTT assay. THMPP at IC<sub>50</sub> concentration of 83.23 μM and 113.94 μM, induced cell death in MCF-7 and SkBr3 cells, respectively. Increased level of caspase-3 and -9, fragmentation of DNA, translocation of phosphatidylserine membrane and morphological changes in the cells confirmed the effect of THMPP in inducing the apoptosis. Gene expression analysis has shown that THMPP was able to downregulate the expression of PI3K/S6K1 genes, possibly via EGFR signaling pathway in both the cell lines, MCF-7 and SkBr3. Further, molecular docking also confirms the potential binding of THMPP with EGFR. QSAR and ADME analysis proved THMPP as an effective anti-breast cancer drug, exhibiting important pharmacological properties. Overall, the results suggest that THMPP induced cell death might be regulated by EGFR signaling pathway which augments THMPP being developed as a potential candidate for treating breast cancer.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: BioMediTech, Research group: Molecular Signaling Lab, Department of Biotechnology, Lady Doak College, Institute for Systems Biology, Seattle, Washington, USA, Institute of Biosciences and Medical Technology

Contributors: Palanivel, S., Murugesan, A., Yli-Harja, O., Kandhavelu, M.

Number of pages: 9

Pages: 495-503

Publication date: 1 Apr 2020

Peer-reviewed: Yes

#### **Publication information**

Journal: Saudi Pharmaceutical Journal

Volume: 28

Issue number: 4

ISSN (Print): 1319-0164

Original language: English

ASJC Scopus subject areas: Pharmacology, Pharmaceutical Science

Keywords: ADME, Apoptosis, Docking, EGFR, Gene expression, QSAR, Tetrahydroquinoline

Electronic versions:

1-s2.0-S1319016420300554-main

DOIs:

10.1016/j.jsps.2020.02.015

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202006236194>

Source: Scopus

Source ID: 85082417780

Research output: Contribution to journal > Article > Scientific > peer-review

### **Appearance of a Drift Problem in Variable-step Perturbative MPPT Algorithms**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering

Contributors: Kivimäki, J., Suntio, T.  
Number of pages: 7  
Pages: 1602-1608  
Publication date: 2015

#### Host publication information

Title of host publication: 31st European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC)  
ISBN (Print): 3-936338-39-6  
DOIs:

10.4229/EUPVSEC20152015-5AO.9.2

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Application and Theory of Petri Nets and Concurrency: 36th International Conference, PETRI NETS 2015 Brussels, Belgium, June 21-26, 2015 Proceedings

#### General information

Publication status: Published

MoE publication type: C2 Edited books

Organisations: Department of Mathematics, Research group: MAT Computer Science and Applied Logics, Regulation of learning and active learning methods (REALMEE), Embedded Electronics research unit of the Bio Electro and Mechanical Systems (BEAMS) department of the Université Libre de Bruxelles

Contributors: Devillers, R. (ed.), Valmari, A. (ed.)

Publication date: 2015

#### Publication information

Publisher: Springer Verlag

Volume: 9115

ISBN (Print): 978-3-319-19487-5

ISBN (Electronic): 978-3-319-19488-2

Original language: English

#### Publication series

Name: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)

Volume: 9115

ISSN (Print): 0302-9743

ISSN (Electronic): 1611-3349

ASJC Scopus subject areas: Computer Science(all), Theoretical Computer Science

DOIs:

10.1007/978-3-319-19488-2

URLs:

<http://www.scopus.com/inward/record.url?scp=84937510301&partnerID=8YFLogxK> (Link to publication in Scopus)

#### Bibliographical note

JUFOID=62555

Source: Scopus

Source ID: 84937510301

Research output: Book/Report > Anthology > Scientific > peer-review

#### Application of terrestrial LiDAR and modelling of tree branching structure for plant- scaling models in tropical forest trees

#### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Mathematics, Research group: MAT Inverse Problems, Wageningen University and the UNESCO-IHE Institute for Water Education, Delft, The Netherlands, 18.10.2013

Contributors: Lau Sarmiento, A., Bartholomeus, H., Herold, M., Martius, C., Malhi, Y., Patrick Bentley, L., Shenkin, A., Raunonen, P.

Number of pages: 3

Pages: 96-98

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of SilviLaser 2015 : 14th conference on Lidar Applications for Assessing and Managing Forest Ecosystems



URLs:

[https://silvilaser2015.teledetection.fr/files/Proceedings\\_Silvilaser\\_22\\_09\\_2015\\_2.pdf](https://silvilaser2015.teledetection.fr/files/Proceedings_Silvilaser_22_09_2015_2.pdf) (Conference proceedings)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Applying third-party moocs in programming education: a case study**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Software Engineering and Intelligent Systems, Research group: Software Engineering and Intelligent Systems, Pervasive Computing

Contributors: Saari, M., Mäkinen, T., Linna, P.

Number of pages: 7

Pages: 53-59

Publication date: 3 Jul 2017

#### **Host publication information**

Title of host publication: 9th International Conference on Education and New Learning Technologies : 3-5 July, 2017  
Barcelona, Spain

Place of publication: Barcelona, Spain

Publisher: IATED

ISBN (Electronic): 978-84-697-3777-4

Electronic versions:

Saari2017\_EDULEARN17

DOIs:

10.21125/edulearn.2017.1014

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202003112655>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A Proposal of Decentralized Architecture for OKD-MES**

Recent research work in the industrial automation field determines that the computational power of embedded devices, which is used for process control on the shop floor, is sufficient for handling new functionalities. Therefore, it becomes possible to manage knowledge that is encapsulated in embedded devices, demonstrating a decentralized solution for controlling processes at the lowest level of the ISA-95 automation pyramid. This chapter argues that part of the OKD-MES functionality can be lowered to the device level. Moreover, the presented chapter exhibits that OKD-MES representation and management of knowledge can be distributed and handled in the shop floor, where devices are capable of controlling processes that are later executed by machines. Hence, this chapter offers an alternative for the actual architecture of OKDMES, which is now centralized in terms of knowledge management. Furthermore, concepts, requirements and an early architecture for developing a decentralized OKD-MES are also shown and discussed

#### **General information**

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Department of Automation Science and Engineering, Research group: Factory automation systems technology

Contributors: Ferrer, B. R.

Number of pages: 10

Pages: 331-340

Publication date: 2015

#### **Host publication information**

Title of host publication: Open Knowledge-Driven Manufacturing & Logistics : The eScop Approach

Place of publication: Warsaw

Publisher: Warsaw University of Technology Publishing House

Editors: Strzelczak, S., Balda, P., Garetti, M., Lobov, A.

ISBN (Print): 978-83-7814-440-3

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### **Arbitrary Land Use Policy in Jordan between Legal Brand and Property Control**

The absence of appropriate land use planning, leapfrog population growth, and high demand for urban land persist among the prevailing urban characteristics of Amman. Generally, land use policy in Jordan, and particularly in Amman remains out of control because of some social considerations and inconsistent laws.

Such phenomenon creates serious problems related to the local land market. This paper attempts to address the wide gap

between land supply and demand through analysis of the relevant institutional framework, land governance, land policy and practice in Jordan. However, the historical background of land proprietorship is given parallel to the overall institutional framework of land regulation. The magnitude and reason for legal land tenure along the proposed urban corridors shall also be examined.

#### **General information**

Publication status: Published

MoE publication type: E1 Popularised article, newspaper article

Organisations: University of Jordan, Architectural department, Hashemite University, Zarqa-Jordan

Contributors: Tewfik, M., Amr, A.

Number of pages: 8

Pages: 86-93

Publication date: Dec 2014

Peer-reviewed: Unknown

#### **Publication information**

Journal: European International Journal of Science and Technology

Volume: 3

Issue number: 9

ISSN (Print): 2304-9693

Original language: English

ASJC Scopus subject areas: Urban Studies, Geography, Planning and Development, Architecture

Keywords: Urban development, regional development, timber construction, innovation network, development platform, Urban form, urban planning, urban processes

Electronic versions:

"Arbitrary Land Use Policy in Jordan between Legal Brand and

URLs:

<http://urn.fi/URN:NBN:fi:ty-201708161684>

Research output: Contribution to journal > Article > General public

#### **Architectural patterns for microservices: A systematic mapping study**

Microservices is an architectural style increasing in popularity. However, there is still a lack of understanding how to adopt a microservice-based architectural style. We aim at characterizing different microservice architectural style patterns and the principles that guide their definition. We conducted a systematic mapping study in order to identify reported usage of microservices and based on these use cases extract common patterns and principles. We present two key contributions. Firstly, we identified several agreed microservice architecture patterns that seem widely adopted and reported in the case studies identified. Secondly, we presented these as a catalogue in a common template format including a summary of the advantages, disadvantages, and lessons learned for each pattern from the case studies. We can conclude that different architecture patterns emerge for different migration, orchestration, storage and deployment settings for a set of agreed principles.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Free University of Bolzano-Bozen

Contributors: Taibi, D., Lenarduzzi, V., Pahl, C.

Number of pages: 12

Pages: 221-232

Publication date: 2018

#### **Host publication information**

Title of host publication: CLOSER 2018 - Proceedings of the 8th International Conference on Cloud Computing and Services Science

Publisher: SCITEPRESS

ISBN (Electronic): 9789897582950

ASJC Scopus subject areas: Computer Science (miscellaneous), Software, Computer Science Applications

Keywords: Architectural style, Architecture pattern, Cloud migration, Cloud native, DevOps, Microservices

DOIs:

10.5220/0006798302210232

Source: Scopus

Source ID: 85046716130

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Architecture beyond signs and symbols : Zumthor's response to the problems of aesthetics

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: School of Architecture, Research group: History of Architecture  
Contributors: Passinmäki, P.  
Number of pages: 4  
Pages: 325-328  
Publication date: 12 May 2016  
Peer-reviewed: Yes

### Publication information

Journal: ARQ-Architectural Research Quarterly  
Volume: 19  
Issue number: 4  
ISSN (Print): 1359-1355  
Ratings:  
Scopus rating (2016): CiteScore 0.2 SJR 0.127 SNIP 0.249  
Original language: English  
DOIs:  
10.1017/S1359135516000038  
Research output: Contribution to journal › Article › Scientific › peer-review

## Architecture for Open, Knowledge-Driven Manufacturing Execution System

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Automation Science and Engineering, Research area: Manufacturing and Automation,  
Research group: Factory automation systems technology  
Contributors: Iarovyi, S., Xu, X., Lobov, A., Lastra, J. L. M., Strzelczak, S.  
Number of pages: 9  
Pages: 519-527  
Publication date: 2015

### Host publication information

Title of host publication: Advances in Production Management Systems: Innovative Production Management Towards Sustainable Growth  
Publisher: Springer  
ISBN (Print): 978-3-319-22759-7  
DOIs:  
10.1007/978-3-319-22759-7\_60  
Source: Bibtex  
Source ID: urn:147f1b11eec705e9a04fc52893d63bac  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Are Finns walking the talk?: Examining the national collaboration process on engineering education for sustainable development five years later

In 2009, the National Collaboration Group for Finnish Engineering Education published a proposal for action on sustainable development (SD). The aim of this paper is to analyze how the three main universities providing engineering education have fulfilled their commitments. The study consists of interviews with key stakeholders supplemented with the analysis of documented material. It is argued that the studied universities are now committed to SD in their strategies. However, a lot of work remains to be done before the strategies are implemented and SD is integrated to all degree programmes. Recommendations for the next steps are presented.

### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Chemistry and Bioengineering, The Education Fund  
Contributors: Takala, A., Korhonen-Yrjänheikki, K.  
Publication date: 1 Jun 2015

### Host publication information

Title of host publication: Conference on Engineering Education for Sustainable Development (7th : 2015 : Vancouver, B.C.)

DOIs:

10.14288/1.0064702

URLs:

<https://open.library.ubc.ca/cIRcle/collections/52657/items/1.0064702>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

### **A review study of photovoltaic array maximum power point tracking algorithms**

There are numerous maximum power point tracking (MPPT) algorithms for improving the energy efficiency of solar photovoltaic (PV) systems. The main differences between these algorithms are digital or analog implementation, simplicity of the design, sensor requirements, convergence speed, range of effectiveness, as well as hardware costs. Therefore, choosing the right algorithm is very important to the users, because it affects the electrical efficiency of PV system and reduces the costs by decreasing the number of solar panels needed to get the desired power. This paper provides the comparison of 62 different techniques used in tracking the maximum power based on literature survey. This paper is intended to be a reference for PV systems users.

#### **General information**

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Department of Electrical Engineering, Research area: Power engineering, Islamic University of Gaza

Contributors: El-Khozondar, H., El-Khozondar, R., Matter, K., Suntio, T.

Number of pages: 8

Publication date: 18 Feb 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: Renewables: Wind, Water, and Solar

Volume: 3

Issue number: 1

ISSN (Print): 2198-994X

Original language: English

DOIs:

10.1186/s40807-016-0022-8

Research output: Contribution to journal > Review Article > Scientific > peer-review

### **Arkinen liikkuminen kontekstina kaupunkitilan tarkasteluun**

#### **General information**

Publication status: Published

Organisations: School of Architecture

Contributors: Tartia, J.

Publication date: 2015

Peer-reviewed: No

#### **Publication information**

Journal: Versus

ISSN (Print): 2242-3443

Original language: Finnish

URLs:

<http://www.ays.fi/versus/>

Research output: Contribution to journal > Special issue > Scientific

### **A Semantic Meta-Model Repository for Lightweight M2M**

One of the biggest problems in managing devices for the Internet of Things (IoT) is the ability for a management server to independently discover and retrieve data models for vendor-specific devices. At the same time, several device management methods also lack methods for device vendors to share their data models in a consistent manner. This paper presents the design and implementation of a repository that can flexibly accommodate many needs with regards to these issues, and allows device vendors to publish semantically similar data models as well as attach meta-data to these models. A Machine-to-Machine (M2M) communication interface also allows a management server to communicate with the repository. We show how these techniques can be used with the Lightweight Machine-to-Machine (LWM2M) standard.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Computing Sciences, Research area: Information security, Ericsson  
Contributors: Silverajan, B., Zhao, H., Kamath, A.  
Number of pages: 5  
Pages: 468-472  
Publication date: 11 Apr 2019

#### Host publication information

Title of host publication: 2018 IEEE International Conference on Communication Systems, ICCS 2018  
Publisher: IEEE  
ISBN (Electronic): 9781538678640  
ASJC Scopus subject areas: Computer Networks and Communications, Hardware and Architecture, Information Systems and Management, Aerospace Engineering  
Keywords: data model repository, IoT device management, LWM2M  
DOIs:  
10.1109/ICCS.2018.8689185  
Source: Scopus  
Source ID: 85065038511  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### A social capital perspective on gaining optimal solutions from suppliers as preferred customer

Capable suppliers willing to provide their best possible offering are increasingly scarce. Such suppliers increasingly select customers to whom they invest their best resources and provide the best offerings. The existing research has paid only limited attention to the antecedents of supplier's solution provision performance, i.e. the design of a good solution and its implementation. Further, existing empirical research has rarely taken a detailed view on the phases of a supplier's solution provision. This study seeks answers to the following questions: can the availability or absence of social capital in the supplier-buyer relationship explain supplier's solution provision performance?, what is the importance of different forms of social capital in supplier's solution provision performance and the different phases of solution provision? The empirical data of this study is collected with a survey addressed to suppliers of four large companies. The survey is sent to 1630 supplier companies and 662 usable responses are received resulting in a response rate of 41%. Partial least squares (PLS) structural equation modelling (SEM) and polynomial regression are used to analyze the data. The results demonstrate the importance of social capital in obtaining the optimal solution from suppliers. The results also present that different types of social capital have different influence on the phases of solution provision. Diagnosis of customer needs appears as the phase most significantly driven by social capital prevalent in the supplier-buyer relationship. The results also show that different forms of social capital can compensate each other and that structural capital can take a stronger role compared to relational capital.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial and Information Management, University of Twente  
Contributors: Jääskeläinen, A., Schiele, H., Aarikka-Stenroos, L.  
Publication date: 2018

#### Host publication information

Title of host publication: Academy of Management Proceedings  
Volume: 2018  
Publisher: Academy of Management AOM  
Edition: 1

#### Publication series

Name: Academy of Management Proceedings  
Volume: 2018  
No.: 1  
ISSN (Print): 0065-0668  
ISSN (Electronic): 2151-6561  
Electronic versions:

A social capital perspective on gaining 2018

DOIs:  
10.5465/AMBPP.2018.16278abstract  
URLs:

<http://urn.fi/URN:NBN:fi:tuni-201912126831>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A Socially-Intelligent Multi-Robot Service Team for In-Home Monitoring**

The objective of this study is to develop a socially-intelligent service team comprised of multiple robots with sophisticated sonic interaction capabilities that aims to transparently collaborate towards efficient and robust monitoring by close interaction. In the distributed scenario proposed in this study, the robots share any acoustic data extracted from the environment and act in-sync with the events occurring in their living environment in order to provide potential means for efficient monitoring and decision-making within a typical home enclosure. Although each robot acts as an individual recognizer using a novel emotionally-enriched word recognition system, the final decision is social in nature and is followed by all. Moreover, the social decision stage triggers actions that are algorithmically distributed among the robots' population and enhances the overall approach with the potential advantages of the team work within specific communities through collaboration.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Technological Educational Institute of Piraeus, Trakya University, Ionian University

Contributors: Drossos, K., Floros, A., Potirakis, S., Tatlas, N., Tuna, G.

Pages: 159-164

Publication date: Jul 2014

#### **Host publication information**

Title of host publication: Information, Intelligence, Systems and Applications, IISA 2014, The 5th International Conference on

Publisher: IEEE

ISBN (Print): 978-1-4799-6171-9

ISBN (Electronic): 978-1-4799-6170-2

DOIs:

10.1109/IISA.2014.6878763

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Assessing business learning by analysing ERP simulation log files**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi

Contributors: Nisula, K., Pekkola, S.

Publication date: 10 Dec 2016

#### **Host publication information**

Title of host publication: AIS SIGED 2016 Conference on IS education and Research. : Dublin, Ireland, December 10-11, 2016

Place of publication: Dublin

ISBN (Print): 978-0-692-81119-1

URLs:

<http://icis2016.aisnet.org/ais-siged-international-conference-education-research/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Assessing coupling dynamics from an ensemble of time series**

Finding interdependency relations between time series provides valuable knowledge about the processes that generated the signals. Information theory sets a natural framework for important classes of statistical dependencies. However, a reliable estimation from information-theoretic functionals is hampered when the dependency to be assessed is brief or evolves in time. Here, we show that these limitations can be partly alleviated when we have access to an ensemble of independent repetitions of the time series. In particular, we gear a data-efficient estimator of probability densities to make use of the full structure of trial-based measures. By doing so, we can obtain time-resolved estimates for a family of entropy combinations (including mutual information, transfer entropy and their conditional counterparts), which are more accurate than the simple average of individual estimates over trials. We show with simulated and real data generated by coupled electronic circuits that the proposed approach allows one to recover the time-resolved dynamics of the coupling between different subsystems.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Mathematics, University of Electronic Science and Technology of China, Institute of

Computer Science (ICS) of the Foundation for Research and Technology - Hellas (FORTH), Lab of Neurophysics and

Neurophysiology, Hefei National Laboratory for Physical Sciences at the Microscale, Instituto de Fisica Interdisciplinar y Sistemas Complejos (CSIC-UIB), Campus Universitat de les Illes Balears, Institut für Kognitionswissenschaft, University of Osnabrück, University of Tartu, Netherlands Institute for Neuroscience

Contributors: Gómez-Herrero, G., Wu, W., Rutanen, K., Soriano, M. C., Pipa, G., Vicente, R.

Number of pages: 13

Pages: 1958-1970

Publication date: 2015

Peer-reviewed: Yes

### Publication information

Journal: Entropy

Volume: 17

Issue number: 4

ISSN (Print): 1099-4300

Ratings:

Scopus rating (2015): CiteScore 2.5 SJR 0.551 SNIP 1.15

Original language: English

ASJC Scopus subject areas: Physics and Astronomy(all)

Keywords: Ensemble, Entropy, Estimator, Time series, Transfer entropy, Trial

DOIs:

10.3390/e17041958

URLs:

<http://www.scopus.com/inward/record.url?scp=84930319366&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

EXT="Gómez-Herrero,Germán"

Source: Scopus

Source ID: 84930319366

Research output: Contribution to journal › Article › Scientific › peer-review

### Assessing sustainability orientations of first year university students

In order for universities to be able to develop and adjust their courses and teaching methods to better support the sustainability and ethical education of university students, the status and levels of sustainability and ethical standards among freshman students need to be measured and analyzed. The objective of our research is to study do first year university students already consider sustainability and ethical aspects when assessing the business environment and opportunities in the markets. The authors intend to develop a sustainability assessment tool and determine whether entrepreneurship courses support sustainable and responsible thinking in university education by measuring the opinion of students using a self-assessment questionnaire. The development of the sustainability assessment tool is based on existing measures on students' sustainability and ethical commitment supported by the works of Buil et al. (2016) and De Clercq & Dakhli (2009). The data were collected at the Tampere University of Technology in Finland and Tallinn University of Technology in Estonia. The findings indicate that first year students already acknowledge the need for taking into account sustainability, and that it is important for business initiatives to be both socially and environmentally responsible. In addition, this study shows that the sustainability orientations of students in different engineering disciplines do not vary significantly from each other. Thus, the sustainability assessment tool developed in this study has been tested and found to be coherent among students in different engineering disciplines. Even though the data set is rather limited, it encourages further research.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial Engineering and Management, Research group: Center for Innovation and Technology Research , Education, Research group: Knowledge and Learning Research Center, Tallinn University of Technology, Tallinn, Estonia

Contributors: Saari, U., Venesaar, U., Ojasoo, M., Mäkinen, S., Nokelainen, P.

Number of pages: 8

Pages: 1-8

Publication date: 13 Aug 2019

### Host publication information

Title of host publication: 79th Annual Meeting of the Academy of Management Proceedings : Symposium on Reported Impacts of Sustainability in Management Education and Engagement, August 9-13, 2019, Boston, Massachusetts, USA

Publisher: Academy of Management

### Publication series

Name: Academy of management proceedings

ISSN (Print): 0065-0668

ISSN (Electronic): 2151-6561

URLs:

<https://aom.org/Meetings/annualmeeting/2019/AOM-2019-Understanding-the-Inclusive-Organization.aspx>

### **Bibliographical note**

Kysytty isbn Saarelta tammikuu 2020 M. K.

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Assessing the usefulness of an early idea development tool among experienced researchers**

We test a novel ideation tool developed for early idea development among experienced academic researchers. We presented the

Impact Canvas® tool to experienced researchers who assessed the usefulness of the tool in early idea development. This paper analyses

their perceptions of the tool: its usability and visual appeal, content elements, ability to facilitate collaboration and motivate them

personally. Our findings imply that the employment background of experienced researchers has an impact on how useful they consider

the tool. Researchers with a background in the public sector appreciate the tool significantly more than researchers who do not have

similar working experiences.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Industrial and Information Management, Research group: Center for Innovation and Technology Research , Innovation Services, Research Services, University of Tampere

Contributors: Saari, U., Aarikka-Stenroos, L., Boedeker, S., Köppä, L., Langwaldt, J.

Number of pages: 6

Pages: 3-8

Publication date: 22 Dec 2017

Peer-reviewed: Yes

### **Publication information**

Journal: CERN IdeaSquare Journal of Experimental Innovation

Volume: 1

Issue number: 2

ISSN (Print): 2413-9505

Original language: English

Keywords: Canvas tool, Early idea development, Ideation process, Ideation tool

Electronic versions:

476-2180-2-PB

DOIs:

[10.23726/cij.2017.476](https://doi.org/10.23726/cij.2017.476)

URLs:

<http://urn.fi/URN:NBN:fi:tty-201801311182>

Research output: Contribution to journal > Article > Scientific > peer-review

### **Assessment of Coordinated Multipoint Transmission Modes for Indoor and Outdoor Users at 28 GHz in Urban Macrocellular Environment**

The aim of this article is to analyze and evaluate the performance of Coordinated Multipoint (CoMP) transmission approach at a frequency of 28 GHz using three dimensional ray tracing simulations in an urban macrocellular environment. The new performance metric introduced in this article is the relative power usage. Other performance metrics examined in this article are received power, the Signal to Interference plus Noise Ratio (SINR), user throughput, relative throughput gain, and the percentage of overlapping area with multiple cells. Indoor and outdoor users are separately analyzed for few key performance indicators. Different cases of coordinated multipoint transmission i.e. intra-node and inter-node coordination is analyzed. The post analysis of the acquired simulation data shows that the use of CoMP functionality is more beneficial for the cell edge users compared with the other users in terms of improving the user's experience. The throughput gain as well as the transmission overhead of the CoMP approach increases with the increase in number CoMP ports. Inter-node CoMP is much more power efficient and beneficial in comparison with the intra-node CoMP case.

### **General information**

Publication status: Published



MoE publication type: A1 Journal article-refereed  
Organisations: Electrical Engineering, Research group: Laboratory of Radio Network Planning, Research group: Wireless Communications and Positioning, Aalto University  
Contributors: Sheikh, M., Biswas, R., Lempiainen, J., Jantti, R.  
Number of pages: 8  
Pages: 119-126  
Publication date: 16 Mar 2019  
Peer-reviewed: Yes

#### **Publication information**

Journal: Advances in Science, Technology and Engineering Systems Journal (ASTESJ)  
Volume: 4  
Issue number: 2  
ISSN (Print): 2415-6698  
Ratings:  
Scopus rating (2019): CiteScore 0.6 SJR 0.139 SNIP 0.298  
Original language: English  
DOIs:  
10.25046/aj040216  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Assessment of student retention using the Evolute approach, an overview**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Pori Department  
Contributors: Einolander, J., Vanharanta, H.  
Number of pages: 6  
Pages: 581–586  
Publication date: 2015

#### **Host publication information**

Title of host publication: 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015  
Publisher: Elsevier

#### **Publication series**

Name: Procedia Manufacturing  
Volume: 3  
ISSN (Print): 2351-9789  
DOIs:  
10.1016/j.promfg.2015.07.269  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A study of a condensing heat exchanger and electrostatic precipitator combination for small-scale wood combustion**

#### **General information**

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Physics, Research area: Aerosol Physics, Research area: Optics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group  
Contributors: Grigonyte, J., Sippula, O., Tissari, J., Laitinen, A., Keskinen, J., Kortelainen, M., Lamberg, H., Jokiniemi, J.  
Publication date: 2015

#### **Host publication information**

Title of host publication: European Aerosol Conference 2015 : EAC 2015, Milan, Italy  
Article number: 2COA\_P021

#### **Bibliographical note**

ISBN kysytty, HO.  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **A study on the behaviour of the weathered crust in the Perniö failure test**

A full-scale embankment failure test was done in Finland in 2009 in Perniö. The test was conducted in order to gather data to enhance stability calculation methods on soft soils in railway environment. A shallow embankment with loading structure was built on top of an existing fill layer over a stiff and overconsolidated clay crust followed by a soft sensitive clay layer and brought to failure in two days. The soft clay has been thoroughly studied and modeled over the last years based on high quality laboratory and field tests as well as measurements from the experiment. In this paper, the effect of the weathered clay crust on the stability of the embankment is studied. According to La Rochelle (1974), the field vane tends to overestimate the undrained shear strength of the dry crust since measurements are affected by uncertainties due to soil structure and test conditions. For this reason a parametric study on stiffness and strength parameters of Perniö dry crust is done through comparison of experimental data with predictions from finite element method. In particular, three different models are used in this study: the isotropic Mohr-Coulomb and Hardening Soil model and the anisotropic NGI-ADP model. The analysis is carried out with PLAXIS 2D. Finally, FE analysis of the Perniö failure test is done using different soil models and the failure load is predicted. Results are discussed in order to evaluate the most suitable model for the realistic prediction of undrained behaviour of Perniö weathered crust.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Foundation Structures, Life Cycle Effectiveness of the Built Environment (LCE@BE)

Contributors: D'Ignazio, M., Di Buo, B., Lämsivaara, T.

Number of pages: 6

Pages: 3639-3644

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the XVI ECSMGE 2015 : 13-17 September 2015 - Edinburgh, Geotechnical Engineering for Infrastructure and Development

Publisher: ICE Publishing

ISBN (Print): 9780727760678

URLs:

[https://www.researchgate.net/publication/265789150\\_A\\_study\\_on\\_the\\_behaviour\\_of\\_the\\_weathered\\_crust\\_in\\_the\\_Perniö\\_failure\\_test](https://www.researchgate.net/publication/265789150_A_study_on_the_behaviour_of_the_weathered_crust_in_the_Perniö_failure_test)

<http://www.icevirtuallibrary.com/doi/abs/10.1680/ecsmge.60678.vol7.572>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Asuinhuoneistojen betonivälipohjien askelääneneristyksen subjektiivinen ja objektiivinen arviointi**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Building Acoustics, Finnish Institute of Occupational Health

Contributors: Kylliäinen, M., Oliva, D., Rekola, L., Hongisto, V.

Number of pages: 4

Pages: 204-207

Publication date: 1 Sep 2015

#### **Host publication information**

Title of host publication: Akustiikkapäivät 2015

Place of publication: Kuopio

Publisher: Akustinen seura

#### **Publication series**

Name: Akustiikkapäivät

ISSN (Print): 1236-8202

ASJC Scopus subject areas: Acoustics and Ultrasonics

URLs:

[http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015\\_Paperin\\_palautus\\_11.pdf](http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015_Paperin_palautus_11.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **A Survey of People Movement Analytics Studies in the Context of Smart Cities**

With the advent of the newest emergency call mandates in US and Europe, with the advances in cellular-based and WiFi-based localization solutions, and with the developments of cloud computing and web-based social networks, the location information and movement-related data is becoming easier and easier to collect from the user mobile devices and from the user cloud data and it is more and more used in a variety of Location Based Services and for various network planning and management tasks. The last decade has seen significant research efforts dedicated to analyze the user location and movement data, to extract mobility patterns and features and to use the predicted patterns for a more efficient resource allocation and for better location-based services. In the context of what is called today 'the smart city', user mobility and location data are becoming key components of the smart city architecture and applications. The goal of this paper is to give a compact and comprehensive overview of the challenges and solutions related to collecting, storing, analyzing, visualizing, using or distributing people's movement data and to summarize the purposes of such data in the context of the smart cities and the Internet of Things

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Aalto University, Tampere University of Technology, Department of Electronics and Communications Engineering, Laboratory for Future Electronics

Contributors: Lohan, E., Kauppinen, T., Debnath, S. B. C.

Pages: 151-158

Publication date: 10 Nov 2016

#### **Host publication information**

Title of host publication: Proceedings of the FRUCT'19

ISBN (Electronic): 978-952-68397-5-2

DOIs:

10.23919/FRUCT.2016.7892195

URLs:

<http://fruct.org/publications/fruct19/files/Loh.pdf>

#### **Bibliographical note**

INT=elt,"Debnath, Sree Bash Chandra"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **A trial of yoking-proof protocol in RFID-based smart-home environment**

Owing to significant progress in the Internet of Things (IoT) within both academia and industry, this breakthrough technology is increasingly penetrating our everyday lives. However, the levels of user adoption and business revenue are still lagging behind the original expectations. The reasons include strong security and privacy concerns behind the IoT, which become critically important in the smart home environment. Our envisioned smart home scenario comprises a variety of sensors, actuators, and end-user devices interacting and sharing data securely. Correspondingly, we aim at investigating and verifying in practice the Yoking-proof protocol, which is a multi-factor authentication solution for smart home systems with an emphasis on data confidentiality and mutual authentication. Our international team conducted a large trial featuring the Yoking-proof protocol, RFID technology, as well as various sensors and user terminals. This paper outlines the essentials of this trial, reports on our practical experience, and summarizes the main lessons learned.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, St. Petersburg State University of Aerospace Instrumentation, Brno University of Technology

Contributors: Prudanov, A., Tkachev, S., Golos, N., Masek, P., Hosek, J., Fujdiak, R., Zeman, K., Ometov, A., Bezzateev, S., Voloshina, N., Andreev, S., Misurec, J.

Number of pages: 10

Pages: 25-34

Publication date: 2016

#### **Host publication information**

Title of host publication: Distributed Computer and Communication Networks - 19th International Conference, DCCN 2016, Revised Selected Papers  
Volume: 678  
Publisher: Springer Verlag  
ISBN (Print): 9783319519166

#### Publication series

Name: Communications in Computer and Information Science  
Volume: 678  
ISSN (Print): 1865-0929  
ASJC Scopus subject areas: Computer Science(all)  
Keywords: Authentication, IoT, RFID, Smart-Home, Yoking-proof protocol  
Electronic versions:

A trial of yoking-proof protocol in RFID-based smart-home environment

DOIs:

[10.1007/978-3-319-51917-3\\_3](https://doi.org/10.1007/978-3-319-51917-3_3)

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202001241513>

Source: Scopus

Source ID: 85013436263

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Augmenting Technology Trees: Automation and Tool Support

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mathematics, Research group: MAT Computer Science and Applied Logics  
Contributors: Heinimäki, T. J., Elomaa, T.  
Number of pages: 8  
Pages: 68-75  
Publication date: Sep 2015

#### Host publication information

Title of host publication: Proceedings of the Seventh International Conference on Virtual Worlds and Games for Serious Applications (VS-Games 2015)  
Publisher: IEEE  
ISBN (Print): 978-1-4799-8101-4  
ISBN (Electronic): 978-1-4799-8102-1  
ASJC Scopus subject areas: Software  
DOIs:  
[10.1109/VS-GAMES.2015.7295765](https://doi.org/10.1109/VS-GAMES.2015.7295765)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### A unified lcf-hcf model based on continuum mechanics

In this work, a unified low- and high-cycle fatigue model based on continuum mechanics is developed. The high-cycle part of the model is based on the concepts of a moving endurance surface in the stress space with an associated evolving isotropic damage variable. The low-cycle part of the model is formulated as a traditional nonlinear isotropic and kinematic hardening J2-plasticity model. The LCF- and HCF-models are connected via the damage evolution equation. Performance of the model is demonstrated with a numerical example.

#### General information

Publication status: Published  
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, Department of Civil Engineering, Lund University  
Contributors: Kouhia, R., Holopainen, S., Ottosen, N. S., Matti, R., Saksala, T.  
Number of pages: 4  
Publication date: 2016  
Peer-reviewed: Unknown  
Event: Paper presented at Nordic Seminar on Computational Mechanics, .  
URLs:  
<http://www.chalmers.se/en/conference/nscm29/Pages/default.aspx>  
Research output: Other conference contribution › Paper, poster or abstract › Scientific

### **Automated driving and the key megatrends of future**

Road transport is facing several changes that derive from the operational environment. Technological progress supporting advances in automated driving is one of these. Alongside e.g. globalisation, urbanisation, aging, climate change and digitalisation are challenging the transport needs and solutions of today. This paper discusses how automated driving is related to the factors of change. Based on the analysis, the progress towards more automated driving is supporting and is supported by the changes deriving from the key megatrends even though also some conflicting issues are recognised.

#### **General information**

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Information Management and Logistics  
Contributors: Pöllänen, M., Nykänen, L.  
Publication date: 2014

#### **Host publication information**

Title of host publication: ITS European Congress : 10th ITS EUROPEAN CONGRESS, Helsinki, Finland 16-19 June 2014  
Article number: TP0067  
ASJC Scopus subject areas: Engineering(all)  
Keywords: automated driving, megatrends, FUTURE-RESEARCH  
URLs:  
<http://www.itsineurope.com/its10/>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Automated pile transfer work cycles with a robotic wheel loader**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Automation and Hydraulic Engineering, Research group: Robotics and Automation, Research group: Innovative Hydraulic Automation  
Contributors: Halbach, E., Kolu, A., Ghabcheloo, R.  
Number of pages: 8  
Publication date: 2018

#### **Host publication information**

Title of host publication: 17th International Conference on Computing in Civil and Building Engineering (ICCCBE) : Tampere, 5-7 June 2018  
Place of publication: Tampere, Finland  
Publisher: RIL  
Editors: Mela, K., Pajunen, S., Raasakka, V.  
ISBN (Electronic): 978-951-758-632-0  
URLs:  
<https://www.ril.fi/en/events/icccbe-2018.html>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Automated Tonal Balance Enhancement for Audio Mastering Applications**

Modern audio mastering procedures are involved with the selective enhancement or attenuation of specific frequency bands. The main reason is the tonal enhancement of the original / unmastered audio material. The aforementioned process is mostly based on the musical information and the mode of the audio material. This information can be retrieved from a listening procedure of the original stimuli, or the correspondent musical key notes. The current work presents an adaptive and automated equalization system that performs the aforementioned mastering procedure, based on a novel method of fundamental frequency tracking. In addition to this, the overall system is being evaluated with objective PEAQ analysis and subjective listening tests in real mastering audio conditions.

#### **General information**

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Signal Processing Research Community (SPRC), Technological Educational Institute of Ionian Islands, Ionian University  
Contributors: Mimilakis, S. - I., Drossos, K., Floros, A., Katerelos, D.  
Number of pages: 7  
Publication date: May 2013

### Host publication information

Title of host publication: Audio Engineering Society Convention 134

Publisher: AES Audio Engineering Society

URLs:

<http://www.aes.org/e-lib/browse.cfm?elib=16737>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Automatic Classification of Z-ring Formation Stages at the Single Cell Level in Escherichia Coli by Machine Learning

In *E. coli*, Z-ring formation precedes the assembly of the membrane that partitions a cell into two daughter cells. Initially, as FtsZ proteins are expressed, they preferentially locate at the poles. After, they form a ring at midcell, in between the nucleoids, 'marking' where a constriction will form. Finally, the ring becomes a circle, where the septum separating the daughter cells forms. Being the temporal-spatial organization of FtsZ noisy, differing between cells in timing and location, its study requires observing many cells by time-lapse microscopy. To assist, image and signal processing methods are needed to extract information unbiasedly from many cells. Also, one needs automatic identification of the ring formation stage in individual cells. Here we used three classification methods to identify the stage of ring formation from microscopy images: Decision Tree (DT), Support Vector Machine (SVM), and Regularized Multinomial Logistic regression (RMLR). We find that RMLR performs better (higher 10-fold cross-validated accuracy, ACC). Our study will assist future studies at the single cell level of the spatio-temporal dynamics of cell division in *E. coli*.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Laboratory of Biosystem Dynamics-LBD, Signal Processing, BioMediTech, Universidade Nova de Lisboa, Aalto Univ, Aalto University, Dept Signal Proc & Acoust

Contributors: Zare, M., Neeli-Venkata, R., Martins, L., Peltonen, S., Ruotsalainen, U., Ribeiro, A. S.

Number of pages: 5

Pages: 72-76

Publication date: 2017

### Host publication information

Title of host publication: Proceedings of the 10th International Joint Conference on Biomedical Engineering Systems and Technologies, Vol 2: Bioimaging

Publisher: SCITEPRESS

Editors: Silveira, M., Fred, A., Gamboa, H., Vaz, M.

ISBN (Electronic): 978-989-758-215-8

Keywords: Z-ring Formation, Stages, Time-lapse Microscopy, Classification Methods, DIVISION SITES, PROTEINS FTSZ, LOCALIZATION, SEGREGATION, DYNAMICS

Source: WOS

Source ID: 000413260200008

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Automatization and stress analysis data of CoCr laser weld fatigue tests

This work includes raw and analyzed test data when using a recently developed fatigue test method for miniature laser welds in cobalt-chromium (CoCr) alloy joints [1]: 10.1016/j.jmbbm.2019.07.004. The automatization of fatigue tests is crucial for saving costs and personnel resources and that is the reason why the automatization threshold and the resulting spectrum data related to CoCr welds are provided here. The finite element method based stress computation output is provided related to shearing-mode tests to support the dataset as a whole. In addition, the compositional data of the parent material and the laser weld are given.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Materials Science and Environmental Engineering, Research group: Plastics and Elastomer Technology, Orton Orthopaedic Hospital, Surface and Corrosion Science

Contributors: Kanerva, M., Besharat, Z., Pärnänen, T., Jokinen, J., Honkanen, M., Sarlin, E., Göthelid, M., Schlenzka, D.

Publication date: 1 Oct 2019

Peer-reviewed: Yes

### Publication information

Journal: Data in Brief

Volume: 26

Article number: 104374

ISSN (Print): 2352-3409

Ratings:

Scopus rating (2019): CiteScore 1.5 SJR 0.105  
Original language: English  
ASJC Scopus subject areas: General  
Keywords: Automatization, CoCr, Fatigue, Laser, Testing, Welding  
DOIs:  
10.1016/j.dib.2019.104374

#### **Bibliographical note**

EXT="Pärnänen, T."  
Source: Scopus  
Source ID: 85072173471  
Research output: Contribution to journal › Article › Scientific › peer-review

#### **A Variable Battery Supply DC-DC Buck Converter Designed for 45nm-CMOS Technology**

In this paper, a buck DC-DC converter is presented that is capable of operation under variable input battery voltage ranging from 3.5V to 6V. The proposed converter is based on a new design technique using an adaptive biasing circuit for cascode power stage. The biasing circuit changes its configuration when the battery voltage drops down to 4.5V. The converter is implemented in 45-nm CMOS technology; it was simulated and its operation was verified at an output power of 200mW where it achieves a maximum power conversion efficiency of 81% for an output voltage of 1.25V.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, Research group: RF Integrated Circuits, Univ Alberta, University of Alberta, Tampere Univ Technol, Tampere University of Technology  
Contributors: Fouladi, A., Järvenhaara, J., Filanovsky, I. M., Tchamov, N. T.  
Publication date: 15 May 2016

#### **Host publication information**

Title of host publication: 2016 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE), Vancouver, May 15-18, 2016.  
ISBN (Electronic): 978-1-4673-8721-7  
DOIs:  
10.1109/CCECE.2016.7726839  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Back-calculation of the Saint-Alban A test embankment with a new modelling approach in LEM**

To facilitate the continued use of limit equilibrium method (LEM) in stability design of embankments on soft clays, the new calculation method "Hybrid su" (HSU) has been developed. It is used to derive undrained shear strength from effective strength parameters, or to predict the excess pore pressure at failure. The HSU method uses an anisotropic effective stress soil model with volumetric hardening, from which a closed form solution for the effective mean stress at failure  $p_f$  is derived. This in turn is used to derive the anisotropic undrained shear strength (for use in total stress analyses), or excess pore pressure (for use in undrained effective stress analyses). The model accounts for factors such as anisotropy, consolidation state, volumetric hardening and to some extent, rate effects. An advantage of the model over traditional undrained effective stress calculations is that the overestimation of shear strength at  $F > 1$  is avoided.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering, Research group: Foundation Structures  
Contributors: Lehtonen, V., Länsivaara, T.  
Number of pages: 9  
Pages: 691-699  
Publication date: 2016

#### **Host publication information**

Title of host publication: Proceedings of the The 17th Nordic Geotechnical Meeting, Reykjavik Iceland : 25th - 28th of May 2016  
ISBN (Electronic): 978-9935-24-002-6  
URLs:  
[http://www.ngm2016.com/uploads/2/1/7/9/21790806/076-024-ngm\\_2016\\_-\\_back-calculation\\_of\\_the\\_saint-alban\\_a\\_test\\_embankment\\_with\\_a\\_new\\_modelling\\_approach\\_in\\_lem\\_lehtonen\\_lansivaara.pdf](http://www.ngm2016.com/uploads/2/1/7/9/21790806/076-024-ngm_2016_-_back-calculation_of_the_saint-alban_a_test_embankment_with_a_new_modelling_approach_in_lem_lehtonen_lansivaara.pdf)  
<http://www.ngm2016.com/>

### **Backend infrastructure supporting audio augmented reality and storytelling**

Today, museums are looking for new ways to attract and engage audience. These include virtual exhibitions, augmented reality and 3D modelling based applications, and interactive digital storytelling. The target of all these activities is to provide better experiences for audiences that are very familiar with the digital world. In augmented reality (AR) and interactive digital storytelling (IDS) systems, visual presentation has been dominant. In contrast to this trend, we have chosen to concentrate on auditory presentation. A key element for this is a backend service supporting different client applications. This paper discusses our experiences from designing a portable open source based audio digital asset management system (ADAM), which supports interaction with smart phones and tablets containing audio augmented reality and audio story applications. We have successfully implemented ADAM system and evaluated it in the Museum of Technology in Helsinki, Finland.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Software engineering, Helsinki Metropolia University of Applied Sciences

Contributors: Salo, K., Giova, D., Mikkonen, T.

Number of pages: 11

Pages: 325-335

Publication date: 2016

#### **Host publication information**

Title of host publication: Human Interface and the Management of Information: Applications and Services : 18th International Conference, HCI International 2016 Toronto, Canada, July 17-22, 2016. Proceedings, Part II

Publisher: Springer Verlag

ISBN (Print): 9783319403960

#### **Publication series**

Name: Lecture Notes in Computer Science

Volume: 9735

ISSN (Print): 0302-9743

ISSN (Electronic): 1611-3349

ASJC Scopus subject areas: Computer Science(all), Theoretical Computer Science

Keywords: Audio augmented reality, Digital asset management, Metadata, Open source DAM, Soundscape

DOIs:

10.1007/978-3-319-40397-7\_31

URLs:

<http://urn.fi/URN:ISBN:978-3-319-40397-7>

Source: Scopus

Source ID: 84978903908

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Background-Free Second-Harmonic Generation Microscopy of Individual Carbon Nanotubes**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Optics, Frontier Photonics, Department of Applied Physics and Nanomicroscopy Center, Aalto University, Univ Jyvaskyla, University of Jyvaskyla, Dept Chem, Nanosci Ctr

Contributors: Bautista, G. S., Johansson, A., Parappurath, N., Herranen, O., Myllyperkiö, P., Jiang, H., Kauppinen, E., Pettersson, M., Kauranen, M.

Number of pages: 2

Publication date: 2015

#### **Host publication information**

Title of host publication: Nonlinear Optics 2015 : Kauai, Hawaii United States 26–31 July 2015

Publisher: OSA

Article number: NW1A.5

ISBN (Print): 978-1-55752-001-2

#### **Publication series**

Name: Nonlinear Optics Conference Series



DOIs:

10.1364/NLO.2015.NW1A.5

URLs:

<https://www.osapublishing.org/abstract.cfm?URI=NLO-2015-NW1A.5>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Balancing Expectations to the Health Software Production Process Standard**

This paper presents the stakeholder expectations to the new version of the ISO/IEC health software life cycle standard 62304. This software production standard is central to the medical device industry but the new version is expected to cover even more scope including also other health software than just regulated medical device software. This paper discusses how to balance the expectations of the law makers, regulatory bodies, software producers and users etc. Compared to the present version the new version should take more into account the special characteristics of developing low risk mobile health application software and cybersecurity while maintaining the endorsement of the regulatory bodies.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Sleep and Sensory Signal Analysis Group-SSSAG

Contributors: Värri, A.

Publication date: 2015

#### **Host publication information**

Title of host publication: The 3rd International Virtual Research Conference In Technical Disciplines

ISBN (Print): 978-80-554-1125-5

#### **Publication series**

Name: RCITD - Proceedings in Research Conference in Technical Disciplines

ISSN (Print): 2453-6571

ISSN (Electronic): 1339-5076

DOIs:

10.18638/rcitd.2015.3.1.71

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Barkhausen noise Potcore sensor simulations with Comsol**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Research group: Materials Characterization, Materials Science, Stresstech Oy

Contributors: Laitinen, A., Santa-aho, S., Lukinmaa, H., Suominen, L., Vippola, M.

Number of pages: 11

Pages: 97-107

Publication date: 24 Sep 2017

#### **Host publication information**

Title of host publication: 12th International Conference on Barkhausen Noise and Micromagnetic Testing

Publisher: ICBM

ISBN (Print): 978-952-68852-0-9

Keywords: Barkhausen noise

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Beaconing in a highway scenario: Vulnerable vehicles problem**

Periodic exchange of short status messages using IEEE 802.11p also referred to as beaconing is a core inter-vehicle communication mode enabling novel cooperative safety applications. A beaconing in the platoon of vehicles moving on a highway is studied as one of the popular practical scenarios. This paper demonstrates that when the inter-arrival times of beacons are small and under certain medium access control protocol parameters, some vehicles in the platoon may suffer from serious performance degradation. The condition when such situation takes place is studied and recommendations are given on a proper choice of IEEE 802.11p parameters.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering

Contributors: Tariq, A. B.  
Number of pages: 7  
Pages: 169-175  
Publication date: 2012

#### Host publication information

Title of host publication: Proceedings of the 11th Conference of Open Innovations Association FRUCT, FRUCT 2012  
Volume: 2012-April  
Publisher: IEEE  
ISBN (Electronic): 9785808807075  
ASJC Scopus subject areas: Computer Science(all), Electrical and Electronic Engineering  
Keywords: Beaconing, Hidden-nodes, IEEE 802.11p, Terms, VANET  
DOIs:  
10.23919/FRUCT.2012.8253122

#### Bibliographical note

INT="Tariq, Ali Bin"

Source: Scopus

Source ID: 85044729916

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### BEADS: A dataset of Binaural Emotionally Annotated Digital Sounds

Emotion recognition from generalized sounds is an interdisciplinary and emerging field of research. A vital requirement for this kind of investigations is the availability of ground truth datasets. Currently, there are 2 freely available datasets of emotionally annotated sounds, which, however, do not include sound events (SEs) with manifestation of the spatial location of the source. The latter is an inherent natural component of SEs, since all sound sources in real-world conditions are physically located and perceived somewhere in the listener's surrounding space. In this work we present a novel emotionally annotated sounds dataset consisting of 32 SEs that are spatially rendered using appropriate binaural processing. All SEs in the dataset are available in 5 spatial positions corresponding to source/receiver angles equal to 0, 45, 90, 135 and 180 degrees. We have used the IADS dataset as the initial collection of SEs prior to binaural processing. The annotation measures obtained for the novel binaural dataset demonstrate a significant accordance with the existing IADS dataset, while small ratings deviations illustrate a perceptual adaptation imposed by the more realistic SEs spatial representation.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Ionian University

Contributors: Drossos, K., Floros, A., Giannakoulopoulos, A.

Number of pages: 6

Pages: 158-163

Publication date: 1 Jul 2014

#### Host publication information

Title of host publication: Information, Intelligence, Systems and Applications, IISA 2014, The 5th International Conference on

Publisher: IEEE

ISBN (Electronic): 978-1-4799-6171-9

Keywords: emotion recognition, music, BEADS, IADS dataset, SEs spatial representation, binaural dataset, binaural emotionally annotated digital sounds, binaural processing, emotionally annotated sound dataset, ground truth datasets, music signals, sound events, Acoustics, Art, Databases, Electronic mail, Emotion recognition, Headphones, Semantics  
DOIs:

10.1109/IISA.2014.6878749

Source: Bibtex

Source ID: urn:b4c1c66c90ee0f9dcdb6a6f156c1bf7e

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Behavior of capacitive humidity sensors in monitoring the drying of concrete walls

This research examines the behavior of capacitive humidity sensors in monitoring the drying of concrete walls in continuous measurements in laboratory conditions. Tests are carried out using continuous measuring of moisture with different capacitive sensors in concrete structures varied with three different types of thermal insulation materials. Sensors are sealed in plastic tubes that were preinstalled into the casting molds. Three borehole measurements are carried out as reference during the research. Results show differences in performance between the examined humidity sensors from two different manufacturers. The main difference is related to stability as sensors from the other manufacturer prove to be more prone to error. The study affirms that measuring humidity in concrete is challenging even when using high-quality

humidity sensors.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Civil Engineering, Research group: Building Physics  
Contributors: Tuominen, E., Vinha, J., Raunima, T.  
Number of pages: 6  
Publication date: 2019  
Peer-reviewed: Yes

#### Publication information

Journal: MATEC Web of Conferences  
Volume: 282  
Article number: 02053  
ISSN (Print): 2274-7214  
Ratings:  
Scopus rating (2019): CiteScore 0.8 SJR 0.166 SNIP 0.714  
Original language: English  
ASJC Scopus subject areas: Civil and Structural Engineering  
Electronic versions:  
matecconf\_cesbp2019\_02053  
DOIs:  
10.1051/matecconf/201928202053  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-201912126820>

#### Bibliographical note

INT=ceng,"Raunima, Tuomas"  
Research output: [Contribution to journal](#) › [Conference article](#) › [Scientific](#) › [peer-review](#)

### Being a start-upper in Italy: Motivations, obstacles and success factors

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations, Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), University of Calabria  
Contributors: Michele Felicetti, A., Ammirato, S., Raso, C., Aramo-Immonen, H., Jussila, J.  
Number of pages: 14  
Pages: 1370-1383  
Publication date: 15 Jun 2016

#### Host publication information

Title of host publication: Proceedings of the 11th forum on knowledge asset dynamics : Towards a new architecture of knowledge: big data, culture and creativity  
Place of publication: Dresden  
Article number: 182  
ISBN (Electronic): 978-88-96687-09-3  
Keywords: Start-up  
URLs:  
<http://www.knowledgeasset.org/>  
Research output: [Chapter in Book/Report/Conference proceeding](#) › [Conference contribution](#) › [Scientific](#) › [peer-review](#)

### Benchmarking of Factory Level ESD Control

A standard compliance of the factory level ESD control varies between organizations. We have audited twelve different factories during the 24-month benchmarking period. These audits were focused on the ESD control programs and the process control. The summary of results and examples of the best practices are presented in this paper.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, ABB Oy, Drives, Nokia Corporation, Cascade Metrology

Contributors: Viheriäköski, T., Kohtamäki, J., Peltoniemi, T., Tamminen, P.  
Number of pages: 7  
Publication date: 27 Sep 2015

#### Host publication information

Title of host publication: Electrical Overstress/Electrostatic Discharge Symposium Proceedings 2015

Volume: 2015

Place of publication: USA

Publisher: IEEE COMPUTER SOC

Article number: 6B.1

ISBN (Print): 9781479988952

ASJC Scopus subject areas: Engineering(all)

Keywords: Surface Resistivity, dissipative material, measurement

Electronic versions:

PID3769119

DOIs:

10.1109/EOESD.2015.7314769

URLs:

<http://urn.fi/URN:NBN:fi:tty-201603013595>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Benchmarking of several disparity estimation algorithms for light field processing

A number of high-quality depth imaged-based rendering (DIBR) pipelines have been developed to reconstruct a 3D scene from several images taken from known camera viewpoints. Due to the specific limitations of each technique, their output is prone to artifacts. Therefore, the quality cannot be ensured. To improve the quality of the most critical and challenging image areas, an exhaustive comparison is required. In this paper, we consider three questions of benchmarking the quality performance of eight DIBR techniques on light fields: First, how does the density of original input views affect the quality of the rendered novel views? Second, how does disparity range between adjacent input views impact the quality? Third, how does each technique behave for different object properties? We compared and evaluated the results visually as well as quantitatively (PSNR, SSIM, AD, and VDP2). The results show some techniques outperform others in different disparity ranges. The results also indicate using more views not necessarily results in visually higher quality for all critical image areas. Finally, we have shown a comparison for different scene's complexity such as non-Lambertian objects.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, Moving Picture Technologies

Contributors: Zakeri, F. S., Bätz, M., Jaschke, T., Keinert, J., Chuchvara, A.

Publication date: 2019

#### Host publication information

Title of host publication: Fourteenth International Conference on Quality Control by Artificial Vision

Publisher: SPIE, IEEE

Editors: Bazeille, S., Verrier, N., Cudel, C.

Article number: 111721C

ISBN (Electronic): 9781510630536

#### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering

Volume: 11172

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Depth image-based rendering, Disparity estimation, Quality evaluation

DOIs:

10.1117/12.2521747

#### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85070208910

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Benefits of digitally guided buying in B2B markets

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Cost Management Center

Contributors: Ojala, M., Mahlamäki, T.

Publication date: 2016

### Host publication information

Title of host publication: 25th annual IPSESA Conference : Dortmund, Sunday 20 March - Wednesday 23 March 2016

Place of publication: Dortmund

URLs:

<http://www.ipsera.com/event-1902575>

<http://www.ipsera2016.lfo.tu-dortmund.de/welcome-to-ipsera-2016/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

## Betonin kosteusteknisten materiaaliominaisuuksien määrittäminen

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Civil Engineering, Research group: Building Physics, Laboratory of Civil Engineering

Contributors: Vääntinen, K., Tuominen, E., Vinha, J.

Number of pages: 10

Pages: 461-470

Publication date: 24 Oct 2017

### Host publication information

Title of host publication: Rakennusfysiikka 2017. Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut : 24.-26.10.2017,

Tampere

Volume: 2

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, Rakennustekniikka, Rakennusfysiikka

Editors: Vinha, J., Kivioja, H.

ISBN (Print): 978-952-15-4023-3

### Publication series

Name: Tampereen teknillinen yliopisto. Rakennustekniikka. Rakennusfysiikka.

ASJC Scopus subject areas: Engineering(all)

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@l102/@web/@p/documents/liit/x229246.pdf](http://www.tut.fi/cs/groups/public_news/@l102/@web/@p/documents/liit/x229246.pdf)

### Bibliographical note

INT=RAK, "Vääntinen, Kari"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

## Beyond ic 4.0 : the future potential of bi-tool utilization in the private healthcare

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Information and Knowledge Management, Research group: Business Data Research Group

Contributors: Ratia, M., Myllärniemi, J.

Publication date: 2018

### Host publication information

Title of host publication: 13th International Forum on Knowledge Asset Dynamics, IFKAD 2018 : Delft, Netherlands, 4-6 July 2018

ISBN (Electronic): 978-88-96687-11-6

### Publication series

Name: Proceedings IFKAD

ISSN (Electronic): 2280-787X

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

## **Biocaced nanofibrilated films and yarns via ionic liquids**

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Materials Science and Environmental Engineering

Contributors: Reyes, G., Lundahl, M., Borghei, M., King, A., Lahti, J., Rojas, O.

Number of pages: 3

Pages: 18-20

Publication date: 2019

Peer-reviewed: Yes

### **Publication information**

Journal: Celulosa Y Papel

Volume: 35

Issue number: 4

ISSN (Print): 0716-2308

Ratings:

Scopus rating (2019): CiteScore 0 SJR 0.101 SNIP 0

Original language: English

Source: Bibtex

Source ID: Reyes201918

Research output: Contribution to journal › Article › Scientific › peer-review

## **Bioimpedance measurement system for evaluation of the status of wound healing**

Hard-to-heal wounds are usually evaluated visually by a medical professional. Visual inspection as a method is subjective and in order to evaluate the wound the dressings have to be removed. Our group has developed a wound patch, a bioimpedance device and a PC software for mapping the wound area and to evaluate the status of wound healing. This study introduces the patch and the measurement system. We also present the test measurement results obtained using an early version of the wound patch. The results confirmed that the patch can be used for the evaluation of the wound status.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Personal Electronics Group, Research group: Physiological Measurement Systems and Methods Group, BioMediTech

Contributors: Kekonen, A., Bergelin, M., Eriksson, J., Ylänen, H., Kielosto, S., Viik, J.

Number of pages: 4

Pages: 175-178

Publication date: 17 Nov 2016

### **Host publication information**

Title of host publication: 2016 15th Biennial Baltic Electronics Conference (BEC)

Publisher: IEEE

ISBN (Print): 978-1-5090-1394-4

ISBN (Electronic): 978-1-5090-1393-7

Keywords: Wound healing, Bioimpedance, Mapping, Chronic wound

DOIs:

10.1109/BEC.2016.7743757

### **Bibliographical note**

JUFOID=72715

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Bispectrum-based demodulation technique using triple-channel heterodyning of triplet-signal**

Paper is dedicated to novel bispectrum-based demodulation technique by using triple-channel heterodyning of triplet-signals. Test statistics used for triplet-signals detection and discrimination are evaluated in the form of the bimagnitude peak values. Experimental study of noise immunity in bispectrum-based digital communication system is performed for suggested triple-channel heterodyning technique. Bit error rate (BER) values are computed under additive Gaussian noise influence in radio communication link for wide variations of input signal-to-noise ratio (SNR).

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Algebraic and Algorithmic Methods in Signal Processing AAMSP, Signal Processing Research Community (SPRC), National Aerospace University

Contributors: Naumenko, V., Solodovnik, V., Totsky, A., Zelensky, A., Astola, J.

Number of pages: 3

Pages: 224-226

Publication date: 14 Dec 2015

#### Host publication information

Title of host publication: 2015 Second International Scientific-Practical Conference Problems of Infocommunications Science and Technology (PIC S&T)

Publisher: IEEE

ISBN (Print): 9789669751928

ASJC Scopus subject areas: Computer Science (miscellaneous), Computer Science Applications

Keywords: bispectrum, digital communication system, noise immunity, three-channel heterodyning, triplet-signal

DOIs:

10.1109/INFOCOMMST.2015.7357319

Source: Scopus

Source ID: 84962840376

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Blind estimation of speckle variance in synthetic aperture radar images

A task of blind estimation of multiplicative noise (speckle) variance in multi-look images acquired by radars with synthesized aperture array is considered. It is shown that there are several factors affecting accuracy of such estimation. The main of them are spatial correlation of the speckle, complexity of an analyzed image and peculiarities of a method used. Spatial and spectral domain approaches are analyzed. It is shown that for both approaches spatial correlation of the speckle is to be estimated and taken into account. Results for real life TerraSAR-X data are presented as illustrations and for analyzing methods' accuracy.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Tampere University of Technology, Department of Signal Processing, Research group: Computational Imaging-CI, Signal Processing Research Community (SPRC), National Aerospace University

Contributors: Abramova, V. V., Kozhemiakin, R., Abramov, S. K., Lukin, V. V., Zelensky, A. A., Egiazarian, K.

Publication date: 25 Jun 2015

#### Host publication information

Title of host publication: 2015 International Conference on Antenna Theory and Techniques: Dedicated to 95 Year Jubilee of Prof. Yakov S. Shifrin, ICATT 2015 - Proceedings

Publisher: The Institute of Electrical and Electronics Engineers, Inc.

ISBN (Print): 9781479985579

ASJC Scopus subject areas: Electrical and Electronic Engineering, Computer Science Applications

Keywords: blind estimation, multi-look, SAR, speckle variance

DOIs:

10.1109/ICATT.2015.7136846

#### Bibliographical note

EXT="Lukin, V. V."

Source: Scopus

Source ID: 84939434768

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Boundary Integral Operators in Linear and Second-order Nonlinear Nano-optics

Recent advances in the fabrication of nanoscale structures have enabled the production of almost arbitrarily shaped nanoparticles and so-called optical metamaterials. Such materials can be designed to have optical properties not found in nature, such as negative index of refraction. Noble metal nanostructures can enhance the local electric field, which is beneficial for nonlinear optical effects. The study of nonlinear optical properties of nanostructures and metamaterials is becoming increasingly important due to their possible uses in nanoscale optical switches, frequency converters and many other devices.

The responses of nanostructures depend heavily on their geometry, which calls for versatile modeling methods. In this work, we develop a boundary element method for the modeling of surface second-harmonic generation from isolated nanoparticles of very general shape. The method is also capable of modeling spatially periodic structures by the use of

appropriate Green's function. We further show how to utilize geometrical symmetries to lower the computational time and memory requirements in the boundary element method even in cases where the incident field is not symmetrical.

We validate the boundary element approach by the calculation of second-harmonic scattering from gold spheres of different radii. Comparison to analytical solution reveals that under one percent relative error is easily achieved. The method is then applied to model second-harmonic microscopy of single gold nanodots and second-harmonic generation from arrays of L- and T-shaped gold particles. The agreement between the calculations and measurements is shown to be excellent.

To provide a more intuitive understanding of the optical response of nanostructures, we develop a full-wave spectral approach, which is based on boundary integral operators. We present a theory which proves that the resonances of a smooth scatterer are isolated poles that occur at complex frequencies. Other types of singularities, such as branch-cuts, may occur only via the fundamental Green function or material dispersion. We propose a definition of an eigenvalue problem at fixed real frequencies which gives rise to modes defined over the surface of the scatterer. We illustrate that these modes accurately describe the optical responses that are usually seen for certain particle shapes when using plane-wave excitations. With the spectral approach, the resonance frequencies and the modal responses of a scatterer can be found as intrinsic properties independent of any incident field. We show that the spectral theory is compatible with the Mie theory for spherical particles and with a previously studied quasi-static theory in the limit of zero frequency.

#### **General information**

Publication status: Published  
MoE publication type: G5 Doctoral dissertation (article)  
Organisations: Department of Physics, Research area: Optics  
Contributors: Mäkitalo, J.  
Number of pages: 73  
Publication date: 29 May 2015

#### **Publication information**

Publisher: Tampere University of Technology  
ISBN (Print): 978-952-15-3522-2  
ISBN (Electronic): 978-952-15-3539-0  
Original language: English

#### **Publication series**

Name: Tampere University of Technology. Publication  
Publisher: Tampere University of Technology  
Volume: 1297  
ISSN (Print): 1459-2045  
Electronic versions:  
makitalo\_1297  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3539-0>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology  
Versio ok 16.12.2015  
Research output: Book/Report > Doctoral thesis > Collection of Articles

### **Breathers Emergence in Spontaneous Modulation Instability**

#### **General information**

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Physics, Research group: Nonlinear Fiber Optics, Research area: Optics  
Contributors: Toenger, S., Godin, T., Billet, C., Dias, F., Erkintalo, M., Genty, G., Dudley, J. M.  
Publication date: 2015

#### **Host publication information**

Title of host publication: European Quantum Electronics Conference 2015  
Publisher: Optical Society of America (OSA)  
Article number: EF\_P\_25  
ISBN (Electronic): 978-1-4673-7475-0  
URLs:  
[https://www.osapublishing.org/abstract.cfm?uri=eqec-2015-EF\\_P\\_25&origin=search](https://www.osapublishing.org/abstract.cfm?uri=eqec-2015-EF_P_25&origin=search)  
Source: Bibtex



### **Brownfield Process: A Method for the Rationalisation of Existing Product Variety towards a Modular Product Family**

The purpose of the research is to define what kind of design information is needed when existing non-modular product elements are designed towards a modular product family that enables product configuration — and what kinds of steps facilitate this kind of design. Thus this thesis poses two research questions: RQ1. How to structure the design information needed in the designing of modular product families? RQ2. How to create the design information needed in the rationalisation of existing product variety towards a modular product family? The research approach includes application of Design Research Methodology (DRM) as originated by Blessing & Chakrabarti (2009). This research includes four main stages (Research Clarification, Descriptive Study I, Prescriptive Study and Descriptive Study II), all focusing on the defining of influencing factors and their impacts, as DRM suggests. This thesis considers that design reuse, product variety, standardisation, modularisation, product platforms, product families and product configuration are all main product structuring topics when an existing product assortment should be rationalised. Consideration of these topics makes up an effective tactic for the enabling of product variants to be provided for customers, without forgetting the benefits of design reuse and commonality in an industrial environment. The contribution of the research suggests that there are five key factors from a design information perspective that are essential in modular product family development aimed at product configuration. These elements are also the answer to RQ1: - Partitioning logic defines viewpoints that affect product structuring decisions from both a business and customer perspective. - A set of modules includes building blocks of product variants of a product family. - Interfaces (standardised) enable efficient defining of product variants in the order/sales-delivery process. - Architecture describes how modules and their interfaces are related to each other. Architecture also considers layout issues such as space reservations. - Configuration knowledge describes the relations between product family elements and customer needs that create a need for variety. Configuration knowledge can also present compatibilities of product elements or customer needs. The thesis also suggests a design process known as the Brownfield Process (the BfP), and includes ten steps in which design information related to the above key factors is defined. This is the suggested answer to RQ2. - Step 1: Target setting based on business environment - Step 2: Generic element model of the Module System - Step 3: Architecture: generic elements and interfaces - Step 4: Target setting based on customer environment - Step 5: Preliminary product family description - Step 6: Configuration knowledge: generic elements and customer needs - Step 7: Modular architecture: modules and interfaces - Step 8: Configuration knowledge: module variants and customer needs - Step 9: Product family documentation - Step 10: Business impact analysis The role of the BfP within the context of design research is discussed. From an academic viewpoint, there is a lack of these kinds of modularisation methods that aim at configurable products, although single aspects and key factors of the proposed method have been often discussed and their benefits and importance are emphasised separately in the literature. From an industrial viewpoint, the steps of the method can be applied in a real life environment based on the case studies. Thus contribution of the thesis can be considered worthwhile and an important addition in this research field.

#### **General information**

Publication status: Published

MoE publication type: G4 Doctoral dissertation (monograph)

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Design, Development and LCM

Contributors: Pakkanen, J.

Number of pages: 283

Publication date: 29 May 2015

#### **Publication information**

Publisher: Tampere University of Technology

ISBN (Print): 978-952-15-3524-6

ISBN (Electronic): 978-952-15-3537-6

Original language: English

#### **Publication series**

Name: Tampere University of Technology. Publication

Publisher: Tampere University of Technology

Volume: 1299

ISSN (Print): 1459-2045

Electronic versions:

pakkanen\_1299

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3537-6>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology

Versio ok 16.12.2015

Research output: Book/Report > Doctoral thesis > Monograph

### **Building Codes and Demand Response of Energy Use**

Buildings are an essential part of the wider energy system. A significant share of electricity consumption occurs in buildings. Traditionally buildings have been places where electricity is consumed. Now they have a growing role also as a location where renewable energy production, such as solar power, occurs.

Demand response means the voluntary actions that are taken on the customer side as a response to something on the demand side. In practice, demand response can involve, for example, reducing the energy consumption during the peak times of the larger energy system or shifting the timing of the building's energy consumption by synchronizing it with local renewable energy production's profile inside the building. The building codes of Finland direct the designers' energy-related solutions both in new construction and licenced renovations.

In this conceptual paper the literature related to demand response and regulation is reviewed, and it is discussed what kind of a role the building codes could have in advancing the buildings' preconditions for demand response. Demand response is currently brought out in EU directives in the regulation with relation to network operators. However, preparedness for demand response could also be advanced by giving more attention to the timing of power use in the building codes.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Capacity Development of Water and Environmental Services CADWES, Research group: Real estate development, Department of Electrical Engineering, Research area: Power engineering, Lappeenranta University of Technology, Tampere University of Applied Science

Contributors: Sorri, J., Heljo, J., Järventausta, P., Honkapuro, S., Harsia, P.

Number of pages: 14

Pages: 8-21

Publication date: 2016

#### **Host publication information**

Title of host publication: Proceedings of the CIB World Building Congress 2016: Volume IV : Understanding Impacts and Functioning of Different Solutions

Volume: 4

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Nenonen, S., Junnonen, J.

ISBN (Electronic): 978-952-15-3744-8

Keywords: building codes, demand response, energy law, energy use, power

Electronic versions:

Building Codes and Demand Response of Energy Use (Paper)

URLs:

<http://urn.fi/URN:NBN:fi:tty-201606174283>

URLs:

[https://tutcris.tut.fi/portal/files/6186967/WBC16\\_Vol\\_4.pdf](https://tutcris.tut.fi/portal/files/6186967/WBC16_Vol_4.pdf) (Proceedings of the CIB World Building Congress 2016: Volume IV - Understanding Impacts and Functioning of Different Solutions)

<http://www.wbc16.com/wbc16/welcome.html>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Building energy retrofits, occupant health and wellbeing**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Building Physics, Department of Civil Engineering, Research area: Structural Engineering, Natl Inst Hlth & Welf, Finland National Institute for Health & Welfare, Dept Environm Hlth

Contributors: Haverinen-Shaughnessy, U., Pekkonen, M., Turunen, M., Aaltonen, A., Leivo, V.

Number of pages: 9

Pages: 679-687

Publication date: 2016

#### **Host publication information**

Title of host publication: CIB World Building Congress 2016 Proceedings : Volume 2 Environmental Opportunities and challenges - Constructing commitment and acknowledging human experiences

Volume: 2

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Prins, M., Wamelink, H., Giddings, B., Ku, K., Feenstra, M.

ISBN (Electronic): 978-952-15-3742-4

URLs:

[https://tutcris.tut.fi/portal/files/6186797/WBC16\\_Vol\\_2.pdf](https://tutcris.tut.fi/portal/files/6186797/WBC16_Vol_2.pdf)

URLs:

<http://www.wbc16.com/wbc16.html>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Building new computational models to support health behavior change and maintenance: new opportunities in behavioral research**

Adverse and suboptimal health behaviors and habits are responsible for approximately 40 % of preventable deaths, in addition to their unfavorable effects on quality of life and economics. Our current understanding of human behavior is largely based on static “snapshots” of human behavior, rather than ongoing, dynamic feedback loops of behavior in response to ever-changing biological, social, personal, and environmental states. This paper first discusses how new technologies (i.e., mobile sensors, smartphones, ubiquitous computing, and cloud-enabled processing/computing) and emerging systems modeling techniques enable the development of new, dynamic, and empirical models of human behavior that could facilitate just-in-time adaptive, scalable interventions. The paper then describes concrete steps to the creation of robust dynamic mathematical models of behavior including: (1) establishing “gold standard” measures, (2) the creation of a behavioral ontology for shared language and understanding tools that both enable dynamic theorizing across disciplines, (3) the development of data sharing resources, and (4) facilitating improved sharing of mathematical models and tools to support rapid aggregation of the models. We conclude with the discussion of what might be incorporated into a “knowledge commons,” which could help to bring together these disparate activities into a unified system and structure for organizing knowledge about behavior.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Signal Processing, Research group: Personal Health Informatics-PHI, Research Community on Data-to-Decision (D2D), University of Southern California, Arizona State University, Northeastern University, National Institutes of Health, Bethesda, Northwestern University, Wharton School, University of Pennsylvania, Scientific Institute Hospital San Raffaele, Valencia Polytechnical University, Columbia University in the City of New York, VTT Technical Research Centre of Finland

Contributors: Spruijt-Metz, D., Hekler, E., Saranummi, N., Intille, S., Korhonen, I., Nilsen, W., Rivera, D. E., Spring, B., Michie, S., Asch, D. A., Sanna, A., Salcedo, V. T., Kukakfa, R., Pavel, M.

Number of pages: 12

Pages: 335-346

Publication date: 17 Sep 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Translational Behavioral Medicine

Volume: 5

Issue number: 3

ISSN (Print): 1869-6716

Ratings:

Scopus rating (2015): CiteScore 3.1 SJR 0.754 SNIP 0.838

Original language: English

ASJC Scopus subject areas: Behavioral Neuroscience, Applied Psychology

Keywords: Computational models of behavior, Connected health, Health-related behavior, Just-in-time adaptive interventions, mHealth, Mobile health, Real-time interventions

DOIs:

10.1007/s13142-015-0324-1

#### **Bibliographical note**

EXT="Saranummi, Niilo"

Source: Scopus

Source ID: 84939204163

Research output: Contribution to journal > Article > Scientific > peer-review

### **Business analytics enabling future insights in the private healthcare**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Information and Knowledge Management, Research group: Business Data Research Group  
Contributors: Ratia, M., Myllärniemi, J.  
Publication date: 2019

#### **Host publication information**

Title of host publication: Proceedings of 14th IFKAD 2019 conference : Matera, Italy, 5-7 June, 2019  
Publisher: IKAM Centro Studi & Ricerche  
ISBN (Electronic): 978-88-96687-12-3

#### **Publication series**

Name: Proceedings IFKAD  
Publisher: IKAM Centro Studi & Ricerche  
ISSN (Print): 2280-787X  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Business catalysts for the Circular Economy innovations**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial Engineering and Management, Research group: Center for Innovation and Technology Research  
Contributors: Aarikka-Stenroos, L., Ranta, V.  
Publication date: Jun 2019

#### **Host publication information**

Title of host publication: Proceedings of The XXX ISPIM INNOVATION CONFERENCE - Celebrating Innovation - 500 Years Since Da Vinci : 16-19 June 2019 - Florence, Italy  
Publisher: International Society for Professional Innovation Management ISPIM  
ISBN (Print): 978-952-335-351-0  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Business intelligence approach – a practical tool for competence based curriculum development**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial and Information Management, Research group: Knowledge and Learning Research Center, Research group: Business Data Research Group, Research group: Cost Management Center, Research group: Center for Research on Operations Projects and Services, Research group: Center for Innovation and Technology Research  
Contributors: Myllärniemi, J., Helander, N., Hellsten, P., Mahlamäki, T., Repo, S.  
Number of pages: 17  
Pages: 6387-6393  
Publication date: 2017

#### **Host publication information**

Title of host publication: EDULEARN17 Proceedings. 9th International Conference on Education and New Learning Technologies : 3-5 July, 2017, Barcelona, Spain  
Publisher: IATED  
ISBN (Print): 978-84-697-3777-4  
DOIs:  
10.21125/edulearn.2017.2451  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Business intelligence process model revisited**

Today many organizations have come to value knowledge as a production factor. Thus, there is a constant need for getting the information in and sorted. Business intelligence (BI) is a process for systematic acquiring, analyzing, and disseminating data and information from various sources to gain understanding about the business's environment. This is required for supporting decisions for achieving organization's business objectives. Literature has introduced models for planning and executing BI. However, as business environments and technologies evolve in a rapid pace, are the models still applicable? Not all recent issues are taken into consideration in the previous models. BI is considered to be integrated into business processes, so the similar evolution is expected to take place. There are two studies investigating BI instigating this study, but there are still questions to be answered. Literature on different models and findings of these studies were combined to form a vision to better match reality. Various issues like users' active involvement, real-time analysis and presentation, and social media resources were brought up. Practitioners can use the approach to assess their current state of BI activities or planning the organization of BI program.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Information and Knowledge Management  
Contributors: Hellsten, P., Myllärniemi, J.  
Number of pages: 8  
Pages: 341-348  
Publication date: 2019

### Host publication information

Title of host publication: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management  
Publisher: SCITEPRESS  
Editors: Bernardino, J., Salgado, A., Filipe, J.  
ISBN (Electronic): 9789897583827

### Publication series

Name: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management  
Volume: 3  
ASJC Scopus subject areas: Software  
Keywords: Business Intelligence, Business Intelligence Process Model, Decision-Making, Organizational Development  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Business models in the circular economy: a structured multiple-case analysis

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research  
Contributors: Ranta, V., Aarikka-Stenroos, L., Mäkinen, S.  
Publication date: Dec 2016

### Host publication information

Title of host publication: Proceedings of ISPIM Innovation Summit, Kuala Lumpur, Malaysia. The International Society for Professional Innovation Management (ISPIM) : 4-7 December 2016  
ISBN (Electronic): 978-952-265-931-6  
URLs:  
<http://summit.ispim.org/>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Bus Transportation Accessibility - Does It Impact Housing Values?

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering, Research group: Real estate development, Research group: Capacity Development of Water and Environmental Services CADWES  
Contributors: Kurvinen, A., Sorri, J.  
Number of pages: 11  
Pages: 321-331  
Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016 : Understanding impacts and functioning of different solutions  
Volume: IV  
Place of publication: Tampere  
Publisher: Tampere University of Technology. Department of Civil Engineering  
Editors: Nenonen, S., Junnonen, J.  
ISBN (Electronic): 978-952-15-3744-8  
ASJC Scopus subject areas: Economics, Econometrics and Finance (miscellaneous), Civil and Structural Engineering  
Keywords: bus stops, bus traffic, housing prices, public transportation, residential property values, traffic related zones, urban form  
Electronic versions:

WBC2016\_Bus\_Transportation\_Accessibility

URLs:

<http://urn.fi/URN:NBN:fi:tty-201606224310>

URLs:

[https://tutcris.tut.fi/admin/files/6372875/WBC2016\\_Bus\\_Transportation\\_Accessibility.pdf](https://tutcris.tut.fi/admin/files/6372875/WBC2016_Bus_Transportation_Accessibility.pdf) (Proceedings of the CIB World Building congress 2016)

<http://www.wbc16.com/wbc16/welcome.html> (Proceedings of the CIB World Building congress 2016)

### **Bibliographical note**

This paper won World Building Congress 2016 Best Paper Award.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **By64 Tuulettuvat julkisivut 2016 -suunnittelu- ja toteusohjeen laadinta**

### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures

Contributors: Annala, P., Lahdensivu, J., Pikkuvirta, J., Pakkala, T.

Number of pages: 6

Pages: 109-114

Publication date: 20 Oct 2015

### **Host publication information**

Title of host publication: Rakennusfysiikka 2015. Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut. 20.-22.10.2015, Tampere

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

Editors: Vinha, J., Ruuska, T.

ISBN (Print): 978-952-15-3580-2

Keywords: Double skin facade, Energy efficiency, New renovation concepts, Innovative HVAC, Earth to air heat exchanger

### **Bibliographical note**

AUX=rak,"Pikkuvirta, Jussa"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

## **Calcium signaling in astrocytes: modeling Fura-2AM measurements**

### **General information**

Publication status: Published

Organisations: Department of Signal Processing, Research group: Computational Neuro Science-CNS

Contributors: Toivari, E., Manninen, T., Nahata, A. K., Jalonen, T. O., Linne, M.

Number of pages: 1

Publication date: 2010

Peer-reviewed: Yes

### **Publication information**

Journal: Frontiers in Neuroscience

ISSN (Print): 1662-4548

Ratings:

Scopus rating (2010): SJR 1.347 SNIP 0.694

Original language: English

DOIs:

10.3389/conf.fnins.2010.13.00061

URLs:

[http://www.frontiersin.org/10.3389/conf.fnins.2010.13.00061/event\\_abstract](http://www.frontiersin.org/10.3389/conf.fnins.2010.13.00061/event_abstract)

Research output: Contribution to journal › Meeting Abstract › Scientific › peer-review

## **Calculation method to determine capillary properties of building materials with automatic free water intake test**

The water absorption coefficient and capillary saturation water content are common building physical material properties.

This paper presents a calculation method to determine these values with an automated free water intake test arrangement. Buoyancy affects weighing results in the automatic measurement and it is recommended to take these factors into account when deriving the real water intake of a specimen. A new mathematical method is presented and trial

experiments have been conducted. The method is proven to work with the polymer modified plaster, concrete, autoclaved aerated concrete and lightweight aggregate concrete, which represent materials from both extremes of capillary activity. The functionality and advantages of the test arrangement for both low and high suction materials are presented.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Civil Engineering, Research group: Building Physics  
Contributors: Tuominen, E., Vinha, J.  
Number of pages: 6  
Publication date: 2019  
Peer-reviewed: Yes

#### Publication information

Journal: MATEC Web of Conferences  
Volume: 282  
Article number: 02037  
ISSN (Print): 2274-7214  
Ratings:  
Scopus rating (2019): CiteScore 0.8 SJR 0.166 SNIP 0.714  
Original language: English  
ASJC Scopus subject areas: Civil and Structural Engineering  
Electronic versions:  
matecconf\_cesbp2019\_02037  
DOIs:  
10.1051/matecconf/201928202037  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-201912126839>  
Research output: Contribution to journal › Conference article › Scientific › peer-review

#### Campus retrofitting (CARE) methodology: a way to co-create future learning environments

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector  
Contributors: Nenonen, S., Eriksson, R., Niemi, O., Junghans, A., Nielsen, S. B., Lindahl, G.  
Number of pages: 12  
Pages: 738-749  
Publication date: 2016

##### Host publication information

Title of host publication: Proceedings of the 20th CIB World Building Congress 2016 : May 30-June 3, 2016, Tampere, Finland  
ISBN (Electronic): 978-952-15-3742-4  
Keywords: Universities, Space management, Facilities management, Space design  
URLs:  
[http://orbit.dtu.dk/files/124058228/Nenonen\\_Eriksson\\_Niemi\\_Junghans\\_Nielsen\\_Lindahl.pdf](http://orbit.dtu.dk/files/124058228/Nenonen_Eriksson_Niemi_Junghans_Nielsen_Lindahl.pdf)  
<http://www.wbc16.com/wbc16/welcome.html>  
Source: Bibtex  
Source ID: urn:3d581eee21d4292b781da57acb1ad288  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Cancer research in the era of next-generation sequencing and big data calls for intelligent modeling

We examine the role of big data and machine learning in cancer research. We describe an example in cancer research where gene-level data from The Cancer Genome Atlas (TCGA) consortium is interpreted using a pathway-level model. As the complexity of computational models increases, their sample requirements grow exponentially. This growth stems from the fact that the number of combinations of variables grows exponentially as the number of variables increases. Thus, a large sample size is needed. The number of variables in a computational model can be reduced by incorporating biological knowledge. One particularly successful way of doing this is by using available gene regulatory, signaling, metabolic, or context-specific pathway information. We conclude that the incorporation of existing biological knowledge is essential for the progress in using big data for cancer research.

##### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Signal Processing, Research group: Computational Systems Biology  
Contributors: Yli-Hietanen, J., Ylipää, A., Yli-Harja, O.  
Publication date: 11 Apr 2015  
Peer-reviewed: Yes

### Publication information

Journal: Chinese Journal of Cancer  
Volume: 34  
Issue number: 10  
Article number: 12  
ISSN (Print): 1944-446X  
Ratings:  
Scopus rating (2015): CiteScore 4.8 SJR 1.081  
Original language: English  
Keywords: Cancer research, Big data, Mathematical modeling, GASTRIC-CANCER, MODULES  
DOIs:  
10.1186/s40880-015-0008-8  
Source: WOS  
Source ID: 000360225300001  
Research output: Contribution to journal › Article › Scientific › peer-review

### Capturing knowledge from research projects: From project reports to storytelling

Research projects are essential tools for creating knowledge and fueling societal developments. Consequently, research efforts are consistent with requirements from accepted scientific methods as they are exhaustively recorded and stored. Traditional approaches are equally effective in helping assess the robustness of research methods. However, approaches to recording research projects leave behind a wealth of tacit knowledge and contextual information. Tacit knowledge and contextual information are essential to enable the development of individual researchers and research teams, which in turn have the potential to increase productivity, effectiveness and impact of future research. Found within the project management literature is the idea of utilizing storytelling to record projects' lessons learned. This paper's main research question is "how would a storytelling framework for capturing and sharing knowledge and contextual information improve organizational memory and the management of research projects?" The framework will be piloted at Canadian, Finnish, and Japanese universities. The effectiveness of the framework will be assessed by comparing it with established procedures to record research projects. In terms of organization, this paper will include a review of the literature, a description of the logic and application of the framework, findings from pilot studies, next steps, and opportunities for future research.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research  
Contributors: Machado, M. A., Magnier-Watanabe, R., Peltola, T.  
Number of pages: 10  
Pages: 2048-2057  
Publication date: Sep 2016

### Host publication information

Title of host publication: 2016 Portland International Conference on Management of Engineering and Technology (PICMET)  
Publisher: IEEE  
ISBN (Print): 978-1-5090-3595-3  
Keywords: Technological innovation, Technology management  
DOIs:  
10.1109/PICMET.2016.7806602  
Source: Bibtex  
Source ID: urn:e6b6fba93971fe08c9732ef2e4b6d809  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Car Type Recognition with Deep Neural Networks

In this paper we study automatic recognition of cars of four types: Bus, Truck, Van and Small car. For this problem we consider two data driven frameworks: a deep neural network and a support vector machine using SIFT features. The accuracy of the methods is validated with a database of over 6500 images, and the resulting prediction accuracy is over 97 %. This clearly exceeds the accuracies of earlier studies that use manually engineered feature extraction pipelines.



### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Signal Processing, Research group: Vision  
Contributors: Huttunen, H., Shokrollahi Yancheshmeh, F., Chen, K.  
Pages: 1115-1120  
Publication date: Jun 2016

### Host publication information

Title of host publication: 2016 IEEE Intelligent Vehicles Symposium, IV 2016  
Publisher: IEEE  
ISBN (Print): 9781509018215  
DOIs:  
10.1109/IVS.2016.7535529  
URLs:  
<https://arxiv.org/abs/1602.07125>  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Case depth prediction of nitrided components

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Materials Science  
Contributors: Sorsa, A., Santa-aho, S., Aylott, C., Shaw, B., Vippola, M., Leiviskä, K.  
Number of pages: 8  
Pages: 65-72  
Publication date: 24 Sep 2017

#### Host publication information

Title of host publication: 12th International Conference on Barkhausen Noise and Micromagnetic Testing  
Publisher: ICBM  
ISBN (Print): 978-952-68852-0-9  
Keywords: Barkhausen noise  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Cavitation erosion, slurry erosion and solid particle erosion performance of metal matrix composite (MMC) coatings sprayed with modern high velocity thermal spray processes

Thermally sprayed metal-matrix composite (MMC) coatings are widely used to protect components and surfaces against wear in various applications. Hard and wear resistant coatings increase the component lifetime and allow the refurbishment of the worn components. This produces significant savings and promotes ecological manufacturing. The current state-of-the-art coatings are produced with high velocity oxygen-fuel (HVOF) spray processes, while modern high velocity air-fuel (HVOF) spray process has become increasingly available in production and research. The current study focuses on the performance of tungsten carbide (WC-10Co4Cr) and chromium carbide ( $\text{Cr}_3\text{C}_2$ -25NiCr) based MMC coatings sprayed with gaseous and liquid fuelled HVOF processes and a modern HVOF spray process. Two powder feedstock types, i.e. dense particles with fine carbides and porous particles with coarse carbides, were selected for both compositions. The results show significant improvements especially for WC-10Co4Cr coatings sprayed with HVOF when compared to HVOF sprayed coatings. In addition,  $\text{Cr}_3\text{C}_2$ -25NiCr coatings sprayed from the dense powder resulted in improved wear resistance compared to conventional feedstock powder.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Materials Science, Research group: Surface Engineering, Research group: Materials Characterization, VZÚ Plzeň, University of West Bohemia  
Contributors: Matikainen, V., Rubio, S., Ojala, N., Koivuluoto, H., Schubert, J., Houdková, S., Vuoristo, P.  
Number of pages: 3  
Pages: 1161-1163  
Publication date: 1 Jan 2017

#### Host publication information

Title of host publication: Materials Science and Technology Conference and Exhibition 2017, MS and T 2017 : October 8-12, 2017, Pittsburgh, Pennsylvania USA  
Volume: 2  
Publisher: Association for Iron and Steel Technology, AISTECH

ISBN (Electronic): 9781510850583

ASJC Scopus subject areas: Mechanics of Materials, Materials Science (miscellaneous), Energy Engineering and Power Technology

Keywords: Cavitation erosion, Coating, Metal matrix composite, Slurry erosion, Thermal spray

URLs:

<http://toc.proceedings.com/36807webtoc.pdf>

Source: Scopus

Source ID: 85047650405

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Cavitation wear characteristics of Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>-ceramic coatings deposited by APS and HVOF -processes**

Thermally sprayed ceramic coatings are used in environments requiring good wear- and corrosion resistance among others. However, a typical issue with ceramic coatings is their low impact resistance and tendency to fail catastrophically by cracking. In bulk ceramics, the Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>-composition has been of interest for long since already small additions of ZrO<sub>2</sub> into Al<sub>2</sub>O<sub>3</sub> have shown improvements in fracture toughness compared to pure Al<sub>2</sub>O<sub>3</sub>. Efforts are being made to induce this increased resistance to fracturing in thermally sprayed coatings as well, resulting in higher wear resistance due to a more predictable behavior and damage-tolerance. In this work, Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub>-coatings have been deposited by atmospheric plasma spray (APS) and high-velocity oxy-fuel spray (HVOF) processes. The wear characteristics of the coatings were evaluated with cavitation erosion, delving into the mechanics of the erosion and the resulting microstructural changes in the coatings. Evidence of phase transformation of t-ZrO<sub>2</sub> to m-ZrO<sub>2</sub> was found during the erosion. The HVOF-sprayed coating exhibited greater wear resistance against the cavitating bubbles due to its finer microstructure.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Materials Science, Research group: Surface Engineering, Institute of Plasma Physics, Academy of Sciences of the Czech Republic

Contributors: Kiilakoski, J., Lukac, F., Koivuluoto, H., Vuoristo, P.

Number of pages: 6

Pages: 928-933

Publication date: 9 Jun 2017

#### **Host publication information**

Title of host publication: International Thermal Spray Conference ITSC 2017, Conference Proceedings : June 7-9, 2017, Düsseldorf, Germany.

Volume: 336

Place of publication: Düsseldorf

Publisher: DVS Media GmbH

ISBN (Electronic): 978-3-96144-000-9

#### **Publication series**

Name: DVS-Berichte / DVS - Deutscher Verband für Schweißen und Verwandte Verfahren e.V.

Publisher: DVS Media GmbH

ISSN (Electronic): 0418-9639

ASJC Scopus subject areas: Mechanics of Materials, Surfaces, Coatings and Films

Keywords: Thermal spray coating, HVOF spraying, Cavitation damage, alumina-ytria-stabilized zirconia, Erosion testing, PLASMA SPRAY

URLs:

<https://www.dvs-ev.de/call4papers/index.cfm?vid=85&id=5>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **CBRN Defense Using THz Pulse Trains from Semiconductor Disk Lasers**

We propose THz generation from a photoconductive antenna illuminated by a train of optical pulses with a pulse repetition rate that corresponds to the desired THz frequency. This new method of THz generation can be seen as a hybrid between the conventional optical THz generation methods, where the optical source is either a heterodyne signal from two continuous wave lasers or a single short pulse. Therefore, the method holds promise for generating both coherent broadband and narrow-linewidth continuous wave THz radiation. The high-repetition rate optical pulse train is obtained from a semiconductor disk laser harmonically mode-locked by a semiconductor saturable absorber mirror and an intracavity etalon. Optical pulse trains with pulse repetition rates from 190 GHz to 580 GHz are demonstrated at an average optical output power of 1 W. This power level is enough for driving full arrays of photoconductive antennas. The approach may provide a compact and powerful THz source for CBRN defense.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication  
Organisations: Optoelectronics Research Centre, Research group: Ultrafast and intense lasers  
Contributors: Saarinen, E.  
Publication date: 2015

#### Host publication information

Title of host publication: NATO ARW on THz Diagnostics of CBRN effects and Detection of Explosives & CBRN : Proceedings of the NATO ARW on Detection of Explosives and CBRN

#### Publication series

Name: NATO Science for Peace and Security Series B: Physics and Biophysics

Publisher: Springer

ISSN (Electronic): 1874-6500

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### CEO 2015: Proceedings of the 8th Nordic Conference on Construction Economics and Organization

Nordic conferences on Construction Economics and Organization (CEO conferences) have been biennial events for academics and industry people. These events are bringing together experts globally and those particularly from Nordic countries for sharing and learning new knowledge, to meet colleagues, get new connection and to visit/see interesting construction case projects or companies. For academics these conferences are important publishing channels. The accepted double-blind reviewed papers are published using widely recognised academic media.

We are very pleased to introduce 8th CEO conference 28th – 29th May 2015, Tampere Finland. The overall theme of this CEO2015 conference is Leadership for targeted change and proven advancements. The following titles represent key areas for which the conference was planned to contribute.

- Gaining desirable changes in real estate and construction sector
- Change towards sustainable built environment and environmental friendly behaviour
- Processes and methods for realizing change initiatives
- Principles, methods and tools for the management of change in processes and projects
- Learning from change: challenges in change processes
- Change behaviour – methods and models to affect change processes
- Business and operations management under unceasing change
- Built environment, companies and projects as systems.

The CEO2015 conference comprises 79 accepted papers and their presentations. The special issue of Elsevier Procedia Economics and Finance (Volume 21, 8th Nordic Conference on Construction Economics and Organization) includes 76 papers. This publication includes three papers. The editors are grateful to all authors for their valuable efforts.

#### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector, Research group: Capacity Development of Water and Environmental Services CADWES, Research group: Real estate development

Contributors: Kähkönen, K. (ed.), Huovinen, P. (ed.), Keinänen, M. (ed.)

Number of pages: 40

Publication date: 2015

#### Publication information

Publisher: Tampere University of Technology. Department of Civil Engineering

ISBN (Electronic): 978-952-15-3534-5

Original language: English

#### Publication series

Name: Tampere University of Technology. Department of Civil Engineering. Construction Management and Economics. Report

Publisher: Tampere University of Technology

Volume: 16

ISSN (Print): 1797-8904

Electronic versions:

ceo\_2015\_proceedings

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3534-5>

### **Bibliographical note**

Versio ok 14.12.2015

Research output: Book/Report › Commissioned report › Professional

### **Challenges Facing BIM Education: Development of Appropriate Teaching and Learning Resources**

Building Information Modelling (BIM) is becoming the new norm in the AEC industry and also part of many construction project management (CPM) programmes. In terms of teaching BIM there is the need for specific resources in explaining the theoretical principles of BIM, BIM tools (authoring, audit and analysis) and building models themselves. Theoretical resources that are available for education in the form of books, articles and websites are easy and straightforward to locate. Likewise a good share of various tools are available for educational purposes. On the other hand, actual building models represent a challenge in terms of preparing and optimising usage of the model for high quality educational purposes. This paper addresses the difficulty in walking the narrow line between an industry ready BIM versus a BIM that is good for student learning and offers a realistic and practical, but simultaneously achievable learning environment. Conducting a case study in an undergraduate CPM education setting, three approaches for obtaining BIM resources were identified with various challenges and benefits. A combination of internally developed models for early exposure and industry models for later courses is proposed.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector, Research group: Capacity Development of Water and Environmental Services CADWES, Research group: Real estate development

Contributors: Puolitaival, T., Forsythe, P., Kähkönen, K.

Publication date: 2015

### **Host publication information**

Title of host publication: RICS COBRA AUBEA 2015 : The Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors

Place of publication: London

Publisher: Royal Institution of Chartered Surveyors

ISBN (Print): 978-1-78321-071-8

URLs:

<http://www.rics.org/fi/knowledge/research/conference-papers/challenges-facing-bim-education-development-of-appropriate-teaching-and-learning-resources/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Challenges in developing data-based value creation**

Understanding data-based value creation helps organizations to enhance its decision-making and to renew their business operations. However, organizations aiming to use modern data analytics face several severe challenges that are not usually so evident or visible beforehand. In this paper we study a Finnish manufacturing company's data empowerment and information and knowledge management practices in order to identify the potential challenges related to modern data-based value creation within industrial context. The empirical data is consisted of group discussions, relevant data sets acquired from the case company's information systems, and lastly, 12 thematic interviews of the key actors in the company in relation to service development. The study provides valuable insights for managing service development and decision-making and creates understanding on data-based value creation. Achieved understanding provides meaningful knowledge for organizations utilizing or having plans to utilize, for example, data analytic methods in their businesses.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Information and Knowledge Management

Contributors: Myllärniemi, J., Helander, N., Pekkola, S.

Number of pages: 7

Pages: 370-376

Publication date: 2019

### **Host publication information**

Title of host publication: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management

Publisher: SCITEPRESS

Editors: Bernardino, J., Salgado, A., Filipe, J.

ISBN (Electronic): 9789897583827

### Publication series

Name: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management

Volume: 3

ASJC Scopus subject areas: Software

Keywords: Case Study, Data-based Value Creation, Information Management Process, Knowledge Management

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Challenges in the paradigm change from mobility as a self-service to mobility as a service

The predominant paradigm of everyday mobility in Finland is mobility as a self-service where most of the mobility needs are taken care with passenger cars. The 'Mobility as a Service' (MaaS) model is a new paradigm that challenges the current mobility practises. The purpose of this paper is to describe the current state of mobility and analyse the potential and challenges of MaaS against current situation in demographics, mobility and mobility related consumption in Finland. It would require a big shift in the current mobility practises for MaaS to become mainstream. In this paper, on one hand potential and one the other more challenging customer segments are recognised and the possibilities of MaaS to address these are discussed.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Civil Engineering

Contributors: Pöllänen, M., Utriainen, R., Viri, R.

Number of pages: 20

Pages: 246-265

Publication date: 2017

### Host publication information

Title of host publication: Conference Proceedings 1st International Conference of Mobility as a Service : ICoMaaS, Tampere 28.-29.11.2017

Publisher: Tampere University of Technology

Keywords: Mobility as a Service, MaaS, challenges, potential

URLs:

<http://www.tut.fi/verne/icomaas/download/>

[http://www.tut.fi/verne/aineisto/ICoMaaS\\_Proceedings\\_S8.pdf](http://www.tut.fi/verne/aineisto/ICoMaaS_Proceedings_S8.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### Changes in operations when introducing disruptive technologies

Disruptive technologies alter the competitive conditions by proposing new sources of value to the customers and possibly cannibalizing existing offerings. Their implications are frequently discussed from the perspective of markets and competition, whereas changes in the internal operations of manufacturing firms are not sufficiently considered. This study explores changes in the practices and delivery chain cooperation of suppliers, when introducing disruptive technologies. In an embedded case study of two disruptive material technologies, we find support for the cognitive and behavioral aspects of changes and reveal the contingent nature and unique character of technology introduction in the business-to-business context.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Martinsuo, M., Ahvenniemi, O., Vaittinen, E.

Publication date: 2015

### Host publication information

Title of host publication: 22nd EurOMA Conference : Operations management for sustainable competitiveness

Place of publication: Switzerland

Publisher: European Operations Management Association

Keywords: operations change, disruptive technology, product innovation

URLs:

<http://www.euroma2015.org/>

### **Characterising the industrial context of engineering change management**

Engineering changes (EC) and their management (ECM) can be categorized from several points of view. In this paper an EC is mainly considered from the position in lifecycle of the object of change: NPD vs. serial production. The performance aspects of engineering change processes emphasize the balancing of speed of the processes and the communication and assessment of consequent changes. ECM practices are studied by comparing two case companies. The cases indicate ECM is highly related to the organization, history and strategy of a company. The increased efficiency in engineering changes is aspired by streamlined ECM in new product development, while enhanced ECM processes apparently batch ECs for increased overall effectivity. The mutual challenge for the studied companies is that the NPD projects result with a set of change requests for serial production.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, VTT Technical Research Centre of Finland

Contributors: Pulkkinen, A., Huhtala, P., Leino, S., Anttila, J. P., Vainio, V. V.

Number of pages: 10

Pages: 618-627

Publication date: 2016

#### **Host publication information**

Title of host publication: Product Lifecycle Management in the Era of Internet of Things : 12th IFIP WG 5.1 International Conference, PLM 2015, Doha, Qatar, October 19-21, 2015, Revised Selected Papers

Publisher: Springer New York LLC

ISBN (Print): 9783319331102

#### **Publication series**

Name: IFIP Advances in Information and Communication Technology

Volume: 467

ISSN (Print): 1868-4238

ASJC Scopus subject areas: Information Systems and Management

Keywords: Case study, Comparison, ECM

DOIs:

10.1007/978-3-319-33111-9\_56

#### **Bibliographical note**

EXT="Leino, Simo-Pekka"

Source: Scopus

Source ID: 84964894186

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Characteristics of Digital Hydraulics with Commercial Controllers**

Model-based control algorithms of digital hydraulic valves offer optimized control performance, but are computationally heavy. Research work has been carried out using PC hardware such as dSPACE real-time systems. In order to apply digital hydraulic valve control in real, series production application, the algorithms should be redesigned such that controllers with limited computation power are sufficient. The paper presents methods for lowering the computational burden and shows the effect of optimization methods in execution time. Model-based controller design is carried out in MATLAB/Simulink and automatic code generation is used in implementation phase. A wheel loader equipped with digital hydraulic valve system is presented as a test case, where control algorithms are implemented on commercial Bosch Rexroth BODAS RC controller. Preliminary work for computationally faster control algorithms is carried out on mobile boom mock-up. The methods presented decrease the execution time to approximately 1/194 of the original.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Digital hydraulics, Research group:

Fluid power automation in mobile machines, Research group: Powertrain design

Contributors: Huova, M., Ahopelto, M., Ketonen, M., Ahola, V., Linjama, M., Huhtala, K.

Number of pages: 15

Pages: 114-128

Publication date: Feb 2015

#### **Host publication information**

Title of host publication: The Seventh Workshop on Digital Fluid Power

Publisher: Linz Center of Mechatronics

ISBN (Print): 978-3-200-04014-4

Keywords: Digital Hydraulics, Digital Valve System, Digital hydraulic valve control, DFCU, Optimization, Mobile machine  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Characterizing the Context of Use in Mobile Work

The context of use has been widely acknowledged as important when designing and evaluating systems for work related activities. This paper describes in case of mobile news making the synthesized findings on the context of use. Findings are categorized to five components and nineteen subcomponents and characterized with examples from our studies. The presented findings validate a previously presented model for context of use in mobile HCI, extend it, and elaborate the definitions for the components. The presented elaborated model can be applied by academics and practitioners in development, research and evaluation activities from identifying requirements to evaluating systems for mobile work. Findings support understanding what circumstances and how they can contribute to user experience and acceptance of designed systems.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: User experience, Augmented Human Activities (AHA)

Contributors: Väättäjä, H.

Number of pages: 167

Pages: 97-113

Publication date: 2015

#### Host publication information

Title of host publication: Human Work Interaction Design. Work Analysis and Interaction Design Methods for Pervasive and Smart Workplaces : 4th IFIP 13.6 Working Conference, HWID 2015, London, UK, June 25-26, 2015, Revised Selected Papers

Publisher: Springer Verlag

ISBN (Print): 978-3-319-27047-0

ISBN (Electronic): 978-3-319-27048-7

#### Publication series

Name: IFIP Advances in Information and Communication Technology

Volume: 468

ISSN (Print): 1868-4238

ASJC Scopus subject areas: Computer Science (miscellaneous)

Keywords: human-computer interaction, human-technology interaction, work, mobile work, CONTEXT, context of use, journalism, smartphone, news, news making

Electronic versions:

Vaataja-Characterizing the context of use in mobile work-HWID-2015. Embargo ended: 25/06/16

DOIs:

10.1007/978-3-319-27048-7\_7

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Charged cable-system ESD event

A charged electronic system failed while it was connected to a USB port. The resulting discharge current waveform had a sub-nanosecond initial peak that bypassed on-board protection devices. In this study the ESD stress waveform is analyzed with simulation and measurement methods.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering

Contributors: Tamminen, P., Viheriäkoski, T.

Publication date: 18 Oct 2016

#### Host publication information

Title of host publication: 2016 38th Electrical Overstress/Electrostatic Discharge Symposium (EOS/ESD)

Publisher: IEEE

ISBN (Electronic): 978-1-5853-7289-8

Keywords: cable shielding, cables (electric), electromagnetic shielding, electrostatic discharge, peripheral interfaces, ESD stress waveform, USB port, charged cable system ESD event, charged electronic system, discharge current waveform, on-board protection devices, subnanosecond initial peak, Cable TV, Cable shielding, Current measurement, Discharges (electric), Power cables, Universal Serial Bus, Wires

DOIs:

10.1109/EOSESD.2016.7592559

Source: Bibtex

Source ID: urn:5e9eb39001154b3f7501d98bb2d14c27

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Charge relaxation of slowly dissipative polymers

Charge relaxation times of solid planar polymers were assessed with different charging methods in a controlled environment. Electrically isolated samples had relatively long relaxation periods. The longest measurement sequence was 62 hours. An electrostatic behavior of the samples under test was then characterized in a changing electrostatic field.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering

Contributors: Viheriäkoski, T., Kärjä, E., Hillberg, J., Tamminen, P.

Number of pages: 9

Pages: 1-9

Publication date: 18 Oct 2016

#### Host publication information

Title of host publication: 2016 38th Electrical Overstress/Electrostatic Discharge Symposium (EOS/ESD)

Publisher: IEEE

ISBN (Electronic): 978-1-5853-7289-8

Keywords: electric charge, electrostatics, polymers, charge relaxation, electrical isolated sample, electrostatic field behavior, slowly dissipative polymer, solid planar polymer, time 62 hour, Charge measurement, Charge transfer, Electric potential, Electrodes, Electrostatics, Ions

DOIs:

10.1109/EOSESD.2016.7592533

Source: Bibtex

Source ID: urn:dd06edd7b8b73b5d55aa28c271275556

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Charlie and the CryptoFactory: Towards Secure and Trusted Manufacturing Environments

The modernization that stems from Industry 4.0 started populating the manufacturing sector with networked devices, complex sensors, and a significant proportion of physical actuation components. However, new capabilities in networked cyber-physical systems demand more complex infrastructure and algorithms and often lead to new security flaws and operational risks that increase the attack surface area exponentially. The interconnected nature of Industry 4.0-driven operations and the pace of digital transformation mean that cyberattacks can have far more extensive effects than ever before. Based on that, the core ideas of this paper are driven by the observation that cybersecurity is one of the key enablers of Industry 4.0. Having this in mind, we propose CryptoFactory - a forward-looking design of a layered-based architecture that can be used as a starting point for building secure and privacy-preserving smart factories. CryptoFactory aims to change the security outlook in smart manufacturing by discussing a set of fundamental requirements and functionality that modern factories should support in order to be resistant to both internal and external attacks. To this end, CryptoFactory first focuses on how to build trust relationships between the hardware devices in the factory. Then, we look on how to use several cryptographic approaches to allow IoT devices to securely collect, store and share their data while we also touch upon the emerging topic of secure and privacy-preserving communication and collaboration between manufacturing environments and value chains. Finally, we look into the problem of how to perform privacy-preserving analytics by leveraging Trusted Execution Environments and the promising concept of Functional Encryption.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, University of Westminster

Contributors: Michalas, A., Kiss, T.

Number of pages: 6

Pages: 141-146

Publication date: 2020

#### Host publication information

Title of host publication: 20th IEEE Mediterranean Electrotechnical Conference, MELECON 2020 : Proceedings

Publisher: IEEE

ISBN (Print): 978-1-7281-5201-1

ISBN (Electronic): 9781728152004



### Publication series

Name: IEEE Mediterranean Electrotechnical Conference  
Publisher: Institute of Electrical and Electronics Engineers  
ISSN (Print): 2158-8473  
ISSN (Electronic): 2158-8481  
ASJC Scopus subject areas: Control and Systems Engineering, Electrical and Electronic Engineering, Control and Optimization, Information Systems and Management, Energy Engineering and Power Technology  
Keywords: Industry 4.0, Privacy, Security, Smart Factories  
DOIs:  
10.1109/MELECON48756.2020.9140712

### Bibliographical note

JUFID=72875  
Source: Scopus  
Source ID: 85089274465  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Circularly Polarized Textile Antenna For 2.45 GHz

This paper presents a circularly polarized antenna on thin and flexible Denim substrate for Industrial, Scientific and Medical (ISM) band and Wireless Body Area Network (WBAN) applications at 2.45 GHz. Copper tape is used as the conductive material on 1 mm thick Denim substrate. Circular polarization is achieved by introducing rectangular slot along diagonal axes at the center of the circular patch radiator. Bandwidth enhancement is done using partial and slotted ground plane. The measured impedance bandwidth of the proposed antenna is 6.4 % (2.42 GHz to 2.58 GHz) or 160 MHz. The antenna exhibits good radiation characteristics with gain of 2.25 dB. Simulated and measured results are presented to validate the operability of antenna within the proposed frequency bands.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Identification and Sensing Systems Research Group, Sensing Systems for Wireless Medicine (MediSense), Department of Electrical Engineering, University of California, Los Angeles, California, USA  
Contributors: Rizwan, M., Rahmat-Samii, Y., Ukkonen, L.  
Number of pages: 2  
Pages: 51-52  
Publication date: 21 Sep 2015

### Host publication information

Title of host publication: Circularly Polarized Textile Antenna For 2.45 GHz  
Publisher: IEEE  
ISBN (Electronic): 978-1-4799-8543-2  
Keywords: Denim, Industrial, Scientific and Medical (ISM) band, Wireless Body Area Network (WBAN), Textile antenna, Circular Polarization  
DOIs:  
10.1109/IMWS-BIO.2015.7303755  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Classification of Knowledge Representation Implementations in the Manufacturing Systems Domain

Ontologies are presented as a powerful mechanism for integration of components that are located in different levels of the ISA-95 automation pyramid, which is widely known in the industrial automation domain. Hence, the development of systems that use knowledge representation is a feasible manner for the reduction of efforts, e.g. in vertical communication implementation. This kind of research is challenging because of the quantity of cross-layer information exchange. In fact, as industrial automation systems are, by nature, dynamic, process control components must be capable of adapting fast to changes. Furthermore, reconfiguration of scalable systems can be automated through ontology modeling. This chapter presents an investigation on how representation of knowledge is utilized in different industrial automation developments. In addition, main concepts and requirements for designing knowledge representation implementations are identified and described. Finally, according to this description, a classification of distinct implementations is also presented.

### General information

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Department of Automation Science and Engineering, Research group: Factory automation systems technology  
Contributors: Ramis Ferrer, B.

Number of pages: 10  
Pages: 235-244  
Publication date: 2015

#### Host publication information

Title of host publication: Open Knowledge-Driven Manufacturing & Logistics : The eScop Approach  
Publisher: Warsaw University of Technology Publishing House  
Editors: Strzelczak, S., Balda, P., Garetti, M., Lobov, A.  
ISBN (Print): 978-83-7814-440-3  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### Clean Components of Fluid Power System Reduce Maintenance Costs

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Intelligent Hydraulics and Automation, Research group: Condition monitoring of hydraulic components and systems  
Contributors: Rininen, J., Elo, L.  
Number of pages: 8  
Publication date: 1 Oct 2015

#### Host publication information

Title of host publication: Maintenance, Condition Monitoring and Diagnostics; Maintenance Performance Measurement and Management : MCMD 2015 and MPMM 2015  
Article number: 2 (2015-10-01)  
ISBN (Print): 978-951-98113-7-6  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### Clothing-Integrated Passive RFID Strain Sensor Platform for Body Movement-Based Controlling

This paper introduces the fabrication and wireless performance evaluation of a passive ultra-high frequency (UHF) radiofrequency identification (RFID)-based strain sensor platform, which is designed for body movement-based human-technology interaction. The used RFID platform is fabricated from electro-textile materials and can thus be seamlessly integrated into clothing. A two-part antenna structure is utilized in this work to avoid the reliability challenges caused by mechanical stresses that clothing-integrated electronics need to endure. The fabricated sensor has an initial peak read range of 5 meters, which is an excellent result for on-body performance. Further, the platform is functional throughout the global UHF RFID frequency band. During elongation, the peak read range of the sensor has a significant decrease, but it is still readable from distances of 2.5 meters. Thus, this sensor can be read wirelessly from a convenient distance, when considering its practical use in body movement-based controlling of digital devices. The wireless performance of the sensor platform has a significant change caused by arm elongation, which based on our initial results can be clearly read from the changed backscattered signal. Thus, based on these preliminary results, our sensor platform shows potential as a passive clothing-integrated controller, which can turn simple gestures into inputs for digital devices.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: BioMediTech, Research group: Wireless Identification and Sensing Systems Research Group  
Contributors: He, H., Chen, X., Ukkonen, L., Virkki, J.  
Number of pages: 4  
Pages: 236-239  
Publication date: 7 Nov 2019

#### Host publication information

Title of host publication: 2019 IEEE International Conference on RFID Technology and Applications (RFID-TA)  
Publisher: IEEE  
ISBN (Print): 978-1-7281-0590-1  
ISBN (Electronic): 978-1-7281-0589-5  
Keywords: Electro-textiles, human-technology interaction, passive UHF RFID technology, strain sensor, clothing-integrated electronics  
DOIs:  
10.1109/RFID-TA.2019.8892118  
Source: Bibtex  
Source ID: 8892118  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Coarse-grained model of protein interaction for bio-inspired nano-communication**

Bio-inspired nano-communication enables nanoscale devices to exchange information with each other by various natural mechanisms of data transfer. One of the most perspective way in bio-inspired communications is using the protein interactions, which refer from various proteins conformation states. In this paper, we describe our new coarsegrained model for protein conformation estimation based on fast transport task solving, developed algorithm and software which implement this model are provided.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, Wireless Communications and Positioning (WICO), Russian Academy of Sciences, ITMO University  
Contributors: Knyazev, S., Tarakanov, S., Kuznetsov, V., Porozov, Y., Koucheryavy, Y., Stepanov, E.

Number of pages: 3

Pages: 260-262

Publication date: 6 Jan 2015

#### **Host publication information**

Title of host publication: 2014 6th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)

ISBN (Print): 978-1-4799-5291-5

ASJC Scopus subject areas: Computer Networks and Communications, Control and Systems Engineering

Keywords: biology signaling, coarse-grained model, nano-communications, protein conformation change

DOIs:

10.1109/ICUMT.2014.7002112

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Co-creating digital services for citizens: Activity theory analysis**

Smart city development relies heavily on creation of digital services that are available for the citizens and for the city authorities. At best, these services are co-created by the authorities, citizens and the digital solution supplier companies. Digital service co-creation is, however, a complex process and includes several contradictions due to presence of several stakeholders. In this paper, we present a case study of smart city initiated digital service co-creation process through the analytical lenses of activity theory.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Information and Knowledge Management, HAMK Design Factory, HAMK University of Applied Sciences, HAMK Smart Research Unit

Contributors: Jussila, J., Kukkamäki, J., Helander, N.

Number of pages: 6

Pages: 285-290

Publication date: 2019

#### **Host publication information**

Title of host publication: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management

Publisher: SCITEPRESS

Editors: Bernardino, J., Salgado, A., Filipe, J.

ISBN (Electronic): 9789897583827

#### **Publication series**

Name: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management

Volume: 3

ASJC Scopus subject areas: Software

Keywords: Activity Theory, Co-creation, Digital Service, Empirical Study

DOIs:

10.5220/0008349002850290

#### **Bibliographical note**

EXT="Jussila, Jari"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Cold-formed RHS T joints with initial geometrical imperfections**

Generally, numerical simulations of structures are carried out in such a way as to most accurately repeat their real behavior. The current rules for finite element modeling of tubular joints oblige scientists and engineers to construct their numerical models considering initial imperfections. However, not all joints are sensitive to initial imperfections. Often consideration of initial imperfections brings no reasonable improvements in the accuracy of results, but severely complicates numerical simulations. In such cases, the effect of geometrical imperfections can be effectively replaced by a simple theoretical equation or neglected entirely. This paper evaluates the effect of initial geometrical imperfections on the structural behavior of cold-formed rectangular hollow section T joints. Imperfections are simulated using the conventional approach for thin-walled structures, applying corresponding buckling modes to the perfect geometry. The paper analyzes several buckling modes and their combinations to identify the most rational technique for simulation of imperfections under in-plane bending and axial loading. Based on the obtained results, parametric studies are conducted to investigate the effect of initial imperfections on joints with various geometry and material properties. The results demonstrate that initial imperfections reduce the resistance and initial stiffness of joints. However, the observed effect has been found sufficiently small to be safely ignored in computational analyses.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, St. Petersburg State Polytechnical University

Contributors: Garifullin, M., Bronzova, M. K., Heinisuo, M., Mela, K., Pajunen, S.

Number of pages: 14

Pages: 81-94

Publication date: 2018

Peer-reviewed: Yes

#### **Publication information**

Journal: Magazine of Civil Engineering

Volume: 80

Issue number: 4

ISSN (Print): 2071-4726

Ratings:

Scopus rating (2018): CiteScore 2.7 SJR 1.062 SNIP 2.509

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

Keywords: Finite element analysis, Hollow section joint, Imperfection, Initial stiffness, Resistance

Electronic versions:

[cold-formed\\_rhs\\_t\\_joints](#)

DOIs:

[10.18720/MCE.80.8](https://doi.org/10.18720/MCE.80.8)

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910033677>

Source: Scopus

Source ID: 85051540096

Research output: Contribution to journal › Article › Scientific › peer-review

### **Collagen-immobilized polyimide membranes for retinal pigment epithelial cell adherence and proliferation**

Degenerative retinal diseases are a leading cause of visual loss and irreversible blindness, particularly in the developed world. Retinal pigment cell (RPE) transplantation is nowadays considered the most promising therapeutic approach for certain retinal diseases, and the presence of a supportive scaffold has been considered essential to ensure the success of the implant. In this work, collagen IV was covalently immobilized to the surface of polyimide membranes, with the purpose of developing scaffold materials for RPE cell culture. The covalent modification method involved four steps: argon-plasma treatment, acrylic acid graft polymerization, surface activation, and finally immobilization of collagen type IV. Collagen-modified membranes did not become more rough but became significantly more hydrophilic than the unmodified and dip-coated controls. ARPE-19 cell morphology and attachment were studied by immunofluorescence staining and confocal microscopy. Covalently modified surfaces showed cell attachment and cell properties comparable to the uncoated and dip-coated controls. This work demonstrated the potential of collagen IV-immobilized polyimide membranes as substrates for the growth of ARPE-19 cells.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Biomaterials and Tissue Engineering Group, BioMediTech, University of Tampere, BioMediTech

Contributors: Teymouri, S., Calejo, M. T., Hiltunen, M., Sorkio, A. E., Juuti-Uusitalo, K., Skottman, H., Kellomäki, M.  
Publication date: 6 Mar 2017  
Peer-reviewed: Yes

#### Publication information

Journal: Cogent Chemistry  
Volume: 3  
Issue number: 1  
ISSN (Print): 2331-2009  
Original language: English  
Keywords: Polyimide, Retinal pigment epithelial cell, SURFACE MODIFICATION, tissue engineering  
Electronic versions:  
Collagen immobilized polyimide membranes for retinal pigment epithelial cell adherence and proliferation  
DOIs:  
10.1080/23312009.2017.1292593  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201703231218>  
Research output: Contribution to journal > Article > Scientific > peer-review

#### Collective nonlinear optical effects in plasmonic nanohole ensembles of different rotational symmetries

We use cylindrical vector beams to investigate second-harmonic generation from rotationally symmetric arrangements of plasmonic nanoholes. The second-harmonic efficiency is shown to depend strongly on collective interactions between the nanoholes.

#### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Photonics, Research group: Nonlinear Optics, University of Tübingen  
Contributors: Bautista, G., Dreser, C., Zang, X., Kern, D., Kauranen, M., Fleischer, M.  
Number of pages: 2  
Publication date: 2018

#### Host publication information

Title of host publication: CLEO : QELS\_Fundamental Science 2018  
Publisher: The Optical Society; OSA  
Article number: FW3G.3  
ISBN (Electronic): 978-1-943580-42-2  
Electronic versions:  
CLEOUS2018-nanoholes. Embargo ended: 18/05/19  
DOIs:  
10.1364/CLEO\_QELS.2018.FW3G.3  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201806041919>. Embargo ended: 18/05/19  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

#### Color-distribution similarity by information theoretic divergence for color images

The divergence similarity between two color images is presented based on the Jensen-Shannon divergence to measure the color-distribution similarity. Subjective assessment experiments were developed to obtain mean opinion scores (MOS) of test images. It was found that the divergence similarity and MOS values showed statistically significant correlations.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Signal Processing, Research group: Vision, University of Niigata, KLab, Japan, K-JIST, Dongguk University, Seoul  
Contributors: Murayama, M., Oguro, D., Kikuchi, H., Huttunen, H., Ho, Y. S., Shin, J.  
Publication date: 17 Jan 2017

#### Host publication information

Title of host publication: 2016 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference, APSIPA 2016  
Publisher: IEEE  
ISBN (Electronic): 9789881476821  
ASJC Scopus subject areas: Artificial Intelligence, Computer Science Applications, Information Systems, Signal Processing

DOIs:

10.1109/APSIPA.2016.7820681

### **Bibliographical note**

JUF0ID=72850

Source: Scopus

Source ID: 85013813769

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Combining Product Innovation With Service Innovation to Increase Value Created With a System**

The focus in the businesses of manufacturing and selling technological devices has been increasingly shifting from USA and Europe towards Asiatic countries due to cost-effectiveness and lower costs of resources. In the areas where costs are inevitably higher, new measures have to be considered in order to be able to compete in the global economy. In this article, we study how can we utilize combined benefits of technological and service innovations in competing against the traditional product-oriented offerings. Product-service systems are integrated systems of products and services that create value through use for customers; the hypothesis in this article is that the efficiency of the business network can be increased by designing an integrated product-service system in comparison to the product-oriented approach. The hypothesis is studied via a real-life product-service system design case study of an automated recycling system, and system dynamics simulation is used to analyze the value created with the system in the related business network. In theory, product-service systems have many potential benefits in comparison to product-oriented offerings; identifying the benefits in practice in a case study increases the understanding of product-service systems design and facilitate their application in the industry.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Aalto University, Aalto Univ, Aalto University, Sch Engn, Dept Engn Design & Prod

Contributors: Ritola, T., Coatanea, E.

Number of pages: 10

Publication date: 2014

### **Host publication information**

Title of host publication: Proceedings of the ASME international mechanical engineering congress and exposition, 2013, vol 12

Publisher: AMER SOC MECHANICAL ENGINEERS

ISBN (Print): 978-0-7918-5641-3

Source: WOS

Source ID: 000360320700022

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Commercialising reclaimed materials in earthworks – guidelines for productization and the process of appending these materials in the Finnish national code of practice**

To decrease the use of non-renewable natural resources as well as environmental effects of earth-works, natural aggregate materials can be replaced with recycled materials acquired from surplus soil, industrial by-products and waste, etc. When wishing to increase the usage of these reclaimed materials (=“UUMA”-material), the usage must be straightforward for developers, designers and constructors alike. To make this possible, the materials must have design guidelines for their appropriate applications. They must be productized and CE marked or otherwise authorized, and the construction guidelines for the materials must be included in the Finnish general specifications for in-frastructural construction works (InfraRYL). As productization is especially important in increasing the usage of UUMA materials, guidelines for vendors are being drawn that present information on commercializing reclaimed materials to be used in earthworks. The guidelines for productization are being prepared in the Finnish national UUMA2 programme (2013-2017, www.uuma2.fi), which was created to promote the use of recycled materials in earthworks.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research area: Infrastructure Construction, Research group: Earth Constructions, Research group: Track Structures, Ramboll Finland Ltd.

Contributors: Koivisto, K., Forsman, J., Ronkainen, M., Lahtinen, P., Kolisoja, P., Kuula, P.

Number of pages: 10

Publication date: 2016

### **Host publication information**

Title of host publication: Proceedings of the 17th Nordic Geotechnical Meeting Reykjavik Iceland : Challenges in Nordic Geotechnic 25th - 28th of May

Place of publication: Reykjavik  
Publisher: Icelandic Geotechnical Society  
ISBN (Electronic): 978-9935-24-002-6  
Electronic versions:

Commercialising reclaimed materials in earthworks 2016

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202005205536>

URLs:

<http://www.ngm2016.com/>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Comparative evaluation of radio propagation properties at 15 GHz and 60 GHz frequencies**

Due to explosive growth in the mobile data demand, millimeter-wave (mmWave) spectrum is to become one of the key enablers for the next-generation 5G wireless. Accurate characterization of mmWave channels has crucial implications on 5G network planning — as compared to more conventional frequency bands — due to a higher impact that surrounding objects have on the radio propagation. In this work, we contribute mmWave channel measurements and compare our obtained results across several metrics of interests, mindful of previously standardized models. The proposed analysis is conducted for a typical mmWave system deployment operating at 15 and 60 GHz. The evaluation studies a difference between the obtained results for the two frequency bands considered, as well as verifies their predictability when utilizing modern modeling considerations.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno

Contributors: Solomitckii, D., Semkin, V., Naderpour, R., Ometov, A., Andreev, S.

Number of pages: 5

Pages: 91-95

Publication date: 1 Nov 2017

### **Host publication information**

Title of host publication: 2017 9th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)

Publisher: IEEE

ISBN (Electronic): 978-1-5386-3435-6

Keywords: 3GPP, Antenna measurements, Delays, Optical attenuators, Optical transmitters, Receiving antennas, channel sounding, mmWave systems, practical measurements, radio propagation, urban deployments

Electronic versions:

Comparative Evaluation of Radio Propagation Properties 2017

DOIs:

10.1109/ICUMT.2017.8255207

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202002262369>

### **Bibliographical note**

jufoid=72315

Source: Bibtex

Source ID: urn:e3e92af655321f382b94981bdab749a2

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Comparative investigation of remote tracking devices for aging care**

Tracking devices help the elderly patients to remain safe, secure and traceable in case of getting lost or in an emergency. This research work was conducted to evaluate the appropriateness of few commercially available tracking devices for aging people, by identifying their usefulness, efficiency, limitations and further improvements. Research involved two steps; literature review about two existing tracking devices simply termed device A and device B, followed by a performance and comparative analysis of the aforementioned devices by applying basic statistics on the results obtained from a questionnaire survey. Devices were used by two groups of people: aging (>70 year old) and middle-aged patients (less than 70 years old) who reported their satisfaction levels about the said devices on a scale of one to five. These devices were found helpful in reducing the dependency of the elderly on others and raised their privacy values. However, these were not recommended for severe memory loss or later stage of critical staged dementia patients because learning and memorizing the process of handling these devices can be difficult for them. Overall, the performance of device B outplayed device A while comparing all considered device parameters. The calling feature of device B appeared to be an appealing characteristic with mean satisfaction levels of 4.9 textpm 0.32 and 4.7 textpm 0.48 as reported by the middle-

aged and aging groups, respectively. These devices will be helpful in decreasing unnecessary rush at health care centers or lost person reporting in police. In upcoming years, these devices can be developed to remotely monitor the movement of the patient.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering

Contributors: Munir, M. W., Shahid, N., Omair, S. M., Munir, G., Ul Haque, M. Z.

Number of pages: 6

Pages: 261-266

Publication date: 1 Sep 2017

Peer-reviewed: Yes

#### Publication information

Journal: INTERNATIONAL JOURNAL OF INFORMATION TECHNOLOGY

Volume: 9

Issue number: 3

ISSN (Print): 2511-2112

Original language: English

DOIs:

10.1007/s41870-017-0034-7

Source: Bibtex

Source ID: urn:3fb5001f93a07dc83f4e1bd74b4d0420

Research output: Contribution to journal > Article > Scientific > peer-review

#### Comparing capacity gains of static and UAV-based millimeter-wave relays in clustered deployments

The prospective millimeter-wave (mmWave) networks are envisioned to heavily utilize relay nodes to improve their performance in certain scenarios. In addition to the stationary mmWave relays already considered by 3GPP as one of the main focuses, the community recently started to explore the use of unmanned aerial vehicle (UAV)-based mmWave relays. These aerial nodes provide greater flexibility in terms of the relay placement in different environments as well as the ability to optimize the deployment height thus maximizing the cell performance. At the same time, the use of UAV-based relays leads to additional deployment complexity and expenditures for the network operators. In this paper, taking into account 3GPP-standardized mmWave-specific propagation, blockage, and resource allocation we compare the capacity gains brought by the static and the UAV-based mmWave relays in different scenarios. For each of the relay types, we investigate both uniform and clustered distribution of human users. The developed mathematical framework and a numerical study reveal that the highest capacity gains when utilizing the UAV-based relays instead of the static ones are observed in clustered deployments (up to 31%), while the performance difference between the UAV-based and the static mmWave relays under a uniform distribution of users is just 3%.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electrical Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, Research group: Wireless Communications and Positioning, Intel Corporation

Contributors: Gapeyenko, M., Petrov, V., Moltchanov, D., Yeh, S. P., Himayat, N., Andreev, S.

Number of pages: 7

Publication date: 2020

#### Host publication information

Title of host publication: 2020 IEEE International Conference on Communications Workshops, ICC Workshops 2020 - Proceedings

Publisher: IEEE

ISBN (Print): 978-1-7281-7441-9

ISBN (Electronic): 9781728174402

#### Publication series

Name: IEEE/CIC international conference on communications in China - workshops

ISSN (Print): 2474-9133

ISSN (Electronic): 2474-9141

ASJC Scopus subject areas: Artificial Intelligence, Computer Networks and Communications, Signal Processing, Information Systems and Management, Control and Optimization

Keywords: 5G, MmWave, New Radio, Relay, UAV

DOIs:

10.1109/ICCWorkshops49005.2020.9145216



### **Bibliographical note**

JUF0ID=88220

Source: Scopus

Source ID: 85090293224

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Comparing two methods for Urban Complexity calculation using Shannon-Wiener index**

This study will compare the results of measuring Urban Complexity using Shannon-Wiener index in two different methods. Using a joint dataset retrieved from Foursquare API, we will measure the degree of urban complexity of every street 1. relating every amenity to the closest street segment in a computational way and then applying the calculation to the segments, and 2. applying the calculation to every cell of a grid that will be combined with the street network afterwards. The selected case study is the city of London and the dataset employed will be retrieved from Foursquare. Over 79,000 venues were collected and classified in over 660 categories. In order to proceed to the analysis, these 660 categories will be reduced to 10 based on the classification of activities observed in the public space from the traditional urban discipline. Then the urban complexity index of each Street segment of London will be measured as a simultaneous calculation of the density and diversity of collected and classified economic activities.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Architecture, University of Alicante, SPIN Unit

Contributors: López Baeza, J., Cerrone, D., Männigo, K.

Number of pages: 10

Pages: 369-378

Publication date: 2017

### **Host publication information**

Title of host publication: Comparing two methods for Urban Complexity calculation using Shannon-Wiener index

Publisher: WIT Press

### **Publication series**

Name: WIT Transactions on Ecology and The Environment

Volume: 226

ISSN (Print): 1743-3541

ISSN (Electronic): 1746-448X

DOIs:

10.2495/SDP170321

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Comparison between calculated and billed building energy consumption values of schools and daycare centers**

In many countries, building regulations set requirements for energy efficiency, which must be fulfilled in order to have a building permit. Because the actual building does not yet exist, the calculations are done in the early design phase with approximate input data. This paper presents results from dynamic whole-building simulations and compares the results to monthly calculation results, billed energy consumption and to a small number of central building energy efficiency parameters. According to the results, using a more sophisticated calculation tool does not necessarily improve the accuracy of the calculation results, if the capabilities of the tool are not properly utilised. Although there was a clear difference between the calculated and billed values, lower calculated energy consumption did correlate with lower billed values. Besides the need for extra effort to ensure accurate input data in general, input values related to infiltration and ventilation should be evaluated especially carefully.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Building Physics

Contributors: Ruusala, A., Laukkarinen, A., Vinha, J.

Number of pages: 6

Publication date: 2019

Peer-reviewed: Yes

### **Publication information**

Journal: MATEC Web of Conferences

Volume: 282

Article number: 02085

ISSN (Print): 2274-7214

Ratings:

Scopus rating (2019): CiteScore 0.8 SJR 0.166 SNIP 0.714

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering

Keywords: building energy consumption, simulation, Building physics, calculated building energy consumption, billed building energy consumption

Electronic versions:

mateconf\_cesbp2019\_02085

DOIs:

10.1051/mateconf/201928202085

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202001091135>

Research output: Contribution to journal > Conference article > Scientific > peer-review

### **Comparison of Detection Techniques for Multipath Propagation of Pseudolite Signals Used in Dense Industrial Environments**

Modern industrial environments with automated production machinery often require special indoor positioning and localization techniques, due to the presence of objects and the infrastructure that may obstruct the line-of-sight propagation or interfere with the behaviour of electromagnetic waves. These challenges are difficult to overcome by the widely employed GNSS positioning system designed for use in outdoor areas. One of existing indoor positioning systems are the pseudolites, which transmit positioning signals similar to the ones used by GNSS systems. One of the sources of errors for pseudolites is the multipath propagation. Our paper compares the performances of several multipath propagation detection techniques, using Binary Offset Carrier (BOC) navigation signal and determines that errors increase sharply when the receiver uses navigation signals that have multipath propagation. The techniques that we present improve the positioning accuracy, which leads to more precise industrial processes.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Ministry of National Education. University Politehnica of Bucharest

Contributors: Alexandru, R., Lohan, E.

Number of pages: 7

Pages: 1294-1300

Publication date: 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Procedia Engineering

Volume: 100

Issue number: C

ISSN (Print): 1877-7058

Ratings:

Scopus rating (2015): CiteScore 0.9 SJR 0.239 SNIP 0.566

Original language: English

ASJC Scopus subject areas: Energy(all)

Keywords: Binary Offset Carrier, GNSS, Indoor positioning, Multipath propagation, Pseudolite

DOIs:

10.1016/j.proeng.2015.01.496

Source: Scopus

Source ID: 84925047361

Research output: Contribution to journal > Article > Scientific > peer-review

### **Comparison of food frequency questionnaire data and shopping records for the assessment of food intake**

Questionnaires are typically used for collecting information describing health behavior in areas such as diet, physical activity and sleep. Utilization of the digital footprint, formed from an individual's unique digital activities, forms a potential new opportunity for describing lifestyle and health-related behavior. We studied if passively collected shopping data describes food intake when compared to food frequency questionnaire (FFQ) data providing information on food and beverage consumption. For 4 out of 21 food groups the results were comparable. Shopping information from only one department store chain gives only a partial picture of the food consumption and differing family sizes add noise to the estimate. If the whole digital footprint would be available, including detailed product-level shopping information from

all stores and restaurants, the food intake could probably be estimated more accurately and applied e.g. in personalized coaching.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Faculty of Biomedical Sciences and Engineering, Tampere University of Technology, Institute for Molecular Medicine, FIMM, HiLIFE, University of Helsinki

Contributors: Kallonen, A., Nieminen, H., Das, S., Sallinen, R.

Pages: 25-30

Publication date: 27 Aug 2018

#### Host publication information

Title of host publication: Proceedings of Seventh International Conference on Well-Being in the Information Society: Fighting Inequalities (WIS 2018)

ISBN (Electronic): 978-952-12-3727-0

#### Publication series

Name: TUCS Lecture Notes

Volume: 28

ISSN (Electronic): 1797-8831

ASJC Scopus subject areas: Molecular Medicine

Keywords: Food intake assessment, shopping data, food frequency questionnaire, digital footprint

URLs:

<http://urn.fi/URN:ISBN:978-952-12-3727-0>

#### Bibliographical note

INT=TUT-BMT,"Das, Soumya"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Comparison of Sintering Methods and Conductive Adhesives for Interconnections in Inkjet-Printed Flexible Electronics

Increasing demands for flexibility and stretchability for electronic devices are driving the research for novel fabrication technologies. Inkjet-printing is one of these novel electronics fabrication techniques studied and developed globally in recent years and it has some interesting benefits over traditional lithography-based techniques, mainly its additive and digital nature. Traditional manufacturing methods are mature techniques and the processes are well defined and optimized for large scale manufacturing and inkjet-printing is not going to replace the lithography as such for large scale manufacturing. Inkjet-printing does, however, enable whole new ways of electronics fabrication, such as high part-to-part customization and 3D processability, which have previously been either very challenging or even impossible.

So far research has focused mainly on inkjet-printing itself and the jetting process is understood fairly well. However, at the moment printed semiconductor materials are far inferior to traditional semiconductor components and can not enable the same level of functionality or connectivity. Hybrid systems, combining the high performance of traditional semiconductor components and benefits of inkjet-printing, are studied as a solution for fabricating high performance devices with novel fabrication techniques. Hybrid systems require the ability to attach external components to the printed structures and this integration was chosen as one of the main topic for this thesis work as it had not been studied previously and the knowledge was required for developing inkjet-printing.

This thesis analyzes inkjet-printed hybrid systems and focuses on system level integration. The work is done on interconnections including both the sintering of metallic nanoparticles as well as external component interconnections and circuit board to circuit board connections. Sintering research is focused on alternative sintering methods to traditional thermal sintering and evaluation of their usability in electronics fabrication. Electrically conductive adhesives are studied as the main method of forming external connection to components and to other circuit boards.

In the research related to this thesis alternative sintering methods were found to be suitable replacements for traditional thermal sintering with the advantages and disadvantages varying between different technologies. Laser and intense pulsed lighting were generally found to be the most promising techniques for inkjet-printed structures. External connections to traditional surface mounted components as well as other printed circuit boards were also successfully demonstrated in the related publications using electrically conductive adhesive materials. Both the electrical performance and long term reliability of the conductive adhesives were found to be inferior to solder-based interconnections but observations show that the difference is caused by the adhesive material itself, not by the use of inkjet-printing. Thus adhesives can be considered as a viable method for forming external interconnections on inkjet-printed structures.

#### General information

Publication status: Published

MoE publication type: G5 Doctoral dissertation (article)

Organisations: Department of Electronics and Communications Engineering, Research group: Laboratory for Future Electronics

Contributors: Niittynen, J.  
Number of pages: 62  
Publication date: 24 Apr 2015

#### Publication information

Publisher: Tampere University of Technology  
ISBN (Print): 978-952-15-3505-5  
ISBN (Electronic): 978-952-15-3515-4  
Original language: English

#### Publication series

Name: Tampere University of Technology. Publication  
Publisher: Tampere University of Technology  
Volume: 1291  
ISSN (Print): 1459-2045  
Electronic versions:  
niittynen\_1291  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3515-4>

#### Bibliographical note

Awarding institution: Tampere University of Technology  
Versio ok 16.12.2015  
Research output: Book/Report › Doctoral thesis › Collection of Articles

#### Compensation of PV generator output power fluctuations with energy storage systems

Photovoltaic generators (PVG) suffer from short-term intermittency of output power. With significant penetration of PV this intermittency can lead to power systems instability and power quality problems. Energy storage systems (ESS) can be used to compensate PV power fluctuations in order to mitigate these problems. In this paper ESS behavior, control and sizing have been investigated to mitigate instabilities caused by PV power plants operating in Northern European conditions through simulations that utilize measurements from the Tampere University of Technology (TUT) Solar PV power station research plant. Continuous synchronized measurements have been recorded with the irradiance and PV module temperature sensor network with a 10 Hz sampling frequency since June 2011. The ESS capacity and power requirements are derived from the simulations for different PVG sizes and PV power ramp rate (RR) limits. The results show how both capacity and power requirements decrease as functions of the RR limit and the PVG size. Also, interesting differences have been noticed compared to similar studies done in Southern European climate, which indicate that the operational climate of the PVG can have an effect on ESS sizing.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electrical Engineering, Research area: Power engineering, Tampere University of Technology  
Contributors: Schnabel, J., Valkealahti, S.  
Number of pages: 5  
Pages: 2177-2181  
Publication date: 14 Sep 2015

#### Host publication information

Title of host publication: 31st European Photovoltaic Solar Energy Conference and Exhibition (31st EU PVSEC), 14– 18 September, 2015, Hamburg, Germany  
ISBN (Print): 3-936338-39-6  
ASJC Scopus subject areas: Energy(all)  
DOIs:  
10.4229/EUPVSEC20152015-5BV.2.6  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Competence portfolio assessment of research and development center for regional development

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations  
Contributors: Salminen, V., Kantola, J. I., Vanharanta, H.

Number of pages: 9  
Pages: 701-708  
Publication date: 2015

#### Host publication information

Title of host publication: 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015  
Publisher: Elsevier

#### Publication series

Name: Procedia Manufacturing  
Volume: 3  
ISSN (Print): 2351-9789  
DOIs:

10.1016/j.promfg.2015.07.310

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Complex-domain sparse imaging in terahertz pulse time-domain holography with balance detection

Terahertz pulse time-domain holography (THz PTDH) is an ultimate technique both for the measurement of object optical properties and broadband wavefront sensing. However, THz PTDH has valuable restriction connected with low signal-to-noise ratio which becomes a serious issue in coherent measurements. This noise problem could be solved by filtering with use of modern block-matching algorithms based on nonlocal similarity of small patches of images existing in investigated objects. Here we present the study on the use of denoising algorithms applied for hyperspectral THz data in the spatio-temporal and spatial-spectral domain. We provide a numerical simulation of denoising in case of broadband uniform topologically charged (BUTCH) beam of pulsed THz radiation.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Computing Sciences, ITMO University  
Contributors: Kulya, M. S., Katkovnik, V., Egiazarian, K., Petrov, N. V.  
Publication date: 2020

#### Host publication information

Title of host publication: Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications XIII  
Publisher: SPIE  
Editors: Sadwick, L. P., Yang, T.  
Article number: 1127921  
ISBN (Electronic): 9781510633216

#### Publication series

Name: Proceedings of SPIE  
Volume: 11279  
ISSN (Print): 0277-786X  
ISSN (Electronic): 1996-756X  
ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering  
Keywords: Hyperspectral data denoising, Pulse time-domain holography, Sparse imaging, THz radiation  
DOIs:  
10.1117/12.2549001

#### Bibliographical note

jufoid=71479  
Source: Scopus  
Source ID: 85083756750  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Complexity and Digitalisation of Cities - Challenges for Urban Planning and Design: Conference Proceedings of 13th AESOP Complexity and Planning Thematic Group Meeting 15th-16th January 2015, Tampere, Finland

#### General information

Publication status: Published  
MoE publication type: C2 Edited books  
Organisations: School of Architecture, Research group: Urban Planning Theory  
Contributors: Partanen, J. (ed.)

Number of pages: 226

Publication date: 2015

### Publication information

Publisher: Tampere University of Technology. School of Architecture

ISBN (Electronic): 978-952-15-3711-0

Original language: English

Electronic versions:

AESOP\_PC2015\_PROCEEDINGS

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3711-0>

Research output: Book/Report › Anthology › Scientific › peer-review

### Composite Nonlinear Feedback Control of a Chemical Reactor

This paper studies the application of composite nonlinear feedback (CNF) control for a continuous time stirred tank reactor. Inside the reactor, an exothermic chemical reaction occurs, which requires cooling when concentration is commanded from low to high conversion rate to prevent a thermal runaway. A full-state CNF controller is designed for adjusting the temperature of the cooling jacket using concentration and temperature measurements. A continuous time gain-scheduled cascade controller, as well as a model predictive controller (MPC) is also fabricated for comparison. The gain-scheduled cascade controller has a proportional-integral (PI) controller as a primary loop controller, and a P-controller as a secondary loop controller. The simulation results show that the CNF controller is able to offer the best overall tracking performance as measured by the integral-of-absolute-error (IAE) criterion. In addition, the CNF controller does not need gain-scheduling for tuning purposes; the CNF controller is capable of changing its tuning as a function of control error only.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research area: Information Systems in Automation, Research area: Dynamic Systems, Department of Automation Science and Engineering

Contributors: Pyrhönen, V., Koivisto, H.

Publication date: 18 Mar 2015

### Host publication information

Title of host publication: Proceedings of AutomaatioXXI, The Industrial Revolution of Internet – From Intelligent Devices to Networked Intelligence

Place of publication: Helsinki, Finland

Publisher: Suomen Automaatioseura ry

ISBN (Electronic): 978-952-5183-46-7

### Publication series

Name: SAS julkaisusarja

Publisher: Finnish Society of Automation

Volume: 44

Keywords: exothermic reaction, nonlinear control, nonlinear dynamics, cascade control

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Comprehensive survey of similarity measures for ranked based location fingerprinting algorithm

Ranked Based Fingerprinting uses only ordering indices instead of actual Wi-Fi RSS values in order to make the algorithm insensitive to devices. A key component of the RBF algorithm is a similarity measure which is used to compare and find the closest ranked fingerprints. Previous papers study a few similarity measures; here we study 49 similarity measures in a test with a benchmark with publicly available indoor positioning database. For different similarity measures the positioning accuracy varies from 15.80 m to 55.22 m. The top 3 similarity measures are Lorentzian, Hamming and Jaccard. Hamming and Jaccard similarity measures have been studied in other papers while Lorentzian had not been studied with that kind of problems.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Automation and Hydraulic Engineering, Signal Processing, Research group: Positioning

Contributors: Minaev, G., Visa, A., Piche, R.

Number of pages: 4

Publication date: 2017

### Host publication information

Title of host publication: Indoor Positioning and Indoor Navigation (IPIN), 2017 International Conference on

Publisher: IEEE  
ISBN (Electronic): 978-1-5090-6299-7  
Electronic versions:  
MinaevCamera  
DOIs:  
10.1109/IPIN.2017.8115922  
URLs:  
<http://urn.fi/URN:NBN:fi:tty-201711292281>

#### **Bibliographical note**

JUFOID=72210

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Computational modelling of high-cycle fatigue using a continuum based model**

In this paper a computational implementation of continuum based transversally isotropic fatigue model is described. The key idea of the continuum based HCF-model is the moving endurance surface where the movement is described by a back stress type tensor, the evolution of which is described by a rate type equation. Furthermore, damage accumulation is also governed with a rate type evolution equation. The model is implemented in the Abaqus FE-program using the user material subroutine. Two strategies to perform a fatigue analysis are compared in a standard cycling loading case. The first analysis reflects the procedure used in a standard fatigue computation. In the second analysis type the effect of evolving damage fields on fatigue life is investigated.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics

Contributors: Holopainen, S., Kouhia, R., Könnö, J., Saksala, T.

Number of pages: 4

Pages: 71-74

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the NSCM28 : 28th Nordic Seminar on Computational Mechanics, October 22 – 23, 2015, Tallinn, Estonia

ISBN (Print): 978-9949-430-95-6

ISBN (Electronic): 978-9949-430-96-3

Electronic versions:

Holopainen\_et\_al\_NSCM28

URLs:

[http://www.ioc.ee/nscm28/files/Proceedings\\_of\\_NSCM28.pdf](http://www.ioc.ee/nscm28/files/Proceedings_of_NSCM28.pdf)

<http://urn.fi/URN:NBN:fi:tty-201610194608>

#### **Bibliographical note**

oa 2015 Holopainen et al tarkistettu 19.10.2016 /KK

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### **Computational wavelength resolution for in-line lensless holography: Phase-coded diffraction patterns and wavefront group-sparsity**

In-line lensless holography is considered with a random phase modulation at the object plane. The forward wavefront propagation is modelled using the Fourier transform with the angular spectrum transfer function. The multiple intensities (holograms) recorded by the sensor are random due to the random phase modulation and noisy with Poissonian noise distribution. It is shown by computational experiments that high-accuracy reconstructions can be achieved with resolution going up to the two thirds of the wavelength. With respect to the sensor pixel size it is a super-resolution with a factor of 32. The algorithm designed for optimal superresolution phase/amplitude reconstruction from Poissonian data is based on the general methodology developed for phase retrieval with a pixel-wise resolution in V. Katkovnik, "Phase retrieval from noisy data based on sparse approximation of object phase and amplitude", <http://www.cs.tut.fi/~lasip/DDT/index3.html>.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Department of Photonics and Optical Information Technology, ITMO University

Contributors: Katkovnik, V., Shevkunov, I., Petrov, N. V., Egiazarian, K.

Publication date: 2017

### Host publication information

Title of host publication: Digital Optical Technologies 2017

Publisher: SPIE

Article number: 1033509

ISBN (Electronic): 9781510611153

### Publication series

Name: Proceedings of SPIE

Volume: 10335

ISSN (Print): 0277-786X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Discrete optical signal processing, Image processing, Noise in imaging systems, Phase retrieval, Superresolution

DOIs:

10.1117/12.2269327

### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85030715279

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Computer-supported collaborative learning: Praxes in new cell-oriented configurable PC-classroom

Currently, technology-enhanced learning environments are a research hotspot in engineering education. Universities invest in modern environments equipped with the newest audiovisual hardware, computers and web-technologies. These environments support learner-centred model of education, which highlights active role of learners, learning-by-doing, and collaborative learner autonomy in a democratic atmosphere. Therefore, traditional teacher-led classrooms can be transformed to more diverse and more creative environments in which teachers and learners have relatively different roles compared with the traditional classroom.

In this paper, we present layout, construction and hardware of our newly developed technology-mediated, configurable, and cell-oriented PC-classroom, which play a key role in our teaching development. We exemplify how the classroom has helped us to improve our automation science and control engineering education. To be more specific, we have adopted the well-known concept of computer-supported collaborative learning (CSCL), which concerns how students can learn together with the help of computers. We also demonstrate how redefining and redesigning the nature of activities occurring in modern learning environments can improve the effectiveness of contact teaching, and hence, allow learning episodes to be more impactful compared with the traditional teacher-led classroom. We would like to pinpoint that redefinition and redesign have allowed us, as teachers, to take the position of a facilitating guide, or mentor, which work in close cooperation with students, and thereby, is able to strengthen the knowledge level of students through intellectual face-to-face discussion as well as through technology-supported communication.

Furthermore, our new classroom has enabled hands-on, competitive, cyber-physical attack-defence events to be conducted, which improve our automation security training. The events have invited participants from industry and academia, but most importantly, they have involved students. During the events, we have offered opportunities for students to make demonstration-of-skills to the participants from business. As a consequence, the new environment has enabled acts of openings for university-business cooperation in terms of education and recruit, free of charge. To our experience and according to student feedback, our redefined ways of conducting teaching has improved student motivation as well as increased their timely investment towards learning activities, which has eventually translated to better grades and overall satisfaction.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Information Systems in Automation

Contributors: Pyrhönen, V., Seppälä, J., Salmenperä, M.

Number of pages: 9

Publication date: 2016

### Host publication information

Title of host publication: SEFI conference 2016 : Engineering Education on Top of the World: Industry University Cooperation

ISBN (Electronic): 9782873520144

ASJC Scopus subject areas: Education

Keywords: Computer-Supported Collaborative Learning, Learner-Centred Learning, Learning Environment, Teaching Technology



Electronic versions:

computer\_supported\_collaborative\_learning\_2016

URLs:

<http://sefibenvwh.cluster023.hosting.ovh.net/wp-content/uploads/2017/09/pyrhonen-computer-supported-collaborative-learning-praxes-223.pdf>

<http://urn.fi/URN:NBN:fi:tuni-201912307142>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Computer vision aided navigation systems**

The paper considers the possible use of computer vision systems for INS aiding. Two methods of navigation data obtaining from the image sequence are analyzed. The first method uses the features of architectural elements in indoor and urban conditions for generation of object attitude parameters. The second method is based on extraction of general features in the image and is more widely applied. Besides the orientation parameters, the second method estimates the object displacement, and thus can be used as visual odometry technique. The described algorithms can be used to develop small-sized MEMS navigation systems efficiently operating in urban conditions.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research group: Positioning, ITMO University

Contributors: Davidson, P., Merkulova, I.

Number of pages: 3

Pages: 560-562

Publication date: 2016

### **Host publication information**

Title of host publication: 23rd Saint Petersburg International Conference on Integrated Navigation Systems, ICINS 2016 - Proceedings

Publisher: State Research Center of the Russian Federation

ISBN (Electronic): 9785919950370

ASJC Scopus subject areas: Computer Networks and Communications, Signal Processing, Electrical and Electronic Engineering, Information Systems

Keywords: Camera, Computer vision, Data fusion, Image processing, Inertial system, Orientation

URLs:

<http://www.scopus.com/inward/record.url?scp=84979499890&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84979499890

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Concentration and composition gradients of exhaust and non-exhaust particles near a major road**

### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, Helsinki Region Environmental Services Authority (HSY), Department of Environmental Sciences, Helsinki University, Metropolia University of Applied Science, Metropolia University of Applied Sciences, Atmospheric Composition Research, Finnish Meteorological Institute

Contributors: Niemi, J. V., Saarikoski, S., Pirjola, L., Taimisto, P., Pulkkinen, A., Yli-Tuomi, T., Lanki, T., Kousa, A., Enroth, J., Kuuluvainen, H., Rönkkö, T., Hillamo, R.

Publication date: 2015

### **Host publication information**

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

### **Bibliographical note**

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Conceptualization of hackathon for innovation management**

Although hackathons have become a popular phenomenon beyond the IT industry, the current use of the concept is ambiguous. However, concept definitions are essential building blocks of theory. Therefore, this paper addresses the hackathon as a concept. Following the conceptualization model of Podsakoff et al. (2016), this paper studies the attributes of the hackathon concept. Specifically, it focuses on the necessary and sufficient concept structure of the hackathon as a

phenomenon and presents the eight necessary and sufficient attributes of the hackathon. Moreover, it proposes three main categories for the eight attributes, i.e. the concepts of 1) short time-bounded event, 2) coopetition, and 3) radical collocation. Furthermore, this exploratory paper defines the hackathon as an innovation contest. The results will benefit both academics studying hackathons and companies who aim to enhance their innovation management, especially in the fuzzy front end of innovation.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Information and Knowledge Management, Häme University of Applied Sciences, HAMK University of Applied Sciences, curlabs ab

Contributors: Halvari, S., Suominen, A., Jussila, J., Jonsson, V., Bäckman, J.

Number of pages: 17

Publication date: 16 Jun 2019

#### Host publication information

Title of host publication: The proceedings of The XXX ISPIM INNOVATION CONFERENCE - Celebrating Innovation - 500 Years Since Da Vinci The International Society for Professional Innovation Management : 16-19 June 2019 - Florence, Italy

Volume: 93

Place of publication: Florence Italy

Publisher: The International Society for Professional Innovation Management (ISPIM)

Editors: Bitran, I., Conn, S., Gernreich, C., Heber, M., Huizingh, K., Kokshagina, O., Torkkeli, M., Tynnhammer, M.

ISBN (Print): 978-952-335-351-0

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Consensus building in the pre-design phase of building projects

Building projects are unique manoeuvres in which numerous participants who possess different skills work together to complete various tasks. Working processes vary in complexity from simple to very complex. Although the building construction sector has traditional ways of structuring projects, project management professionals are continuously seek new process models and ways to cooperate between people and project participants. This paper focuses on processes in the pre-planning phase of a building project and is based on exploratory study where the conceptual and empirical literature about construction processes and decision-making were reviewed. Over thirty existent models were identified and thirteen of these models, which take a decision making into account, were more closely studied. In addition, decision-making models in other fields were surveyed. Using a hermeneutic cycle approach, the aim of this paper is to investigate a preferable model for the pre-planning phase of construction projects that can produce the main objectives, which is to best serve the end user and the project as a whole. As a final result a new model in the case of the pre-design phase of the building process is introduced and discussed. This paper asks what we have learnt from these foci.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector, Research group: Capacity Development of Water and Environmental Services CADWES, Research area: Construction Management and Economics, Research group: Real estate development

Contributors: Keinänen, M., Uotila, U., Sorri, J., Teriö, O., Kähkönen, K.

Number of pages: 12

Pages: 561-572

Publication date: 2016

#### Host publication information

Title of host publication: WBC16 Proceedings of the CIB World Building Congress 2016 Volume II : Environmental Opportunities and challenges, Constructing commitment and acknowledging human experiences

Volume: Volume II

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Prins, M., Wamelink, H., Giddings, B., Ku, K., Feenstra, M.

ISBN (Electronic): 978-952-15-3741-7

#### Publication series

Name: Tampere University of Technology. Department of Civil Engineering. Construction Management and Economics.

ISSN (Print): 1797-8904

Keywords: consensus building, target setting, decision-making, construction project management, pre-design phase

URLs:

[https://tutcris.tut.fi/portal/files/6186797/WBC16\\_Vol\\_2.pdf](https://tutcris.tut.fi/portal/files/6186797/WBC16_Vol_2.pdf)

URLs:

### **Constrained Long-Horizon Direct Model Predictive Control for Synchronous Reluctance Motor Drives**

A finite control set model predictive control strategy for the control of the stator currents of a synchronous reluctance motor driven by a three-level neutral point clamped inverter is presented in this paper. The presented algorithm minimizes the stator current distortions while operating the drive system at switching frequencies of a few hundred Hertz. Moreover, the power electronic converter is protected by overcurrents and/or overvoltages owing to a hard constraint imposed on the stator currents. To efficiently solve the underlying integer nonlinear optimization problem a sphere decoding algorithm serves as optimizer. To this end, a numerical calculation of the unconstrained solution of the optimization problem is proposed, along with modifications in the algorithm proposed in [1] so as to meet the above-mentioned control objectives. Simulation results show the effectiveness of the proposed control algorithm.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electrical Energy Engineering, Research group: Power electronics, Universita degli Studi di Padova, Italy, Technische Universitat Munchen

Contributors: Ortombina, L., Liegmann, E., Karamanakos, P., Tinazzi, F., Zigliotto, M., Kennel, R.

Number of pages: 8

Publication date: 10 Sep 2018

#### **Host publication information**

Title of host publication: 2018 IEEE 19th Workshop on Control and Modeling for Power Electronics, COMPEL 2018

Publisher: IEEE

Article number: 8460173

ISBN (Print): 9781538655412

ASJC Scopus subject areas: Modelling and Simulation, Energy Engineering and Power Technology, Electrical and Electronic Engineering, Control and Optimization

DOIs:

10.1109/COMPEL.2018.8460173

#### **Bibliographical note**

JUF0ID=79370

Source: Scopus

Source ID: 85054503298

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Constrained PSK: Energy-efficient modulation for Sub-THz systems**

Deploying sub-THz frequencies for mobile communications is one timely research area, due to the availability of very wide and contiguous chunks of the radio spectrum. However, at such extremely high frequencies, there are large challenges related to, e.g., phase noise, propagation losses as well as to energy-efficiency, since generating and radiating power with reasonable efficiency is known to be far more difficult than at lower frequencies. To address the energy-efficiency and power amplifier (PA) nonlinear distortion related challenges, modulation methods and waveforms with low peak-to-average-power ratio (PAPR) are needed. To this end, a new modulation approach is formulated and proposed in this paper, referred to as constrained phase-shift keying (CPSK). The CPSK concept builds on the traditional PSK constellations, while additional constraints are applied to the time domain symbol transitions in order to control and reduce the PAPR of the resulting waveform. This new modulation is then compared with pulse-shaped  $\pi/2$ -BPSK and ordinary QPSK, in the discrete Fourier transform (DFT) spread orthogonal frequency division multiplexing (DFT-s-OFDM) context, in terms of the resulting PAPR distributions and the achievable maximum PA output power, subject to constraints in the passband waveform quality and out-of-band emissions. The obtained results show that the proposed CPSK approach allows for reducing the PAPR and thereon for achieving higher PA output powers, compared to QPSK, while still offering the same spectral efficiency. Overall, the CPSK concept offers a flexible modulation solution with controlled PAPR for the future sub-THz networks.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electrical Engineering, Research group: Wireless Communications and Positioning

Contributors: Nasarre, I. P., Levanen, T., Valkama, M.

Number of pages: 7

Publication date: 2020

#### **Host publication information**

Title of host publication: 2020 IEEE International Conference on Communications Workshops, ICC Workshops 2020 - Proceedings

Publisher: IEEE  
ISBN (Print): 978-1-7281-7441-9  
ISBN (Electronic): 9781728174402

#### Publication series

Name: IEEE/CIC international conference on communications in China - workshops

ISSN (Print): 2474-9133

ISSN (Electronic): 2474-9141

ASJC Scopus subject areas: Artificial Intelligence, Computer Networks and Communications, Signal Processing, Information Systems and Management, Control and Optimization

Keywords: 5G New Radio (NR) evolution, DFT-s-OFDM, Energy-efficiency, Modulation, PAPR, Power amplifiers, Sub-THz communications

DOIs:

10.1109/ICCWorkshops49005.2020.9145132

#### Bibliographical note

JUF0ID=88220

Source: Scopus

Source ID: 85090293993

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Consumer acceptance in new service innovation: Enhancing consumer durables with new product-related services.

Manufacturing companies are increasingly offering services to gain benefits in the competitive markets but also to reach closer contact with their customers. However, customer acceptance of the new services defines whether the manufacturers succeed in their service launches or if the investments have been misspent. The importance of customer acceptance has been noticed widely in the previous literature but the research has not really extended to the domain of product-related consumer services. This paper contributes to this literature by discussing consumer acceptance of a product-related service but also acceptance of a manufacturer as a service provider. The focus is on a service enhancing consumer durable provided by a manufacturer through retailer network. The data was collected in two phases; preliminary data by

interviews realized in one country and the actual data set by questionnaire carried out in two other countries. This study shows that the customer acceptance of product-related service is not self-evident. Considering customer's earlier service usage, brand loyalty, and trialability of the service innovation are important in service acceptance. Surprisingly, respondent's age and gender affected only rarely customers' perceptions and wishes for services from manufacturers even though these factors have been found important in some other studies. As a conclusion, manufacturers introducing service innovations need to strive to enhance consumers' service acceptance by providing information about the service for potential customers, facilitating service deployment and use as well as ensuring smooth service implementation.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Vaittinen, E., Nenonen, S.

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the 22nd Innovation Product Development Management Conference (IPDMC)

#### Publication series

Name: International Product Development Management Conference

ISSN (Print): 1998-7374

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Consumers' Views on Eco-Friendliness as a Dimension of a High-Tech Brand

High-tech companies are facing the need to perform deeper analysis of how consumers view the eco-friendliness of their brands, in order to create green product and marketing strategies. The focus of this paper is to study whether consumers associate eco-friendliness with high-tech brands, and what kinds of consumers are most pro-environmental based on demographics. The key finding of this research is that consumers consider also eco-friendly aspects when reflecting on high-tech brands on four dimensions also used to measure general brand experience: the sensory, affective, behavioral and intellectual dimensions [1]. Demographically, women consider eco-friendliness more in association with high-tech brands than men across all of the four brand experience dimensions. In addition, mature consumers consider on the intellectual and sensory brand dimensions more eco-friendly aspects than young consumers. There are no statistically significant differences in the responses based on the educational background of the respondents.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research

Contributors: Saari, U., Mäkinen, S., Alinikula, P.

Number of pages: 8

Pages: 1-8

Publication date: 17 Nov 2014

### Host publication information

Title of host publication: Going Green - CARE INNOVATION 2014

Publisher: SAT Austrian Society for Systems Engineering and Automation

Article number: 067

URLs:

<http://www.4980.timewarp.at/CARE/CI2014/index.html>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### Contact analysis included in a 3D FEA of tube splices

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Metal and Light-weight structures

Contributors: Perttola, H., Ronni, H., Heinisuo, M.

Publication date: 2014

#### Host publication information

Title of host publication: Eurosteel 2014 7th European conference on steel and composite structures

ISBN (Print): 978-92-9147-121-8

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Continuous-wave optical parametric oscillators for mid-infrared spectroscopy

The atmospheric window at 3 to 5  $\mu\text{m}$  is one of the most important spectral regions for molecular spectroscopy. This region accommodates strong fundamental vibrational spectra of several interesting molecules, including species relevant for air quality monitoring, medical diagnostics, and fundamental research. These applications require excellent spectroscopic sensitivity and selectivity. For example, atmospheric research often needs precise quantification of trace gas fractions of down to the parts-per-trillion level ( $10^{-12}$ ), with the capability of resolving individual spectral features of different molecular compounds. This sets stringent requirements for the light source of the spectrometer in terms of output power, noise, and linewidth. In addition, the wavelength tuning range of the light source needs to be large, preferably over the entire atmospheric window, in order to enable measurements of molecular fingerprints of several compounds. Continuous-wave optical parametric oscillators (CW-OPOs) are one of the few light sources that have the potential of combining all these favorable characteristics. This contribution summarizes our progress in the development of CW-OPOs, with an emphasis on precise frequency control methods for high-resolution molecular spectroscopy. Examples of new applications enabled by the advanced CW-OPO technologies will be presented. These examples include a demonstration of world-record detection sensitivity in trace gas analysis, as well as the first characterization of infrared spectrum of radioactive methane  $^{14}\text{CH}_4$ .

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Research group: Infrared Light Sources, University of Helsinki

Contributors: Vainio, M.

Publication date: 2020

#### Host publication information

Title of host publication: Nonlinear Frequency Generation and Conversion : Materials and Devices XIX

Publisher: SPIE

Editors: Schunemann, P. G., Schepler, K. L.

Article number: 1126419

ISBN (Print): 9781510632912

ISBN (Electronic): 9781510632929

#### Publication series

Name: Proceedings of SPIE - The International Society for Optical Engineering

Volume: 11264

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Infrared spectroscopy, Molecular spectroscopy, Nonlinear optics, Optical frequency conversion

DOIs:

10.1117/12.2548711

#### **Bibliographical note**

jufoid=71479

Source: Scopus

Source ID: 85084182629

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Continuum approach for modeling fatigue in amorphous glassy polymers. Applications to the investigation of damage mechanisms in polycarbonate**

In this study, we attempt to elucidate how the various micro-mechanisms contribute to the fatigue development in an amorphous glassy matrix. To investigate this issue, we propose an approach suitable for modeling fatigue in amorphous polymers. The studies are based on finite element analyses of a dogbone-shaped test specimen featuring plastic instabilities and localization behavior.

Also discussed is the development of fatigue damage in toughened polymers, in view of dispersed particles. The results show that the fatigue damage initiates at the sites following closely the localization of the plastic deformations or instabilities, while the concentrated regions of hydrostatic stress were essentially different. The more rigid the inclusions are, the more intensive the damage growth in the ligaments between the inclusions, while the rigidity has no impact on the location of the matrix damage. On the basis of the results, the micro-mechanism which will trigger fatigue damage is discussed.

#### **General information**

Publication status: Published

Organisations: Department of Mechanical Engineering and Industrial Systems

Contributors: Holopainen, S., Kouhia, R.

Publication date: 28 Oct 2016

Peer-reviewed: Unknown

Event:

URLs:

<http://www.chalmers.se/en/conference/nscm29/Pages/default.aspx>

Research output: Other conference contribution > Paper, poster or abstract > Scientific

#### **Control of Electric Vehicle Charging in Domestic Real Estates as Part of Demand Response Functionality**

The paper discusses an electric vehicle (EV) charging control method enabling flexible high-power charging in domestic real estates. In the method, the charging current(s) of an EV is adjusted in accordance of the free capacity between maximum current limit and the non-EV load current(s). This kind of harging is simulated using long-lasting electricity consumption measurements and is also demonstrated with a real commercial charging station and an EV. The simulations and the real world demonstration show that the method works well and is very flexible. However, if it is widely used, its impacts on distribution grids are not favorable from distribution system operator (DSO) point-of-view. Power based distribution tariffs, which are nowadays under active consideration by Finnish DSOs, could cope with this problem.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering, Lappeenranta University of Technology

Contributors: Rautiainen, A., Lummi, K., Järventausta, P., Tikka, V., Lana, A.

Publication date: 2016

#### **Host publication information**

Title of host publication: Cired Workshop 2016

Article number: 0240

ISBN (Electronic): 978-1-78561-202-2

URLs:

[http://www.cired.net/publications/workshop2016/pdfs/CIRED2016\\_0240\\_final.pdf](http://www.cired.net/publications/workshop2016/pdfs/CIRED2016_0240_final.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Convolutional Recurrent Neural Networks for Rare Sound Event Detection**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: Audio research group - ARG

Contributors: Cakir, E., Virtanen, T.

Pages: 27-31

Publication date: 2017

### **Host publication information**

Title of host publication: Proceedings of the Detection and Classification of Acoustic Scenes and Events 2017 Workshop (DCASE2017)

Publisher: Tampere University of Technology. Laboratory of Signal Processing

ISBN (Electronic): 978-952-15-4042-4

URLs:

<http://urn.fi/URN:ISBN:978-952-15-4042-4>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Coopetition and company performance**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: University of Vaasa (UVA), University of Vaasa

Contributors: Helander, N., Vesalainen, J., Juha, P.

Publication date: 2 Sep 2015

### **Host publication information**

Title of host publication: IMP 2015 Conference

URLs:

[http://www.impgroup.org/paper\\_view.php?viewPaper=8479](http://www.impgroup.org/paper_view.php?viewPaper=8479)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Core Project Team As a Management Entity for Construction Projects**

The complexity of constructed facilities and the high degree of specialisation in design and construction generates very fragmented working environment for the construction project. Construction project organisations are built up from the units of organisations and they have arranged rules and procedures about how practicalities are to be done. A current perception of construction management is widely built around power, authority, and task orientation. This is resulting from the traditional focus of the construction industry on the technical and managerial features of construction projects.

Organisations of construction projects vary substantially in their structure and this structure has considerable consequences to outcomes. Therefore, project management professionals continuously seek and establish new organisational and management structures and linkages to facilitate imperative cooperation between people and project partners. New understanding and amendments are broadening the content of construction project management and have provided new insights for successful construction operations. This paper is based on research according to this continuum by having focus on the appearances of management entity of a new kind, its significance and roles as a part of construction project management. The paper sought to summarize this literature and the survey study by focusing on the project management entity "core project team", later "core team". Drawing from this inclusive, the phenomenon of core team, the authors approach the field through six attributes, which have been selected to describe the new way for organising project management.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Digitalization in the real estate and construction sector

Contributors: Keinänen, M., Kähkönen, K.

Number of pages: 10

Pages: 208-217

Publication date: 2018

Peer-reviewed: Yes

### Publication information

Journal: In\_bo: Ricerche e progetti per il territorio, la città e l'architettura. Construction Management

Volume: 9

Issue number: 13

ISSN (Print): 2036-1602

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering

Keywords: Core project team, Core team, Construction management, Construction project, Construction teams

Electronic versions:

Core Project Team As a Management Entity for Construction Projects

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[https://in\\_bo.unibo.it/issue/view/751/showToc](https://in_bo.unibo.it/issue/view/751/showToc)

<http://urn.fi/URN:NBN:fi:ty-201901281176>

Research output: Contribution to journal > Article > Scientific > peer-review

### Cost- and time-effective sewing patterns for embroidered passive UHF RFID tags

Embroidery is an efficient method for the fabrication of textile antennas. We studied the effects of reducing the amount of conductive thread to achieve savings in material costs and the effects of the sewing pattern on the wireless performance of embroidered passive UHF RFID tags on two different fabric substrates. The antennas were sewed on cotton and polyamide fabrics, the ICs were attached to the embroidered antennas with a conductive adhesive, and the wireless performance of the ready-made textile RFID tags was evaluated through measurements. The fabric parameters were found to have a major effect on the tag performance. Based on our results, significant amounts of time and conductive yarn can be saved in the embroidery of RFID tag antennas by only partially sewing the tag antenna.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: BioMediTech, Faculty of Biomedical Sciences and Engineering, Research group: Wireless Identification and Sensing Systems Research Group

Contributors: Brechet, N., Ginestet, G., Moradi, E., Ukkonen, L., Torres, J., Björninen, T., Virkki, J.

Pages: 30-33

Publication date: 1 Mar 2017

### Host publication information

Title of host publication: Proceedings of IEEE 2017 International Workshop on Antenna Technology

Publisher: IEEE

ISBN (Electronic): 978-1-5090-5176-2

Electronic versions:

PID4547891

DOIs:

10.1109/IWAT.2017.7915289

URLs:

<http://urn.fi/URN:NBN:fi:ty-201712202422>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Cost optimization of end-plate connections

Minimum cost beam-to-column end-plate joints are determined in this study. The goal is to achieve partial automation of the time-consuming joint design. The premise is that the joint is to be designed for target bending moment and shear force resistance and initial rotational stiffness. It is assumed that the designer has prescribed the beam and column profiles and the initial rotational stiffness a priori. The joint design task is formulated as a mathematical optimization problem, where the total cost of the joint is minimized such that the resistance and stiffness requirements are satisfied. The component method described in the standard EN 1993-1-8 is used for evaluating the bending resistance and initial rotational stiffness of the joint. The end-plate dimensions and bolt positions are taken as the design variables of the optimization problem. The number of bolt rows, bolt sizes and bolt strength are incorporated as parameters with fixed values during optimization. The applicability and performance of the proposed approach for joint cost minimization is demonstrated on case studies, with a comparison to an alternative procedure found in the literature. The results indicate that mathematical optimization provides a useful tool for design automation of steel joints.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication



Organisations: Civil Engineering, Research group: Metal and Light-wight structures, AINS Group  
Contributors: Mela, K., Hietaharju, L.  
Number of pages: 6  
Pages: 349-354  
Publication date: 16 Sep 2019

#### Host publication information

Title of host publication: Proceedings of Nordic Steel 2019 : CE/papers Special Issue  
Volume: 3  
Publisher: Wilhelm Ernst und Sohn

#### Publication series

Name: CE/papers  
ISSN (Electronic): 2509-7075  
DOIs:

10.1002/cepa.1065

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Creating sustainable value in manufacturing operations: the role of an external service provider

Manufacturing companies need to fulfill sustainability requirements in their operations. Previous research has not covered external service providers' sustainability-oriented cooperation with manufacturing firms sufficiently. The purpose is to develop new knowledge on ways to create sustainable value as part of manufacturing operations, particularly in cooperation with an external service provider. We conducted a qualitative study with two companies and mapped the activities in sustainable value creation. The results reveal a strategic approach to sustainable value, creation of sustainability by continuous improvement and development projects, and enhanced sustainable value creation through an industrial symbiosis with the external service provider.

#### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services  
Contributors: Martinsuo, M., Kivilä, J., Heikkilä, J.  
Publication date: 2015

#### Host publication information

Title of host publication: 22nd EurOMA Conference : Operations management for sustainable competitiveness  
Place of publication: Switzerland  
Publisher: European Operations Management Association  
Keywords: Sustainability, Manufacturing, Service providers  
URLs:

<http://www.euroma2015.org/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

#### Cross-Cultural Design of Mobile Mathematics Learning Service for South African Schools

In the era of mobile devices and services, researchers in the educational domain have been interested in how to support learning with mobile technology in both local and global contexts. Recent human-computer interaction (HCI) research in the educational domain has particularly focused on how to develop mobile learning services and how to evaluate the learning outcomes. However, learning occurs in a local cultural context and the impact of culturally sensitive issues of the design of mobile learning needs more attention. We studied mobile mathematics learning -service in a longitudinal research with over 30 South African schools during three years. Our aim was to understand culturally dependent issues which need to be taken into consideration in the design of mobile learning services. We found subjective and objective culturally dependent issues in the content, context, infrastructure and technology of mobile learning and therefore, subjects to cross-cultural research. In conclusion, we argue that localization enhances the user experience and therefore support learning.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Pervasive Computing, Research area: User experience, University of Tampere  
Contributors: Vainio, T., Walsh, T., Varsaluoma, J.  
Number of pages: 12  
Pages: 81-93  
Publication date: 2015  
Peer-reviewed: Yes

### Publication information

Journal: IADIS International Journal on WWW/Internet

Volume: 12

Issue number: 1

ISSN (Print): 1645-7641

Original language: English

Keywords: Cross-Cultural Design, Mobile Learning, Cultural Context, Subjective and Objective Culture

URLs:

<http://www.iadisportal.org/ijwi/papers/2014121106.pdf>

### Bibliographical note

EXT="Vainio, Teija"

Research output: Contribution to journal > Article > Scientific > peer-review

## Crossing Boundaries for Learning – through Technology and Human Efforts

### General information

Publication status: Published

MoE publication type: C1 Separate scientific books

Organisations: University of Helsinki

Contributors: Niemi, H., Multisilta, J., Löfström, E.

Publication date: 2014

### Publication information

Publisher: CICERO Learning Network, University of Helsinki

ISBN (Print): 978-952-10-9878-9

Original language: Undefined/Unknown

Keywords: 516 Educational sciences

Source: Bibtex

Source ID: urn:8ca22e584c9a353efda0aea3cc9fbf1d

Research output: Book/Report > Book > Scientific > peer-review

### Crowdsourcing in Business-to-Business Markets: A Value Creation and Business Model Perspective

The foundation for the analysis of this chapter builds on the value creation model of Amit and Zott (2001), where they studied the importance of sources of value creation in the field of electronic business. This model was chosen for the purposes of this study because it is developed from fundamental value creation models and dominates concerning value creation in e-business, of which crowdsourcing by utilizing social media tools represents also. Moreover, Amit and Zott's business model (2001, p. 511), which focuses on e-business for B2C companies, can be adapted for all virtual markets in general, and also applies to B2B companies (2006, p. 20). Most importantly, the model enables to analyze the relations between value creation and business model. In next, the theoretical background of value creation is opened up especially in the context of business-to-business markets, and furthermore, the model of Amit and Zott (2001) is presented. Lastly, crowdsourcing in business-to-business markets as the research context of the present study is discussed.

### General information

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)

Contributors: Bernhardt, J., Helander, N., Jussila, J., Kärkkäinen, H.

Number of pages: 11

Pages: 933-943

Publication date: Apr 2016

### Host publication information

Title of host publication: Encyclopedia of E-Commerce Development, Implementation, and Management

Place of publication: United States

Publisher: IGI Global

Article number: 66

ISBN (Print): 978-1-4666-9787-4

Keywords: Crowdsourcing, value creation, business model

Electronic versions:

Crowdsourcing in Business-to-Business Markets

DOIs:

10.4018/978-1-4666-9787-4.ch066

URLs:

<http://urn.fi/URN:NBN:fi:tty-201608084397>

URLs:

<http://www.igi-global.com/chapter/crowdsourcing-in-business-to-business-markets/149014>

Research output: Chapter in Book/Report/Conference proceeding > Chapter > Scientific > peer-review

### **CueSense: a Wearable Proximity-Aware Display Enhancing Encounters**

Wearable technology has been envisioned, amongst other things, to enhance face-to-face social interaction. For example, the visibility of wearable devices to other people (e.g. a wearable display) could augment the wearer's appearance by displaying public and socially relevant information about them. Such information could increase nearby people's awareness of the wearer, thus serve as tickets-to-talk and, ideally, enhance their first encounters. We present the design of CueSense, a wearable displays that shows textual content from the wearer's social media profiles, determined by the level of proximity to another user and match-making between their contents. We report the findings from a preliminary user study with 18 participants, followed by discussion as well as ideas for future research and further refinement of the concept.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: User experience, Augmented Human Activities (AHA), Tampere University of Technology

Contributors: Jarusriboonchai, P., Olsson, T., Prabhu, V., Väänänen-Vainio-Mattila, K.

Number of pages: 6

Publication date: 2015

#### **Host publication information**

Title of host publication: CHI EA '15 Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems

Publisher: ACM

ISBN (Print): 978-1-4503-3146-3

Electronic versions:

CueSense: A Wearable Proximity 2015

DOIs:

10.1145/2702613.2732833

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202004083148>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Culture-Aware Web Information System Development**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pori Department, Research group: Software Engineering and Intelligent Systems, Christian-Albrechts-Universität zu Kiel

Contributors: Jaakkola, H., Thalheim, B.

Number of pages: 18

Pages: 121-138

Publication date: 2015

#### **Host publication information**

Title of host publication: 25th International Conference on Information Modelling and Knowledge Bases EJC 2015 June 9-12, 2015, Maribor, Slovenia

Place of publication: Maribor

Publisher: University of Maribor, Faculty of Electrical Engineering and Computer Science

Editors: Welzer, T., Hölbl, M., Kiyoki, Y., Thalheim, B., Jaakkola, H.

ISBN (Electronic): 978-961-248-486-6

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Culture-Aware Web Information Systems in Dependence of Context**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication  
Organisations: Pervasive Computing, Christian-Albrechts-University Kiel  
Contributors: Jaakkola, H., Thalheim, B.  
Pages: 309-331  
Publication date: Jun 2017

#### Host publication information

Title of host publication: The Proceedings of the 27th International Conference on Information Modelling and Knowledge Bases

Publisher: Sirindhorn International Institute of Technology, Thammasat University, Thailand

Editors: Sornlertlamvanich, V., Chawakitchareon, P., Hansuebsai, A., Koopipat, C., Kiyoki, Y., Jaakkola, H., Thalheim, B., Yoshida, N.

ISBN (Electronic): 978-616-407-165-0

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Customer lifetime value in manufacturing services

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Cost Management Center

Contributors: Stormi, K., Laine, T., Suomala, P.

Publication date: 15 Jun 2016

##### Host publication information

Title of host publication: Proceedings of the Manufacturing Accounting Research Conference 2016 : Lisbon, Portugal, June 15-17, 2016

Place of publication: Belgium

Publisher: European Institute for Advanced Studies in Management EIASM

URLs:

[http://www.eiasm.org/frontoffice/event\\_announcement.asp?event\\_id=1155#4336](http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=1155#4336)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Customer Perceived Value - A Key in Marketing of Integrated Solutions

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Knowledge and Learning Research Center, Research group: Novi

Contributors: Helander, N., Sillanpää, V., Vuori, V., Uusitalo, O.

Pages: 37-42

Publication date: 3 Jun 2017

##### Host publication information

Title of host publication: The 5th International Conference on Strategic Innovative Marketing., At Athens, Greece, Volume: 5 : September 23-26, 2016

Publisher: Springer

Editors: Kavoura, A., Sakas, D., Tomaras, P.

ISBN (Electronic): 978-3-319-56288-9

##### Publication series

Name: Springer Proceedings in Business and Economics

ISSN (Print): 2198-7246

Electronic versions:

##### Integrated solutions

DOIs:

10.1007/978-3-319-56288-9\_6

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910033684>

URLs:

<http://www.icsim.net/>

##### Bibliographical note

jufoid=84314

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Customers' conscious experience in a coffee shop**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations

Contributors: Vanharanta, H., Kantola, J., Seikola, S.

Number of pages: 8

Pages: 618-625

Publication date: 2015

#### **Host publication information**

Title of host publication: 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015

Publisher: Elsevier

#### **Publication series**

Name: Procedia Manufacturing

Volume: 3

ISSN (Print): 2351-9789

Electronic versions:

Customers' Conscious Experience in a Coffee Shop

DOIs:

10.1016/j.promfg.2015.07.283

URLs:

<http://urn.fi/URN:NBN:fi:tty-201606064220>

#### **Bibliographical note**

EXT="Kantola, Jussi"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Customer value management framework for supply chains**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics

Contributors: Ala-Maakala, M., Liimatainen, H.

Number of pages: 10

Pages: 447-456

Publication date: 4 Jul 2016

#### **Host publication information**

Title of host publication: The proceedings of 21st international symposium on logistics (ISL 2016) : Sustainable transport and supply chain innovation, Kaohsiung, Taiwan 3-6 July 2016

Editor: Pawar, K.

ISBN (Electronic): 9780853583172

URLs:

<http://www.isl21.org/wp-content/uploads/2016/06/ISL-Proceedings-2016.pdf>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Customized service solutions for project business**

Project-based firms are supplementing their technology-based offerings with services, to build continuity into their customer relationships and add customer value. Project-related services can be offered using multiple business model options. Where different customers may require customized service solutions, suppliers need to consider whether and how they can customize service-related offerings efficiently. The purpose of this study to increase understanding on customization and the use of customer information in project-related service design and delivery processes. We employed a qualitative multiple-case research design, to explore the customization and use of customer information in project deliveries. The results show that companies engage in additive and subtractive customization in their project-related services, despite their increasing pursuit of standardization. They also engage in resource intensive search for customer information, while remote monitoring is foreseen as a strong option for the future. The results illustrate the need for

different approaches towards customization for different types of services and during the different stages of the project life cycle.

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Martinsuo, M., Momeni, K.

Number of pages: 21

Publication date: Aug 2015

#### **Host publication information**

Title of host publication: 23rd Nordic Academy of Management Conference 2015

Publisher: Nordic Academy of Management

Keywords: project business, services, customization, remote monitoring system

URLs:

<https://conference.cbs.dk/index.php/NFF2015/NFF2015/schedConf/presentations>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

#### **Cyclic quantum walks: Photonic realization and decoherence analysis**

Quantum walks serve as novel tools for performing efficient quantum computation and simulation. In a recent experimental demonstration [1] we have realized photonic quantum walks for simulating cyclic quantum systems, such as hexagonal lattices or aromatic molecules like benzene. In that experiment we explored the wave function dynamics and the probability distribution of a quantum particle located on a six-site system (with periodic boundary conditions), alongside with simpler demonstration of three- and four-site systems, under various initial conditions. Localization and revival of the wave function were demonstrated. After revisiting that experiment we will theoretically analyze the case of noisy quantum walks by implementing the bit-phase flip channel. This will allow us to draw conclusions regarding the performance of our photonic quantum simulation in noisy environments. Finally, we will briefly outline some future directions.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, University of Ottawa, Canada, National Research Council, Bar Ilan University, Massachusetts Institute of Technology

Contributors: Nejadstari, F., Zhang, Y., Jayakody, M. N., Bouchard, F., Larocque, H., Sit, A., Fickler, R., Cohen, E., Karimi, E.

Publication date: 2020

#### **Host publication information**

Title of host publication: Advanced Optical Techniques for Quantum Information, Sensing, and Metrology

Publisher: SPIE

Editors: Hemmer, P. R., Migdall, A. L., Hasan, Z. U.

Article number: 1129503

ISBN (Print): 9781510633537

ISBN (Electronic): 9781510633544

#### **Publication series**

Name: Proceedings of SPIE - The International Society for Optical Engineering

Volume: 11295

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Decoherence, Photonic quantum walks, Quantum simulation

DOIs:

10.1117/12.2546566

#### **Bibliographical note**

jufoid=71479

Source: Scopus

Source ID: 85084182226

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **D2D communications for mobile devices: Technology overview and prototype implementation**

The mobile devices of today evolve towards offering uninterrupted connectivity while attempting to achieve untethered mobility of their users. Further technological advances in hardware often lead to an increased data consumption. Combining these two factors, we notice that the data rates on the current Internet connections are starting to lag behind. Ultimately, we observe a mismatch between the data transfer rate requirements and the actual throughput availability. In this paper, we utilize direct links between proximate devices to help offload the large amounts of user-originated data from the conventional cellular links. The paper explores the implementation possibilities of this technology on the consumer Android devices, as well as substantiates our application development choices. The proposed approach employs the infrastructure-based connections for coordination, while most data transfers happen over the device-to-device links. This allows the developers to utilize our data offloading platform for other proximate applications.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Department of Pervasive Computing,

Research area: Software engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno

Contributors: Devos, M., Ometov, A., Mäkitalo, N., Aaltonen, T., Andreev, S., Koucheryavy, Y.

Pages: 124-129

Publication date: 5 Dec 2016

#### **Host publication information**

Title of host publication: 8th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)

Publisher: IEEE

ISBN (Print): 978-1-4673-8819-1

ISBN (Electronic): 978-1-4673-8818-4

Keywords: Device-to-device communication, Data transfer, Internet, Mobile communication, IEEE 802.11 Standard, Mobile handsets, Operating systems

Electronic versions:

D2D communications for mobile devices 2016

DOIs:

10.1109/ICUMT.2016.7765344

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202003092609>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Data-Driven Approach for Analysis of Performance Indices in Mobile Work Machines**

This paper presents a data-driven approach for the analysis of performance indices in mobile work machines. Performance analysis and optimisation of mobile work machines has become increasingly important in recent years. The mobile work machine optimisation is performed based on performance measurements. One of the most interesting and potential approach for improving the quality of the performance analysis is the utilisation of Big Data and data-driven analysis methods, such as machine learning. This study utilises a machine learning algorithm, Classification and Regression Trees (CART), in the performance analysis of the mobile work machines. The most significant benefit of the presented method is that it provides a statistical reference of the machine performance for the operators. The method enables operators to compare performance against reference fleet of machines working in similar operating conditions. This feature can lead to more informative and reliable interpretations and analysis of the performance values. The results of this paper demonstrate how the presented method was used to analyse the performance of a mobile work machine fleet.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Dynamic Systems, Research area:

Measurement Technology and Process Control, Tampere University of Technology

Contributors: Väyrynen, T., Peltokangas, S., Anttila, E., Vilkkö, M.

Number of pages: 7

Pages: 81-86

Publication date: 19 Jul 2015

#### **Host publication information**

Title of host publication: DATA ANALYTICS 2015, The Fourth International Conference on Data Analytics

Editors: Klemas, T., Chan, S.

ISBN (Electronic): 978-1-61208-423-7

#### **Bibliographical note**

AUX=ase,"Anttila, Eero"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Data including GROMACS input files for atomistic molecular dynamics simulations of mixed, asymmetric bilayers including molecular topologies, equilibrated structures, and force field for lipids compatible with OPLS-AA parameters**

In this Data in Brief article we provide a data package of GROMACS input files for atomistic molecular dynamics simulations of multicomponent, asymmetric lipid bilayers using the OPLS-AA force field. These data include 14 model bilayers composed of 8 different lipid molecules. The lipids present in these models are: cholesterol (CHOL), 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphatidylcholine (POPC), 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphatidylethanolamine (POPE), 1-stearoyl-2-oleoyl-sn-glycero-3-phosphatidyl-ethanolamine (SOPE), 1-palmitoyl-2-oleoyl-sn-glycero-3-phosphatidylserine (POPS), 1-stearoyl-2-oleoyl-sn-glycero-3-phosphatidylserine (SOPS), N-palmitoyl-D-erythro-sphingosyl-phosphatidylcholine (SM16), and N-lignoceroyl-D-erythro-sphingosyl-phosphatidylcholine (SM24). The bilayers' compositions are based on lipidomic studies of PC-3 prostate cancer cells and exosomes discussed in Llorente et al. (2013) [1], showing an increase in the fraction of long-tail lipid species (SOPS, SOPE, and SM24) in the exosomes. Former knowledge about lipid asymmetry in cell membranes was accounted for in the models, meaning that the model of the inner leaflet is composed of a mixture of PC, PS, PE, and cholesterol, while the extracellular leaflet is composed of SM, PC and cholesterol discussed in Van Meer et al. (2008) [2]. The provided data include lipids' topologies, equilibrated structures of asymmetric bilayers, all force field parameters, and input files with parameters describing simulation conditions (md.mdp). The data is associated with the research article "Interdigitation of Long-Chain Sphingomyelin Induces Coupling of Membrane Leaflets in a Cholesterol Dependent Manner" (Róg et al., 2016) [3].

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Research area: Computational Physics, Research group: Biological Physics and Soft Matter, University of Helsinki, University of Limerick, University of Oslo, Zora Biosciences Oy, MEMPHYS - Centre for Biomembrane Physics, University of Southern Denmark

Contributors: Róg, T., Orłowski, A., Llorente, A., Skotland, T., Sylvänne, T., Kauhanen, D., Ekroos, K., Sandvig, K., Vattulainen, I.

Number of pages: 4

Pages: 1171-1174

Publication date: 1 Jun 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: Data in Brief

Volume: 7

ISSN (Print): 2352-3409

Ratings:

Scopus rating (2016): CiteScore 0.5 SJR 0.226 SNIP 0.213

Original language: English

Keywords: Force field, GROMACS, Lipid, Lipidomics, Molecular dynamics simulations, Topology

Electronic versions:

Rog et al. Data including GROMACS

Supplementary material

DOIs:

10.1016/j.dib.2016.03.067

URLs:

<http://urn.fi/URN:NBN:fi:ty-201604283887>

Source: Scopus

Source ID: 84962909567

Research output: Contribution to journal › Article › Scientific › peer-review

### **DCASE 2016 Acoustic Scene Classification Using Convolutional Neural Networks**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Audio research group

Contributors: Valenti, M., Diment, A., Parascandolo, G., Squartini, S., Virtanen, T.

Publication date: 1 Sep 2016

#### **Host publication information**

Title of host publication: Proceedings of the Detection and Classification of Acoustic Scenes and Events 2016 Workshop (DCASE2016)



Publisher: Tampere University of Technology. Department of Signal Processing

ISBN (Electronic): 978-952-15-3807-0

Keywords: Acoustic scene classification, convolutional neural networks, DCASE, computational audio processing

URLs:

<http://www.cs.tut.fi/sgn/arg/dcase2016/documents/workshop/Valenti-DCASE2016workshop.pdf>

<http://urn.fi/URN:ISBN:978-952-15-3807-0>

Source: Bibtex

Source ID: urn:c2fdc060aad74381513299d25e4a3052

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Decision making on sustainability in product development projects**

Companies use various evaluation and decision making criteria in their product development projects, to ensure the selection of the right projects to their project portfolio. Recently, sustainability has become an increasingly important decision parameter in companies, but it has not, yet, been studied sufficiently as part of decision making in product development projects. This study pursues increased understanding on the ways in which companies can embed sustainability into their decision making and information search. We employed a qualitative, interview-based research design with three environmentally oriented companies and studied their practices of sustainability-related decision making in projects. The results map factors relevant in sustainability-based decision making particularly concerning the product development task, decision makers, decision elicitation and decision aggregation. Sustainability-orientation in decision making particularly reveals internal information processes, decision makers' different incentives, cost saving orientation and relationships between different project evaluation criteria as relevant factors. The paper contributes by supplementing a generic framework of relevant factors in product development decision making with specifics in sustainability-based decision making.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Martinsuo, M., Arvio, I.

Publication date: Jun 2015

#### **Host publication information**

Title of host publication: 15th Annual Conference of EURAM European Academy of Management : EURAM 2015

Place of publication: Warsaw

Publisher: European Academy of Management, EURAM

ISBN (Print): 9788389437600

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Defining product end-of-life strategies in new product development.**

New product development is about creating new offerings to the market and new business for the supplier. At the same time, it needs to consider the end-of-life options for the product, due to increasing legal and regulatory requirements towards eco-friendly product designs. Even if sustainability has become a relevant concern in product development, previous research does not sufficiently cover how end-of-life strategies can be taken into account in new product development processes. This study explores the ways in which environmentally conscious manufacturing firms consider end-of-life strategies in their product development processes. A pre-study with two companies and their external service provider is reported, covering the different practices for identifying end-of-life options and factors relevant in considering product end-of-life strategies during new product development. The results open up avenues for focused studies on the front end of innovation that is identified as the crucial phase for initiating material choices and other end-of-life considerations.

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Martinsuo, M., Sukanen, I., Kivilä, J.

Number of pages: 16

Publication date: Aug 2015

#### **Host publication information**

Title of host publication: 23rd Nordic Academy of Management Conference NFF 2015- Business in society : NFF 2015

Publisher: Nordic Academy of Management

Keywords: product end-of-life, end-of-life strategy, product development, sustainability

URLs:

<https://conference.cbs.dk/index.php/NFF2015/NFF2015/schedConf/overview>

### **Bibliographical note**

AUX=ttt,"Sukanen, Ilmari"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Demolished buildings: Empirical evidence on types, ages and construction materials**

Studies have found that from the ecological perspective, preservation of existing buildings is usually more sustainable than demolition and new construction. Knowledge about the characteristics of demolished buildings could help to promote renovation of buildings and to advance more sustainable management of building stocks, but so far the acquisition of comprehensive data has posed an immense challenge for research. Due to the lack of empirical evidence, the current understanding is largely based on theorizing. To participate in bridging this gap of knowledge, the current study takes advantage of data extracted from the Finnish Building and Dwelling Register. This data, which encompass all buildings demolished in Finland between 2000 and 2012 (50 818 buildings), are utilized to investigate the ages, decades of origin and construction materials and methods of demolished buildings by building types in 11 different categories from residential to non-residential. The results show that buildings are being demolished after remarkably short service lives. On average, the demolished buildings were only 51 years old — a service life that is considered as appropriate for temporary structures in the current design guidance. Furthermore, prefabricated buildings reached lives around 20 years, which is clearly less than with in situ built buildings. The average lives of buildings made of different materials were as follows: 54 years (timber buildings), 50 years (brick buildings), 40 years (concrete buildings) and 19 years (steel buildings). A comparison to statistics covering the existing stock showed that demolition is typically underrepresented in the youngest cohorts and overrepresented in older cohorts.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: School of Architecture, Research group: Built Environment in Transition

Contributors: Huuhka, S.

Number of pages: 8

Pages: 1105-1112

Publication date: 22 Jun 2016

### **Host publication information**

Title of host publication: CESB16 - Central Europe towards Sustainable Building 2016 : Innovations for Sustainable Future, June 22-24, 2016, Prague

Place of publication: Prague

Publisher: Czech Technical University in Prague

Editors: Hajek, P., Tywoniak, J., Lupisek, A., Sojkova, K.

ISBN (Print): 978-80-271-0248-8

ISBN (Electronic): 978-80-271-0248-8

URLs:

<http://cesb.cz/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Demolition Rates of Buildings with Different Functions and Construction Materials**

Obsolescence of buildings is a complex phenomenon. Previous research has found that demolition of buildings is primarily determined by behavioural aspects, amongst which is the use of the building. At the same time, service life design of buildings keeps focusing strongly on physical factors, such as the durability of materials. This study intends to shed light on the relationship of the building's function and material by investigating demolition rates of Finnish buildings that are made of different materials (timber, concrete, bricks, steel) and that have different functions (10 categories, both residential and non-residential). The study uses demolition data from the Finnish Building and Dwelling Register (50 818 buildings – all buildings demolished between 2000 and 2012) and statistical data on the composition of the entire building stock. According to the results, the building type seems to be more decisive than the material. The highest loss rates take place amongst warehouse buildings.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: School of Architecture, Research group: Built Environment in Transition

Contributors: Huuhka, S.

Number of pages: 7

Pages: 301-307

Publication date: 21 Jun 2016

### Host publication information

Title of host publication: YRSB16 - iiSBE Forum of Young Researchers in Sustainable Building 2016 : Innovations for Sustainable Future June 21, 2016, Prague

Place of publication: Prague

Publisher: Czech Technical University in Prague

Editors: Zelezna, J., Hajek, P., Tywoniak, J., Lupisek, A., Sojkova, K.

ISBN (Electronic): 978-80-01-05979-1

URLs:

<http://www.cesb.cz/yrsb/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Design: A Key Stage of Product Lifecycle

DESIGN appears to be a key and critical stage of product lifecycle. Different models have been introduced in previous research to describe the conceptual design process. The RFBS model is one of them extending and deepening the existing FBS models. A previous paper was presenting the model and assuming the possible execution of the process tasks automatically. The present paper provides an overview of the progresses that have been made in this direction during the past years. The model-driven engineering philosophy underlying the RFBS model of knowledge is concretely exemplified in this paper. The implementation through ontology and language such as SysML that was part of the model-driven engineering philosophy is concretely described in this paper in form of computer-aided tools dedicated to the conceptual design stages.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engn Design & Prod, Sch Engn

Contributors: Bernard, A., Coatanea, E., Christophe, F., Laroche, F.

Number of pages: 7

Pages: 3-9

Publication date: 2014

Peer-reviewed: Yes

### Publication information

Journal: Procedia CIRP

Volume: 21

ISSN (Print): 2212-8271

Ratings:

Scopus rating (2014): SJR 0.755 SNIP 1.4

Original language: English

Keywords: Computer-aided tools, Design method, Knowledge based system, Modelling, RFBS

DOIs:

[10.1016/j.procir.2014.06.146](https://doi.org/10.1016/j.procir.2014.06.146)

URLs:

<http://www.sciencedirect.com/science/article/pii/S2212827114007641>

<http://www.mendeley.com/research/design-key-stage-product-lifecycle>

Source: Mendeley

Source ID: c917d102-f71c-324d-bf73-70ffe40d606b

Research output: Contribution to journal › Article › Scientific › peer-review

### Design and simulation of a thermal flow sensor for gravity-driven microfluidic applications

Gravity-driven flow is an attractive approach to develop simpler microfluidic systems. Because clogged microchannels could easily lead to fatal operational failures, it is crucial to monitor flow rate in these systems. Therefore, we propose here for the first time a numerical model that combines a calorimetric flow sensor and a gravity-driven system. With the validated model, we studied the flow behavior in a gravity-driven system. Furthermore, we were able to improve the sensitivity of the measurement based on simulation results. This demonstrates, how the model could be used as an effective optimization tool in the gravity-driven system including calorimetric flow measurement.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Microsystems, Research area: Measurement Technology and Process Control

Contributors: Mäki, A., Kontunen, A., Ryyänen, T., Verho, J., Kreutzer, J., Lekkala, J., Kallio, P.

Number of pages: 5

Pages: 125-129  
Publication date: 2016

#### Host publication information

Title of host publication: IEEE 11th Annual International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)

Publisher: IEEE

ISBN (Electronic): 978-1-5090-1947-2

Keywords: Atmospheric modeling; Heating; Liquids; Microchannels; Reservoirs; Temperature measurement; Temperature sensors; calorimetric flow sensor; gravity-driven flow; modeling; numerical simulation

DOIs:

10.1109/NEMS.2016.7758214

URLs:

<http://ieeexplore.ieee.org/document/7758214/>

#### Bibliographical note

INT=ase,"Kontunen, Anton"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Detailed analysis of laser-induced breakdown spectroscopy of single particles using electrodynamic balance trapping

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research area: Optics, Research area: Aerosol Physics, Research group: Applied Optics

Contributors: Järvinen, S. T., Saari, S., Keskinen, J., Toivonen, J.

Pages: CH\_7\_5

Publication date: 2015

#### Host publication information

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: Optical Society of America

ISBN (Print): 978-1-4673-7475-0

URLs:

[http://www.osapublishing.org/abstract.cfm?URI=CLEO\\_Europe-2015-CH\\_7\\_5](http://www.osapublishing.org/abstract.cfm?URI=CLEO_Europe-2015-CH_7_5)

Source: Bibtex

Source ID: urn:6a7f30acd7f36662c9eb556c444f9d16

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Detection and Assessment of Sleep-Disordered Breathing with Special Interest of Prolonged Partial Obstruction

Sleep-disordered breathing (SDB) has become more common and puts more strain on public health services than ever before. Obstructive sleep apnea (OSA) and its health consequences such as different cardiovascular diseases are nowadays well recognized. In addition to OSA, attention has recently been paid to another SDB; prolonged partial obstruction. However, it is often undiagnosed and easily left untreated because of the low number of respiratory events during polysomnography recording. This patient group has found to present with more atypical subjective symptoms than OSA patients.

Polysomnography (PSG) is considered to be the gold standard in reference methods in SDB diagnostics. PSG is a demanding and laborious multichannel recording method and often requires subjects to spend one night in a sleep laboratory. There is long tradition in Finland to use mattress sensors in SDB diagnostics. Recently, smaller electromechanical film transducer (Emfit) mattresses have replaced the old Static Charge-Sensitive Bed (SCSB) mattresses. However, a proper clinical validation of Emfit mattresses in SDB diagnostics has not been carried out.

In this work, the use of Emfit recording in the detection of sleep apneas, hypopneas, and prolonged partial obstruction with increased respiratory effort was evaluated. The general aim of the thesis is to develop and improve the diagnostic methods for sleep-related breathing disorders.

Comparisons with both PSG with nasal pressure recording and transesophageal pressure were made. Special attention was paid to the existence of the spiking phenomenon in the Emfit mattress in relation to changes in negative intrathoracic pressure in estimating increased respiratory effort. This entails monitoring the esophageal pressure as a part of nocturnal polysomnography. The recording method is demanding and uncomfortable and is usually not used with ordinary sleep laboratory patients. Thus, reliable and easy indirect quantification methods for respiratory effort are needed in clinical work. According to the results presented in this work, the Emfit signal reveals increased respiratory effort as well as apneas/hypopneas.

To find out the prevalence and consequences of prolonged partial obstruction among sleep laboratory patients was another aim of this thesis. This was done by retrospective analyses of sleep laboratory patients from one year. The prevalence of patients with prolonged partial obstruction was 11%. They were as sleepy as OSA patients, but their life quality was worse, as assessed by a survey. These results, along with the findings of the heart rate variation evaluation carried out in this thesis, suggest that prolonged partial obstruction and OSA should be considered as different entities of SDB.

With the Emfit mattress sensor, the SDB types can be differentiated, which is expected to enhance the accuracy of diagnostics. However, there is increasing need for easy and cheap screening methods to evaluate nocturnal breathing. In this respect, the usability of compressed tracheal sound signal scoring in SDB screening was estimated. The method reveals apneas and hypopneas but, according to the present findings, it can also be used in the detection of prolonged partial obstruction. The findings encourage the use of compressed tracheal sound analysis in screening different SDB.

The analysis of sleep recordings is still based on a doctor's subjective and visual estimation. To date, no generally accepted and sufficiently reliable automatic analysis method exists. Robust, automatic quantification methods with easier techniques for non-invasive sleep recording would enable the analysis methods to be also used for screening purposes. In this technology-orientated world, people could take much more responsibility and take care of themselves better by following their own biosignals and by changing their health habits earlier. The need for good sleep as a necessity for good life and health is widely recognized.

#### **General information**

Publication status: Published

MoE publication type: G5 Doctoral dissertation (article)

Organisations: Department of Electronics and Communications Engineering

Contributors: Tenhunen, M.

Number of pages: 77

Publication date: 4 Sep 2015

#### **Publication information**

Place of publication: Tampere

Publisher: Tampere University of Technology

ISBN (Print): 978-952-15-3531-4

ISBN (Electronic): 978-952-15-3556-7

Original language: English

#### **Publication series**

Name: Tampere University of Technology. Publication

Publisher: Tampere University of Technology

Volume: 1304

ISSN (Print): 1459-2045

Electronic versions:

tenhunen\_1304

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3556-7>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology

Versio ok 16.12.2015

Research output: Book/Report › Doctoral thesis › Collection of Articles

### **Developing commercialization plans through stakeholder interaction: Patterns identified from Public-Private Innovation Projects**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, University of Southern Denmark

Contributors: Höjbjerg Clarke, A., Rostgaard Evald, M., Aarikka-Stenroos, L.

Number of pages: 20

Publication date: 27 Aug 2015

#### **Host publication information**

Title of host publication: The 31st Annual IMP Conference and Doctoral Colloquium 2015, Kolding, Denmark.

Editors: Vagn Freytag, P., Höjbjerg Clarke, A.

Keywords: stakeholders, commercialization, innovation, Public sector, private

URLs:

<http://www.impconference2015.com/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Developing Learning and Teaching in Engineering Mathematics with and without Technology**

University teachers of mathematics have begun to observe that nowadays new students when beginning their studies do not have as good a mathematical proficiency as before. The phenomenon has been noticed in all western countries during recent decades [1, 2]. What shall we do? We think that there are at least two available courses of action for improved learning results in university mathematics: 1) to identify as soon as possible the students who have an insufficient knowledge base in mathematics, and to begin remedial instruction for them, and 2) to develop mathematics learning environments both with and without technology.

The aim of this paper is to describe how Tampere University of Technology (TUT) has developed learning environments in mathematics during the last decade. We focus in the paper on two cases: 1) a multisemiotic approach to mathematical concepts and procedures, and 2) computer aided assessment and learning systems.

The first case consists of developing studies in mathematical exercises in which new kinds of problem-solving have been constructed. In the second case new students have participated in an ICT –based basic skills test at the beginning of their mathematics studies, to enable them to practice mathematical procedures in solving processes [3]. Electronic and web-based tools make it possible for students to learn independently at any time, and for teachers, offer an effective way to evaluate students' proficiency.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Mathematics, Research group: MAT Positioning, Research group: Positioning, Research group: MAT Intelligent Information Systems Laboratory

Contributors: Joutsenlahti, J., Ali-Löytty, S., Pohjolainen, S.

Publication date: 15 Sep 2016

#### **Host publication information**

Title of host publication: SEFI 2016 Annual Conference Proceedings : Engineering Education on Top of the World: Industry University Cooperation

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 9782873520144

URLs:

[http://www.sefi.be/conference-2016/papers/Mathematics\\_and\\_Engineering\\_Education/joutsenlahti-developing-learning-and-teaching-in-engineering-mathematics-with-and-without-technology-153\\_a.pdf](http://www.sefi.be/conference-2016/papers/Mathematics_and_Engineering_Education/joutsenlahti-developing-learning-and-teaching-in-engineering-mathematics-with-and-without-technology-153_a.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Development of a Low-Cost Fuzzy Gain Schedule Neutralization Control System**

This paper has focused on the development of a Low-Cost Fuzzy Gain Schedule Neutralization Control System. The system dynamics has been identified for different operational conditions. The implementation and instrumentation of a typical Neutralization System using low cost elements, with an appropriate monitoring, control and data acquisition of the process variables has been successfully implemented, as well as the Fuzzy Gain Schedule pH neutralization controller. As inputs it has been used the Auxiliary Variable, defined with the linguist terms as Acid, Neutral and Alkaline by three trapezoidal membership functions, as well as the control error and the change in the control error, both defined by five triangular membership functions. The controller outputs were defined for the Acid and Alkali pumps by 18 triangular membership functions and it was defined a set of 50 fuzzy rules. The development of the control system considered in this paper reveals an attractive industrial application perspective, representing a potential application for water consumption reduction in industry, based on low cost elements.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, University of Campinas, Federal University of Uberlândia

Contributors: Sislian, R., Da Silva, F. V., Gedraite, R., Jokinen, H., An, D. K. R.

Number of pages: 4

Pages: 575-578

Publication date: Oct 2015

#### **Host publication information**

Title of host publication: WCECS 2015 - World Congress on Engineering and Computer Science 2015

Volume: II  
Publisher: Newswood Limited  
ISBN (Electronic): 9789881404725

#### Publication series

Name: Lecture Notes in Engineering and Computer Science

Volume: 2220

ISSN (Electronic): 2078-0966

ASJC Scopus subject areas: Computer Science (miscellaneous)

Keywords: Fuzzy control, Neutralization, Water consumption reduction

URLs:

[http://www.iaeng.org/publication/WCECS2015/WCECS2015\\_pp575-578.pdf](http://www.iaeng.org/publication/WCECS2015/WCECS2015_pp575-578.pdf)

Source: Scopus

Source ID: 84992694500

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Development of chip-surface stimulus electrode array for fully-implantable subretinal prosthesis chip

In this study, we have developed a chip-surface stimulus electrode array for fully-implantable subretinal prosthesis chip. To realize visual restoration with high resolution, stimulus electrodes should be miniaturized and arrayed with high density. When we miniaturize them, however, their electrochemical impedances become higher and their amount of charge injection become smaller. Additionally, as the number of electrodes increases, it becomes difficult to make electrical connection to each pixel of the retinal prosthesis chip and each electrode by electrical wiring. To overcome these problems, we have developed the stimulus electrodes that have low electrochemical impedances and large charge injection capacities, and established a fabrication process of chip-surface stimulus electrode array. We fabricated the stimulus electrodes made of extremely porous platinum which had large-surface-area compared with conventional Pt. We also fabricated the chip-surface stimulus electrodes array on the subretinal prosthesis chip which surface was rough and covered with insulator film.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Biomaterials and Tissue Engineering Group, BioMediTech, Integrated Technologies for Tissue Engineering Research (ITTE), International Graduate School in Biomedical Engineering and Medical Physics (Ministry of Education in Finland), Graduate School of Engineering, Tohoku University

Contributors: Sasaki, Y., Suzuki, T., Iwagami, T., Tani, T., Naganuma, H., Kino, H., Hyttinen, J., Kellomäki, M., Tanaka, T.

Pages: O-253-O-254

Publication date: 17 Aug 2014

Peer-reviewed: Yes

#### Publication information

Journal: Transactions of Japanese Society for Medical and Biological Engineering

Volume: 52

ISSN (Print): 1347-443X

Ratings:

Scopus rating (2014): CiteScore 0.1 SJR 0.127 SNIP 0.038

Original language: English

ASJC Scopus subject areas: Biomedical Engineering

Keywords: Electrode, Extremely porous platinum, Retinal prosthesis

DOIs:

10.11239/jsmbe.52.O-253

Source: Scopus

Source ID: 84939439184

Research output: Contribution to journal > Article > Scientific > peer-review

#### Development of efficient electrically pumped nanolasers based on InAlGaAs tunnel junction

We propose and experimentally demonstrate a metallo-dielectric nanolasers utilizing an InAlGaAs tunnel junction for efficient carrier injection, which reduce the complexity when optimizing the metal contact, and reduces the device resistance.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: ORC, University of California San Diego

Contributors: Fang, C. Y., Vallini, F., Amili, A. E., Tukiainen, A., Lyytikäinen, J., Guina, M., Fainman, Y.  
Publication date: 2018

#### Host publication information

Title of host publication: CLEO : Science and Innovations, CLEO\_SI 2018

Publisher: OSA - The Optical Society

ISBN (Electronic): 9781557528209

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Mechanics of Materials

DOIs:

10.1364/CLEO\_SI.2018.SW4Q.4

Source: Scopus

Source ID: 85048984466

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Development of New Kinds of Plasmonics Materials Through Swift Heavy Ion Shaping Technique

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research group: Nonlinear Optics

Contributors: Cardin, J., Dufour, C., KHOMENKOV, V., Fafin, A., Monnet, I., Rizza, G., COULON, P., Slablab, A., Maily, D., Ulysse, C., Lafosse, X., Perruchas, S., Gacoin, T.

Publication date: 1 Jun 2013

#### Host publication information

Title of host publication: 7th International Conference on Materials for Advanced Technologies (ICMAT 2013), Jun 2013, Suntec, Singapore

Place of publication: Singapore

URLs:

<https://hal.archives-ouvertes.fr/hal-01141517>

Source: Bibtex

Source ID: urn:ea7999b3358b51830b80923b8fb84f3a

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Development of Si neural probe module with adjustable gain amplifier for neuronal signal recording

In recent years, lots of research on biomedical technologies directly using bio-signals such as BMI (Brain Machine Interface) have been performed intensively. Among bio-signals, ECoG (Electrocorticogram), LFP (Local Field Potential), and AP (Action Potential) are usually recorded especially for diagnosis, treatment, and prevention of brain diseases. These bio-signals have different amplitudes and frequency bandwidths, and the signal intensities vary accordingly with recording electrode conditions and individual variation. Therefore, a multiple bio-signals recording system having adjustable gain and bandwidth is strongly required. In this study, we designed the adjustable gain amplifier appropriate for the system, and fabricated the module composed of the amplifier and a Si neural probe for the multiple bio-signal recording in the deep brain. Additionally, we verified fundamental functions of the module by in vitro experiments.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Biomaterials and Tissue Engineering Group, Research group: Computational Biophysics and Imaging Group, BioMediTech, Integrated Technologies for Tissue Engineering Research (ITTE), Graduate School of Engineering, Electrical and Electronics Engineering Department, Department of Bioengineering and Robotics, Tohoku University, Nagasaki Institute of Applied Science

Contributors: Tani, T., Naganuma, H., Harashima, T., Iwagami, T., Kino, H., Kiyoyama, K., Kellomäki, M., Hyttinen, J., Tanaka, T.

Pages: O-377-O-378

Publication date: 17 Aug 2014

Peer-reviewed: Yes

#### Publication information

Journal: Transactions of Japanese Society for Medical and Biological Engineering

Volume: 52

ISSN (Print): 1347-443X

Ratings:

Scopus rating (2014): CiteScore 0.1 SJR 0.127 SNIP 0.038



Original language: English  
ASJC Scopus subject areas: Biomedical Engineering  
Keywords: Adjustable gain amplifier, Multiple bio-signal recording, Si neural probe  
DOIs:  
10.11239/jsmbe.52.O-377  
Source: Scopus  
Source ID: 84939449061  
Research output: Contribution to journal › Article › Scientific › peer-review

## **Development of students' multidisciplinary collaboration skills by simulation of the design process**

### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector  
Contributors: Salmisto, A., Keinänen, M., Kähkönen, K.  
Pages: 348-360  
Publication date: 2016

### **Host publication information**

Title of host publication: Proceedings of the CIB World Building Congress 2016: Volume I - Creating built environments of new opportunities.  
Volume: 1  
ISBN (Print): 978-952-15-3741-7  
Keywords: collaboration, multidisciplinary, engineering education, collaborative learning, design process  
URLs:  
[https://tutcris.tut.fi/portal/files/6186667/WBC16\\_Vol\\_1.pdf](https://tutcris.tut.fi/portal/files/6186667/WBC16_Vol_1.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **DIC measurements of the human heart during cardiopulmonary bypass surgery**

Image-based measurements of the deformation of the human heart can be very useful to the surgeon, when assessing the condition and functioning of the patient's heart. Digital image correlation can provide fast and accurate information about the deformation and motion of the surface of the heart. The deformation measurements can be visualized with colors allowing easy interpretation of the results, which makes this technique even more suitable for use in the operating room. Digital image correlation, however, requires either a natural or an artificial surface pattern with high contrast. The surface of the heart is wet, smooth, and has only a minimal contrast pattern, which cannot easily be improved with artificial markers. This preliminary feasibility study, however, shows that despite the practical and theoretical problems, DIC can provide useful data on the deformation of the human heart during cardiopulmonary bypass surgery. The results show that the natural patterns of the right atrium and ventricle are sufficient for DIC analysis, but significantly better results could be obtained with higher contrast artificial patterns.

### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Materials Science, Research group: Materials Characterization, Universitätsklinikum Gießen und Marburg GmbH, LaVision GmbH  
Contributors: Hokka, M., Mirow, N., Nagel, H., Vogt, S., Kuokkala, V.  
Number of pages: 9  
Pages: 51-59  
Publication date: 2016

### **Host publication information**

Title of host publication: Conference Proceedings of the Society for Experimental Mechanics Series  
Volume: 6  
Publisher: Springer New York LLC  
ISBN (Print): 9783319214542  
ASJC Scopus subject areas: Engineering(all), Computational Mechanics, Mechanical Engineering  
Keywords: Digital Image Correlation, Human heart, In-vivo measurements, Natural pattern  
DOIs:  
10.1007/978-3-319-21455-9\_6

### **Bibliographical note**

JUFID=72540  
Source: Scopus

Source ID: 84952003607

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Diesel engine exhaust particle measurements using a particle size magnifier (PSM)**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group, Metropolia University of Applied Science, Metropolia University of Applied Sciences, Helsinki University

Contributors: Kuuluvainen, H., Karjalainen, P., Saukko, E., Nousiainen, P., Karhu, T., Pirjola, L., Keskinen, J., Rönkkö, T.

Publication date: 2015

#### **Host publication information**

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

#### **Bibliographical note**

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Difference frequency modulation of multi-section dual-mode lasers with nanoscale surface gratings**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, Research group: Nanophotonics, Facilities and Infrastructure

Contributors: Uusitalo, T., Virtanen, H., Viheriälä, J., Salmi, J., Aho, A. T., Dumitrescu, M.

Number of pages: 9

Publication date: 7 Mar 2016

#### **Host publication information**

Title of host publication: SPIE Proceedings : Novel In-Plane Semiconductor Lasers XV

Volume: 9767

Publisher: SPIE

Editors: Belyanin, A. A., Smowton, P. M.

Article number: 97670S

#### **Publication series**

Name: Proceedings of SPIE

ISSN (Electronic): 0277-786X

Keywords: Frequency modulation, lasers, Nanotechnology, Modulation, Nanoimprint lithography, Quantum dots, terahertz radiation, ultraviolet radiation, distributed feedback laser diodes

DOIs:

10.1117/12.2213888

#### **Bibliographical note**

INT=orc,"Aho, Antti T."

JUFOID=71479

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Different approaches of the PLM maturity concept and their use domains –analysis of the state of the art**

Product lifecycle management (PLM) implementation and adoption involves extensive changes in both intra- and inter-organizational practices. Various maturity approaches, for instance based on CMM (Capability maturity modeling) principles, can be used to make the implementation of PLM a better approachable and a more carefully planned and coordinated process. However, there are a number of different types of current approaches which can be thought to fall under the concept of PLM maturity. The aim of this paper is to investigate, analyze and categorize the various existing PLM maturity approaches to get an organized picture of the models and their background presumptions, as well as their potential use domains, and to facilitate their proper use to better implement PLM in different industry contexts.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, Lappeenranta University of Technology

Contributors: Kärkkäinen, H., Silventoinen, A.

Number of pages: 14

Pages: 89-102

Publication date: 2016

#### Host publication information

Title of host publication: Product Lifecycle Management in the Era of Internet of Things : 12th IFIP WG 5.1 International Conference, PLM 2015, Doha, Qatar, October 19-21, 2015, Revised Selected Papers

Publisher: Springer New York LLC

ISBN (Print): 978-3-319-33110-2

#### Publication series

Name: IFIP Advances in Information and Communication Technology

Volume: 467

ISSN (Print): 1868-4238

ASJC Scopus subject areas: Information Systems and Management

Keywords: Comparison, Maturity approaches, Maturity models, Product lifecycle management, State-of-the-Art

DOIs:

10.1007/978-3-319-33111-9\_9

Source: Scopus

Source ID: 84964801199

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Different types of non-volatile nanoparticles in off-road diesel engine exhaust

##### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group

Contributors: Kuuluvainen, H., Karjalainen, P., Saukko, E., Nilsson, O., Sirviö, K., Ovaska, T., Niemi, S., Keskinen, J., Rönkkö, T.

Publication date: 2015

##### Host publication information

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

##### Bibliographical note

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

#### Diffraction compensation of finite beams in hyperbolic metamaterials

The propagation of finite size beams in a hyperbolic metamaterial is modeled as a moving particle of negative mass. We show the occurrence of anomalous diffraction, diffraction compensation and profile recovery for any input excitation.

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research group: Nonlinear Optics, Research area: Optics, Univ Porto, Universidade do Porto, Fac Ciencias, Ctr Fis Porto

Contributors: Pannian, J. C., Alberucci, A., Boardman, A., Assanto, G.

Publication date: 2016

##### Host publication information

Title of host publication: Laser science 2016

Publisher: Optical Society of America (OSA)

Article number: JW4A.10

ISBN (Print): 978-1-943580-19-4

URLs:

<https://www.osapublishing.org/abstract.cfm?uri=LS-2016-JW4A.10>

### **Diffusion of innovation: Case of co-design of cabins in mobile work machine industry**

This paper describes the development of using virtual reality for work content in one application area over a decade. Virtual reality technology has developed rapidly; from walk-in CAVE-like virtual environments to head-mounted displays within a decade. In this paper, the development is studied through the lens of diffusion of innovation theory, which focuses not only on innovation itself, but also on the social system. The development of virtual technology is studied by one case, which is cabin design in the mobile work machine industry. This design process has been especially suitable for using virtual reality technology.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Automation Technology and Mechanical Engineering, Tampere University

Contributors: Ellman, A., Tiainen, T.

Publication date: 1 Jun 2019

Peer-reviewed: Yes

#### **Publication information**

Journal: Computers

Volume: 8

Issue number: 2

Article number: 39

ISSN (Print): 2073-431X

Ratings:

Scopus rating (2019): CiteScore 2.5 SJR 0.361 SNIP 1.25

Original language: English

ASJC Scopus subject areas: Human-Computer Interaction, Computer Networks and Communications

Keywords: Cabin design, Diffusion of innovation, Virtual reality

Electronic versions:

computers-08-00039

DOIs:

10.3390/computers8020039

URLs:

<http://urn.fi/URN:NBN:fi:tty-201909062077>

Source: Scopus

Source ID: 85069801135

Research output: Contribution to journal › Article › Scientific › peer-review

### **Digital Hydraulics on Rails – Pilot Project of Improving Reliability on Railway Rolling Stock by Utilizing Digital Valve System**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Fluid power automation in mobile machines, Research group: Powertrain design, Research group: Digital hydraulics, Bosch Rexroth AG, VR-Group Ltd  
Contributors: Fischer, H., Laamanen, A., Iso-Heiko, A., Schäfer, O., Karvonen, M., Karhu, O., Huhtala, K., Pulkkinen, V., Huttunen, A.

Number of pages: 11

Pages: 644-654

Publication date: 20 May 2015

#### **Host publication information**

Title of host publication: Proceedings of The Fourteenth Scandinavian International Conference on Fluid Power, SICFP15

Editors: Laamanen, A., Huhtala, K.

ISBN (Electronic): 978-952-15-3530-7, 978-952-15-3658-8

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3530-7>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Digital image correlation study of the deformation and functioning of the human heart during open-heart surgery**

Currently, ultrasound technology is routinely used for monitoring of the left side of the human heart during open-heart surgery. However, this method shows shortcomings in providing accurate information of the right ventricle and atrium. The

aim of this paper is to demonstrate how Digital Image Correlation (DIC) can be used to monitor the functioning of the heart during open-heart surgery and potentially overcome some of the shortcomings of ultrasound methods. Being a contact-free method is a major asset from a practical implementation perspective of DIC. In this paper, we present the methodology of the experiment and some preliminary results of a study in which a DIC system was installed in an operating room and image sequences of the heart were taken at three stages of the surgery. We present a procedure for obtaining DIC measurements in this challenging setting, discuss how the data was extracted as well as how the measured values changed during the operation in the context of the surgical stages and interventions performed.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, Research group: Materials Characterization

Contributors: Soltani, A., Curtze, S., Lahti, J., Järvelä, K., Laurikka, J., Hokka, M., Kuokkala, V. T.

Number of pages: 9

Pages: 19-27

Publication date: 2018

#### Host publication information

Title of host publication: Mechanics of Biological Systems, Materials and other topics in Experimental and Applied Mechanics - Proceedings of the 2017 Annual Conference on Experimental and Applied Mechanics

Volume: 4

Publisher: Springer New York LLC

ISBN (Print): 9783319635514

#### Publication series

Name: Conference Proceedings of the Society for Experimental Mechanics

ISSN (Print): 2191-5644

ISSN (Electronic): 2191-5652

ASJC Scopus subject areas: Engineering(all), Computational Mechanics, Mechanical Engineering

Keywords: Biomaterial characterization, Deformation, DIC, Motion, Open heart surgery

DOIs:

10.1007/978-3-319-63552-1\_4

Source: Scopus

Source ID: 85032509230

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Digitalisaatio kunnossapidossa

Teollinen internet vie älyä yhä enemmän kentälaitteiden ja kokonaisten prosessien ja laitekantajärjestelmien suuntaan. Älykkäiden laitteiden lisääntyminen kentällä tuottaa enemmän tietoa prosesseista ja lisää tarvetta analyysiä helpottaville työkaluille. Tämä luo samalla mahdollisuuden lähestyä kunnossapitoa strategisemmin – yrityksen keinona parantaa suorituskykyä älykkäiden ratkaisujen kautta. Kehitys on vasta alkuvaiheessa, mutta laite- ja palvelutoimittajat ovat jo tuoneet markkinoille laitteita, analytiikkaratkaisuja ja malleja, joissa hyödynnetään kasvava datamäärä ja älykkäät prosessit. Jotta tästä kehityksestä saataisiin täysimittainen hyöty, on yritysten laitteiden teknisen kehityksen lisäksi arvioitava ja kehitettävä omia toimintamallejaan.

#### General information

Publication status: Published

MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material

Organisations: Industrial Engineering and Management, Research group: Center for Research on Project and Service Business (CROPS), Quva Oy

Contributors: Martinsuo, M., Ackerman, E., Ruusuvuori, P.

Number of pages: 7

Pages: 48-54

Publication date: 2019

#### Host publication information

Title of host publication: Kunnossapidon vuosikirja 2019 : Elinjakson hallinta ja hyvä tuotanto-omaisuuden hallintatapa

Publisher: Kunnossapitoyhdistys ProMaint

ISBN (Print): 978-952-68687-4-5

ISBN (Electronic): 978-952-68687-5-2

Research output: Chapter in Book/Report/Conference proceeding > Chapter > Professional

#### Direct Laser Writing of Fluorescent Silver Nanoclusters in Polyvinyl Alcohol Films

We demonstrate successful fabrication of fluorescent microstructures by direct laser writing of silver nanoclusters in polyvinyl alcohol films using a cost-effective laser diode. The nanoclusters show very good photostability in the widely

used polymer material.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Optics, Research group: Applied Optics, Frontier Photonics

Contributors: Karimi, N., Kunwar, P., Toivonen, J.

Publication date: Oct 2015

#### Host publication information

Title of host publication: Frontiers in Optics 2015 : Proceedings

Article number: FTu5E.4

ISBN (Electronic): 978-1-943580-03-3

ASJC Scopus subject areas: Physics and Astronomy(all)

Keywords: Optical data storage, Microstructure fabrication, Fluorescence, laser-induced

DOIs:

10.1364/FIO.2015.FTu5E.4

URLs:

<https://www.osapublishing.org/abstract.cfm?uri=FiO-2015-FTu5E.4>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Direct Measurement of Temporal Rogue Waves Generated by Spontaneous Modulation Instability

We measure the real time intensity profiles of localized structures emerging from spontaneous modulation instability. We show that the results can be interpreted in terms of analytical solutions of the nonlinear Schrödinger equation.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Fiber Optics, Institut FEMTO-ST, Institut FEMTO-ST, Université de Franche-Comté, School of Mathematical Sciences, University College Dublin, Institut FEMTO-ST, UMR 6174 CNRS-Université de Franche-Comté

Contributors: Narhi, M., Wetzell, B., Billet, C., Merolla, J., Toenger, S., Sylvestre, T., Morandotti, R., Dias, F., Genty, G., Dudley, J. M.

Publication date: 2016

#### Host publication information

Title of host publication: Frontiers in Optics 2016

Publisher: Optical Society of America

Article number: FTu3I.4

ISBN (Print): 978-1-943580-19-4

URLs:

<https://www.osapublishing.org/abstract.cfm?uri=fio-2016-FTu3I.4>

#### Bibliographical note

EXT="Toenger, Shanti"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Discovering collaborative and inclusive solutions to co-create multidimensional value in cross-sector collaboration

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Information and Knowledge Management, Research group: Knowledge and Learning Research Center, Hanken School of Economics

Contributors: Vuori, V., Bor, S., Polsa, P., Käpylä, J., Helander, N.

Number of pages: 6

Pages: 364-369

Publication date: Sep 2019

#### Host publication information

Title of host publication: Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management : 17-19 September, 2019, Vienna, Austria

Publisher: SCITEPRESS

ISBN (Print): 9789897583827

### Publication series

Name: IC3K 2019 - Proceedings of the 11th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management

Volume: 3

URLs:

<http://www.insticc.org/node/TechnicalProgram/ic3k/presentationDetails/83657>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Disruptive innovation in ecosystems: Path-creation and institutional barriers

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Lappeenranta University of Technology

Contributors: Ritala, P., Aarikka-Stenroos, L.

Number of pages: 16

Pages: 1-16

Publication date: Jun 2016

#### Host publication information

Title of host publication: XXVI ISPIM Conference: Porto, Portugal (2016) Blending Tomorrow's Innovation Vintage. : The International Society for Professional Innovation Management, Jun. 2016

Place of publication: Manchester

Publisher: International Society for Professional Innovation Management ISPIM

ISBN (Print): 978-952-265-929-3

ISBN (Electronic): 978-952-265-929-3

URLs:

<http://search.proquest.com/docview/1803692263?pq-origsite=gscholar>

Source: Bibtex

Source ID: urn:c0dee1d4b4657d55de8d93bf3fad657c

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Distributed Experiments in Design Sciences, a Next Step in Design Observation Studies?

This paper describes and proposes a new method for conducting globally distributed design research. Instead of using e.g. a software we tried out a completely analogue approach: Five carefully prepared packages, containing all the necessary materials and instructions for a design challenge, were sent out to supervisors in Norway, Finland, Italy, and Australia. These local supervisors then conducted the egg-drop exercise with students that are part of an international course held at CERN. As the task is conducted according to a previously tested protocol, the results gathered with this new method can then be benchmarked with this available data. This new approach to globally conducted engineering design activities avoids local bias and enables for gathering large amounts of diverse data points. One can also think of a research community where every member can send out one experiment per year and, in return, receives data points from across the world.

Based on the feedback from the supervisors we can say that from an organisational standpoint of view, this method works well. The comparison to the existing data has yet to be done.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, NTNU Trondheim, Aalto Univ, Aalto University, Helsinki Inst Phys, Unimore, Swinburne University of Technology, CERN, European Organization for Nuclear Research (CERN)

Contributors: Kriesi, C., Steinert, M., Aalto-Setälä, L., Anvik, A., Balters, S., Baracchi, A., Jensen, B. M., Bjorkli, L. E., Buzzaccaro, N., Cortesi, D., D'Onghia, F., Dosi, C., Franchini, G., Fuchs, M., Gerstenberg, A., Hansen, E., Hiekkänen, K. M., Hyde, D., Ituarte, I., Kalasniemi, J., Kurikka, J., Lanza, I., Laurila, A., Lee, T. H., Lonvik, S., Mansikka-Aho, A., Nordberg, M., Oinonen, P., Pedrelli, L., Pekuri, A., Rane, E., Reime, T., Repokari, L., Ronningen, M., Rowlands, S., Sjomán, H., Slattsveen, K., Strachan, A., Stromstad, K., Suren, S., Tapio, P., Utriainen, T., Vignoli, M., Vijaykumar, S., Welo, T., Wulvik, A.

Number of pages: 10

Publication date: 2015

#### Host publication information

Title of host publication: DS 80-2 Proceedings of the 20th International Conference on Engineering Design (ICED 15) Vol 2: Design Theory and Research Methodology Design Processes

Publisher: DESIGN SOC

Editors: Weber, C., Husung, S., Cantamessa, M., Cascini, G., Marjanovic, D., Venkataraman, S.

### Publication series

Name: International Conference on Engineering Design

Publisher: DESIGN SOC

ISSN (Print): 2220-4334

Keywords: Research methodologies and methods, Crowdsourcing, Collaborative design, Prototyping, Globally distributed experiment, COLLABORATION, STRESS

Source: WOS

Source ID: 000366977500032

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Distributed power allocation over indoor multi-pico stations

A low-complexity distributed power allocation algorithm is proposed to reduce the interference and improve the transmitting rate of edge users. Different scenarios are considered and user experience of indoor communication is promoted. The simulation results prove the effectiveness of our algorithm. The proposed power control scheme ensures that more users can achieve their required rate and the fairness of different users is improved. Besides, more than 50% energy can be saved without loss in outage ability, and energy efficiency is also promoted. In addition, the proposed algorithm can be extended to scenarios that the required rates of pico stations can be changed periodically.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Beijing Institute of Petrochemical Technology, School of Information and Electronics, Beijing Institute of Technology

Contributors: Fei, Z. S., Gao, Q., Fu, Y., Isotalo, T., Niemelä, J.

Number of pages: 6

Pages: 227-232

Publication date: 1 Jun 2015

Peer-reviewed: Yes

### Publication information

Journal: Journal of the Beijing Institute of Technology

Volume: 24

Issue number: 2

ISSN (Print): 1004-0579

Ratings:

Scopus rating (2015): CiteScore 0.2 SJR 0.153 SNIP 0.163

Original language: English

ASJC Scopus subject areas: Engineering(all)

Keywords: Distributed power allocation, Indoor communication, Multi-pico stations

DOIs:

10.15918/j.jbit1004-0579.201524.0214

Source: Scopus

Source ID: 84940670650

Research output: Contribution to journal > Article > Scientific > peer-review

### Distributors As Market Orientation Agents in Innovation Development and Commercialization.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Perkin Elmer

Contributors: Aarikka-Stenroos, L., Talvitie, M.

Number of pages: 17

Publication date: 14 Jun 2015

#### Host publication information

Title of host publication: The Proceedings of the XXVI ISPIM Conference 2015 Budapest, Hungary

Place of publication: Denmark

Publisher: International Society for Professional Innovation Management ISPIM

ISBN (Electronic): 978-952-265-779-4

Keywords: Innovation, distributor, market demands, commercialization



URLs:

[http://conference.ispim.org/wp-content/uploads/sites/2/XXVI\\_ISPIM\\_Call\\_for\\_Papers.pdf](http://conference.ispim.org/wp-content/uploads/sites/2/XXVI_ISPIM_Call_for_Papers.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Does Strategic and Innovative Fit Indicate Smart Social Media use in a Company?**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, Pori Department, Research group: Business Ecosystems, Networks and Innovations, Managing digital industrial transformation (mDIT), University of Calabria

Contributors: Jussila, J., Aramo-Immonen, H., Rouvari, O., Porkka, P., Ammirato, S.

Number of pages: 11

Pages: 1973-1983

Publication date: 15 Jun 2016

### **Host publication information**

Title of host publication: Proceedings of the 11th International Forum on Knowledge Asset Dynamics : Towards a New Architecture of Knowledge: Big Data, Culture and Creativity, Dresden -Germany 15-17 June 2016

Place of publication: Dresden

Article number: 249

ISBN (Electronic): 978-88-96687-09-3

Keywords: social media, strategy, Innovation

URLs:

<http://www.knowledgeasset.org/Program/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **Dots-on-the-fly electron beam lithography**

We demonstrate a novel approach for electron-beam lithography (EBL) of periodic nanostructures. This technique can rapidly produce arrays of various metallic and etched nanostructures with line and pitch dimensions approaching the beam spot size. Our approach is based on often neglected functionality which is inherent in most modern EBL systems. The raster/vector beam exposure system of the EBL software is exploited to produce arrays of pixel-like spots without the need to define coordinates for each spot in the array. Producing large arrays with traditional EBL techniques is cumbersome during pattern design, usually leads to large data files and easily results in system memory overload during patterning. In Dots-on-The-fly (DOTF) patterning, instead of specifying the locations of individual spots, a boundary for the array is given and the spacing between spots within the boundary is specified by the beam step size. A designed pattern element thus becomes a container object, with beam spacing acting as a parameterized location list for an array of spots confined by that container. With the DOTF method, a single pattern element, such as a square, rectangle or circle, can be used to produce a large array containing thousands of spots. In addition to simple arrays of nano-dots, we expand the technique to produce more complex, highly tunable arrays and structures on substrates of silicon, ITO/ FTO coated glass, as well as uncoated fused silica, quartz and sapphire.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Optoelectronics Research Centre, Research group: Nanophotonics

Contributors: Isotalo, T. J., Niemi, T.

Number of pages: 7

Publication date: 2016

### **Host publication information**

Title of host publication: SPIE Proceedings : Alternative Lithographic Technologies VIII

Volume: 9777

Publisher: SPIE

Editor: Bencher, C.

Article number: 97771E

ISBN (Electronic): 9781510600126

### **Publication series**

Name: Proceedings of SPIE

Publisher: SPIE

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Electrical and Electronic Engineering, Applied Mathematics

Keywords: electron beam lithography, nano-fabrication, nano-particle arrays, optoelectronics, periodic nano-structures, plasmonics

DOIs:

10.1117/12.2219136

Source: Scopus

Source ID: 84981516864

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Double-side pumped membrane external-cavity surface-emitting laser (MECSEL) with increased efficiency emitting > 3 W in the 780 nm region**

We demonstrate a double-side pumped MECSEL emitting more than 3 W of output power in the 780 nm wavelength region. The laser exhibits an efficiency as high as 34.4 %.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics

Contributors: Kahle, H., Phung, H., Penttinen, J., Rajala, P., Tukiainen, A., Ranta, S., Guina, M.

Publication date: 1 May 2019

#### **Host publication information**

Title of host publication: 2019 Conference on Lasers and Electro-Optics, CLEO 2019 - Proceedings

Publisher: IEEE

ISBN (Electronic): 9781943580576

ASJC Scopus subject areas: Spectroscopy, Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality , Management, Monitoring, Policy and Law, Electronic, Optical and Magnetic Materials, Radiology Nuclear Medicine and imaging, Instrumentation, Atomic and Molecular Physics, and Optics

DOIs:

10.23919/CLEO.2019.8749958

#### **Bibliographical note**

INT=phys,"Rajala, Patrik"

Source: Scopus

Source ID: 85069191246

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **DroneRF dataset: A dataset of drones for RF-based detection, classification and identification**

Modern technology has pushed us into the information age, making it easier to generate and record vast quantities of new data. Datasets can help in analyzing the situation to give a better understanding, and more importantly, decision making. Consequently, datasets, and uses to which they can be put, have become increasingly valuable commodities. This article describes the DroneRF dataset: a radio frequency (RF) based dataset of drones functioning in different modes, including off, on and connected, hovering, flying, and video recording. The dataset contains recordings of RF activities, composed of 227 recorded segments collected from 3 different drones, as well as recordings of background RF activities with no drones. The data has been collected by RF receivers that intercepts the drone's communications with the flight control module. The receivers are connected to two laptops, via PCIe cables, that runs a program responsible for fetching, processing and storing the sensed RF data in a database. An example of how this dataset can be interpreted and used can be found in the related research article "RF-based drone detection and identification using deep learning approaches: an initiative towards a large open source drone database" (Al-Sa'd et al., 2019).

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Computing Sciences, Qatar University

Contributors: Allahham, M. S., Al-Sa'd, M. F., Al-Ali, A., Mohamed, A., Khattab, T., Erbad, A.

Publication date: 1 Oct 2019

Peer-reviewed: Yes

#### **Publication information**

Journal: Data in Brief

Volume: 26

Article number: 104313

ISSN (Print): 2352-3409

Ratings:

Scopus rating (2019): CiteScore 1.5 SJR 0.105  
Original language: English  
ASJC Scopus subject areas: General  
Keywords: Anti-drone systems, Classification, Drone identification, UAV detection  
DOIs:  
10.1016/j.dib.2019.104313  
Source: Scopus  
Source ID: 85071552598  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Drying-Mediated Self-Assembly of Graphene for Inkjet Printing of High-Rate Micro-supercapacitors**

Scalable fabrication of high-rate micro-supercapacitors (MSCs) is highly desired for on-chip integration of energy storage components. By virtue of the special self-assembly behavior of 2D materials during drying thin films of their liquid dispersion, a new inkjet printing technique of passivated graphene micro-flakes is developed to directly print MSCs with 3D networked porous microstructure. The presence of macroscale through-thickness pores provides fast ion transport pathways and improves the rate capability of the devices even with solid-state electrolytes. During multiple-pass printing, the porous microstructure effectively absorbs the successively printed inks, allowing full printing of 3D structured MSCs comprising multiple vertically stacked cycles of current collectors, electrodes, and solid-state electrolytes. The all-solid-state heterogeneous 3D MSCs exhibit excellent vertical scalability and high areal energy density and power density, evidently outperforming the MSCs fabricated through general printing techniques.

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Electrical Engineering, Research group: Laboratory for Future Electronics, Research group: Wireless Communications and Positioning, KTH Royal Institute of Technology  
Contributors: Sollami Delekta, S., Laurila, M., Mäntysalo, M., Li, J.  
Number of pages: 14  
Publication date: 27 Jan 2020  
Peer-reviewed: Yes

#### **Publication information**

Journal: Nano-Micro Letters  
Volume: 12  
Article number: 40  
ISSN (Print): 2311-6706  
Original language: English  
Electronic versions:  
Drying-Mediated Self-Assembly of Graphene 2020  
DOIs:  
10.1007/s40820-020-0368-8  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-202008266668>  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Dual-frequency signal processing architecture for robust and precise positioning applications**

Availability of new GPS civil signals L2C and L5 along with existed L1C/A signal and Galileo E1/E5/E6 signals has increased the potential ways to generate linear combination of signals to remove ionosphere errors and improve accuracy in carrier integer ambiguity resolution. Conventionally, a linear combination of dual frequency signals has been used to remove first order ionosphere delays incurred in signal propagation path which is a major source of range error. Out of the three civil signals in GPS and Galileo system, L5/E5 signals have advanced signal features such as higher received power, faster chip rate and lower carrier frequency than L1/E1 and L2C/E6 signals. Hence, dual frequency receiver with combination of L1/L5 and E1/E5 signals is more suitable to remove ionosphere delay and get benefit from L5/E5 signal characteristics. However, the major limitation of linear combination of signal observations is an amplification of receiver noise. To get benefit of two frequency signals, a suitable signal processing architecture is needed. By taking advantage of GPS L5/Galileo E5 signal characteristics, a dual frequency signal processing architecture is proposed with an aim to reduce the ionosphere-free signal observation noise and to enhance the L1/E1 signal tracking loop sensitivity. The L1/E1 signal tracking loop sensitivity can be enhanced by Doppler aiding from L5/E5 signal tracking loop. The low noise L5/E5 signal Doppler aid reduces the noise in the L1/E1 signal tracking loop. Moreover, two frequency signals tracked with common Doppler estimate will have common observation errors, which will get cancel in linear combination of observations i.e. ionosphere-free, wide-lane etc. Further, code phase observations can be smoothed (Hatch filter) using carrier phase observations. The carrier phase observations are limited by cycle slip. Hence, we have investigated an optimum combination of divergence-free and ionosphere-free pseudorange smoothing using dual-frequency carrier Doppler observations for GPS L1/L5 and Galileo E1/E5 signals. The cycle slip in carrier phase observations can be neglected in carrier Doppler observations. The proposed signal processing architecture incorporated in GPS L1/L5 and

Galileo E1/E5 dual frequency receiver will ensure robust signal tracking and minimum pseudorange errors, suitable to a range of high accuracy standalone and code differential positioning applications. The performance of the proposed dual frequency signal processing architecture is evaluated with GPS L1/L5 signals collected from Block-IIIF satellites.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Faculty of Electronics and Instrument Engineering, Samara National Research University

Contributors: Bolla, P., Lohan, E.

Number of pages: 9

Pages: 72-80

Publication date: 5 Jun 2018

#### Host publication information

Title of host publication: 2018 IEEE/ION Position, Location and Navigation Symposium, PLANS 2018

Publisher: IEEE

ISBN (Electronic): 9781538616475

ASJC Scopus subject areas: Automotive Engineering, Aerospace Engineering, Control and Optimization

Keywords: Carrier Doppler smoothing, Doppler aiding, Dual-frequency, Hatch filter

DOIs:

10.1109/PLANS.2018.8373367

#### Bibliographical note

EXT="Bolla, Padma"

jufoid=72638

Source: Scopus

Source ID: 85048871323

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Dual-ID headgear UHF RFID tag with broadside and end-fire patterns based on quasi-Yagi antenna

We present a wearable quasi-Yagi antenna on a periodic surface for a dual-ID passive UHF RFID tag embedded in headgear. The antenna produces a near end-fire radiation pattern directed towards the user's line of sight with the directivity of 4 dBi. Moreover, it integrates another tag by utilizing the Yagi antenna's reflector as a second dipole tag antenna with broadside radiation directed upwards from the user. Hence, in one platform, we obtain a dual-ID tag with near end-fire and broadside patterns for the two tag IDs. The former is achieved by inserting a periodic surface made up of a 2-by-2 grid of square loops in between the antenna and the body. This enhances the launching of surface waves for achieving the end-fire radiation and suppresses the undesired electromagnetic antenna-body interaction.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: BioMediTech

Contributors: Le, D., Ukkonen, L., Björninen, T.

Number of pages: 3

Pages: 610-612

Publication date: 10 Dec 2019

#### Host publication information

Title of host publication: Proceedings of IEEE Asia-Pacific Microwave Conference

Publisher: IEEE

ISBN (Electronic): 9781728135175

DOIs:

10.1109/APMC46564.2019.9038680

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Dual-Mode Behavior in Multi-Section DFB Semiconductor Lasers with Laterally-Coupled Ridge-Waveguide Surface Gratings

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, Research group: Nanophotonics

Contributors: Uusitalo, T., Virtanen, H., Viheriälä, J., Salmi, J. O., Aho, A., Dumitrescu, M.

Publication date: Jun 2015

#### Host publication information

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: OSA - The Optical Society

Article number: CB\_P\_26

ISBN (Electronic): 978-1-4673-7475-0

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CB\\_P\\_26](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CB_P_26)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

#### Durability study on high speed water hydraulic miniature on/off-valve

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Digital hydraulics

Contributors: Paloniitty, M.

Number of pages: 11

Pages: 201-211

Publication date: 24 May 2016

##### Host publication information

Title of host publication: DFP16, Proceedings of the eighth workshop on digital fluid power, May 24-25, 2016, Tampere, Finland

Place of publication: Tampere

ISBN (Print): 978-952-15-3755-4

ISBN (Electronic): 978-952-15-3756-1, 978-952-15-3757-8

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3757-8>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Dynamic characteristics of three-phase Z-source-based photovoltaic inverter with asymmetric impedance network

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)

Contributors: Jokipii, J., Suntio, T.

Number of pages: 8

Pages: 1976-1983

Publication date: 2015

##### Host publication information

Title of host publication: 9th International Conference on Power Electronics ECCE Asia (ICPE-ECCE Asia)

Publisher: IEEE

ISBN (Electronic): 978-89-5708-254-6

DOIs:

10.1109/ICPE.2015.7168049

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Dynamic laser speckle metrology with binarization of speckle patterns

Dynamic laser speckle analysis is non-destructive detection of physical or biological activity through statistical processing of speckle patterns on the surface of diffusely reflecting objects. This method is sensitive to microscopic changes of the surface over time and needs simple optical means. Advances in computers and 2D optical sensors forced development of pointwise algorithms. They rely on acquisition of a temporal sequence of correlated speckle images and generate activity data as a 2D spatial contour map of the estimate of a given statistical parameter. The most widely used pointwise estimates are the intensity-based estimates which compose each map entry from a time sequence of intensity values taken at one and the same pixel in the acquired speckle images. Accuracy of the pointwise approach is strongly affected by the signal-dependent nature of the speckle data when the spread of intensity fluctuations depends on the intensity itself. The latter leads to erroneous activity determination at non-uniform distribution of intensity in the laser beam for the non-normalized estimates. Normalization of the estimates, introduces errors. We propose to apply binarization to the acquired speckle images by comparing the intensity values in the temporal sequence for a given spatial point to the mean intensity value estimated for this point and to evaluate a polar correlation function. Efficiency of this new processing

algorithm is checked both by simulation and experiment.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: 3D MEDIA, Bulgarian Academy of Sciences

Contributors: Stoykova, E., Nazarova, D., Berberova, N., Gotchev, A., Ivanov, B., Mateev, G.

Publication date: 2017

#### Host publication information

Title of host publication: 19th International Conference and School on Quantum Electronics: Laser Physics and Applications

Publisher: SPIE

Article number: 102260R

ISBN (Electronic): 9781510609532

#### Publication series

Name: Proceedings of SPIE

Volume: 10226

ISSN (Print): 0277-786X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: Binary patterns, Dynamic speckle, Intensity-based algorithms, Optical metrology, Pointwise processing

DOIs:

10.1117/12.2262330

#### Bibliographical note

JUFOID=71479

Source: Scopus

Source ID: 85017345812

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Dynamics of rogue wave and soliton emergence in spontaneous modulation instability

Numerical simulations of spontaneous modulation instability show that localized structures in the chaotic instability field are well-described by analytic elementary and higher order soliton on finite background solutions of the nonlinear Schrödinger equation.

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Frontier Photonics, The University of Auckland, University College Dublin, Ireland, Christina Thorpe, Université de Franche-Comté, Institut FEMTO-ST, School of Mathematical Sciences, University College Dublin

Contributors: Toenger, S., Godin, T., Billet, C., Dias, F., Erkintalo, M., Genty, G., Dudley, J. M.

Number of pages: 2

Publication date: 4 May 2015

#### Host publication information

Title of host publication: CLEO: QELS - Fundamental Science, CLEO\_QELS 2015

Publisher: Optical Society of America (OSA)

ISBN (Print): 9781557529688

ASJC Scopus subject areas: Atomic and Molecular Physics, and Optics, Electrical and Electronic Engineering

DOIs:

10.1364/CLEO\_QELS.2015.FW4D.2

Source: Scopus

Source ID: 84935059381

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

#### Dynamics of value in technology inspired value co-creation: Case in homecare value network

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial Engineering and Management, Research group: Cost Management Center

Contributors: Tiitola, V., Korhonen, T., Laine, T., Lyly-Yrjänäinen, J.

Publication date: 2019

#### Host publication information

Title of host publication: 14th IFKAD 2019 Proceedings : 5-7 June 2019, Matera, Italy

Publisher: IKAM Centro Studi & Ricerche

ISBN (Electronic): 978-88-96687-12-3

#### Publication series

Name: PROCEEDINGS IFKAD

ISSN (Electronic): 2280-787X

URLs:

<https://www.ifkad.org/previous-editions/ifkad-2019/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Economical utilization of high strength steel: Welded slim floor box beams

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Metal and Light-wight structures

Contributors: Mela, K., Heinisuo, M.

Publication date: 2014

##### Host publication information

Title of host publication: Eurosteel 2014 7th European conference on steel and composite structures

ISBN (Print): 978-92-9147-121-8

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Editorial

##### General information

Publication status: Published

MoE publication type: B1 Article in a scientific magazine

Organisations: Department of Civil Engineering, Research area: Construction Management and Economics, Research

group: Digitalization in the real estate and construction sector, Research group: Capacity Development of Water and

Environmental Services CADWES, Research group: Real estate development

Contributors: Kähkönen, K., Huovinen, P., Keinänen, M.

Pages: 1-5

Publication date: 2015

Peer-reviewed: No

##### Publication information

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

ASJC Scopus subject areas: Engineering(all)

Research output: Contribution to journal › Editorial › Scientific

#### Editorial: Experiments in an Organisational Context

##### General information

Publication status: Published

MoE publication type: B1 Article in a scientific magazine

Organisations: Industrial and Information Management, Copenhagen Business School, Mines ParisTech, London Business School

Contributors: Christiansen, J., Birkinshaw, J., Le Massaon, P., Mäkinen, S.

Number of pages: 2

Publication date: 2017

Peer-reviewed: No

##### Publication information

Journal: CERN IdeaSquare Journal of Experimental Innovation

Volume: 1

Issue number: 2  
ISSN (Print): 2413-9505  
Original language: English  
DOIs:  
10.23726/cij.2017.684  
Research output: Contribution to journal › Editorial › Scientific

### **Editorial: Information to support decision-making**

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Civil Engineering  
Contributors: Juuti, P. S.  
Pages: 5-6  
Publication date: May 2017  
Peer-reviewed: Yes

#### **Publication information**

Journal: Ympäristöhistoria: Finnish Journal of Environmental History  
Volume: 2017  
Issue number: 1  
ISSN (Print): 1799-6953  
Original language: English  
URLs:  
[http://www.uta.fi/yky/tutkimus/historia/projektit/iehg/Ymparistohistoria/2017\\_1.html](http://www.uta.fi/yky/tutkimus/historia/projektit/iehg/Ymparistohistoria/2017_1.html)  
Research output: Contribution to journal › Editorial › Scientific › peer-review

### **Educating Computer Science Educators Online - A Racket MOOC for Elementary Math Teachers of Finland**

Many countries all over the world are in the process of introducing programming into their K-12 curricula. New Finnish Curriculum includes programming mentioned especially in accordance with mathematics and crafts. Consequently, Finland needs to train teachers to teach programming at elementary school level. In this paper, we describe how elementary math teachers were educated online to teach programming using the Racket programming language. The aim of the course was to increase both content knowledge (CK) and technological pedagogical content knowledge (TPACK). By analyzing the course feedback, questionnaires and exercise data, we present the teachers' views on the course and effects on their professional development (TPD). Finally, we describe development ideas for future online courses.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Pervasive Computing, Research area: Software engineering  
Contributors: Partanen, T., Niemelä, P., Mannila, L., Poranen, T.  
Pages: 47-58  
Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 9th International Conference on Computer Supported Education  
Publisher: SCITEPRESS - Science and Technology Publications  
ISBN (Electronic): 978-989-758-239-4  
DOIs:  
10.5220/0006257800470058  
Source: Bibtex  
Source ID: urn:d6146dd9d542d5c0a85f938eb99499e9  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Educating future coders with a holistic ICT curriculum and new learning solutions**

Technology-orientation and coding are gaining momentum in Finnish curriculum planning for primary and secondary school. However, according to the existing plans, the scope of ICT teaching is limited to practical topics, e.g., how to drill basic control structures (if-then-else, for, while) without focusing on the high level epistemological view of ICT. This paper proposes some key extensions to such plans, targeted to highlight rather the epistemological factors of teaching than talk about concrete means of strengthening the craftsmanship of coding. The proposed approach stems from the qualitative data collected by interviewing ICT professionals (N=7, 4 males, 3 females), who have gained experience of the industry needs while working as ICT professionals (avg=11.3 y, s=3.9 y). This work illustrates a holistic model of ICT teaching as well as suggests a set of new methods and tools.



### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Research area: Software engineering, Rovio, Jyväskylän yliopisto

Contributors: Niemelä, P., Di Flora, C., Helevirta, M., Isomöttönen, V.

Number of pages: 5

Pages: 132-136

Publication date: 2016

### Host publication information

Title of host publication: 7th International Multi-Conference on Complexity, Informatics and Cybernetics, IMCIC 2016 and 7th International Conference on Society and Information Technologies, ICSIT 2016

Volume: 2

Publisher: IIS

ISBN (Electronic): 9781941763384

ASJC Scopus subject areas: Artificial Intelligence, Information Systems, Computer Networks and Communications

Keywords: Concept maps, Holistic ICT model, ICT curriculum, Modelling, Teaching ICT in primary and secondary school

URLs:

<http://www.iis.org/CDs2016/CD2016Spring/papers/EB259QT.pdf>

Source: Scopus

Source ID: 85032963441

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Education and Materials Joining Research methods at Tampere University of Technology

At Tampere University of Technology (TUT), education and research related to joining technologies are performed by two university departments, the Department of Materials Science (DMS) and the Department of Mechanical Engineering and Industrial Systems (MEI). Many of the research activities are conducted via close collaboration between these two units.

### General information

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Materials Science, Research group: Metals Technology, Research group: Surface Engineering, Department of Mechanical Engineering and Industrial Systems, Research group: Laser

Contributors: Peura, P., Vuoristo, P., Vihinen, J.

Number of pages: 4

Pages: 73-76

Publication date: Jun 2015

Peer-reviewed: Unknown

### Publication information

Journal: Hitsaustekniikka

Volume: 65

Issue number: 2-3/2015

ISSN (Print): 0437-6056

Original language: English

### Bibliographical note

ORG=mol,0.5

ORG=mei,0.5

Research output: Contribution to journal › Article › Professional

### Education on the utilization of secondary materials in earthworks

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering, Aalto University, Aalto University

Contributors: Kuula, P., Leppänen, M., Kolisoja, P., Korkiala-Tanttu, L., Sorvari, J., Gustavsson, H.

Number of pages: 11

Pages: 177-187

Publication date: 6 Jun 2018

#### Host publication information

Title of host publication: Proceedings of the 10th International Conference on the Environmental and Technical Implications of Construction with Alternative Materials : No Gradle no Grave Circular Economy into practice

Publisher: RIL - Finnish Association of Civil Engineers

Editors: Lahtinen, P., Raasakka, V.

ISBN (Electronic): 978-951-758-631-3

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Effect of active damping on the output impedance of PV inverter

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)

Contributors: Aapro, A., Messo, T., Suntio, T.

Number of pages: 8

Publication date: 2015

#### Host publication information

Title of host publication: IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL)

ISBN (Print): 978-1-4673-6847-6

DOIs:

10.1109/COMPEL.2015.7236463

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Effect of air gap on the adhesion of PET layer on cardboard substrate in extrusion coating

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science

Contributors: Suokas, E.

Number of pages: 16

Pages: 529-544

Publication date: 1 Jan 2017

#### Host publication information

Title of host publication: 16th TAPPI European PLACE Conference 2017

Publisher: TAPPI Press

ISBN (Electronic): 9781510850880

ASJC Scopus subject areas: Media Technology, Chemical Engineering(all), Chemistry(all), Mechanical Engineering, Materials Science(all)

Source: Scopus

Source ID: 85044480842

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Effect of elevated nitrate and sulfate concentrations on selenate removal by mesophilic anaerobic granular sludge bed reactors

Simultaneous removal of selenate (SeO<sub>4</sub><sup>2-</sup>), nitrate (NO<sub>3</sub><sup>-</sup>) and sulfate (SO<sub>4</sub><sup>2-</sup>), typically present in Se-contaminated wastewaters, by Eerbeek anaerobic granular sludge, was investigated in batch and continuous bioreactor experiments. Batch experiments showed that SeO<sub>4</sub><sup>2-</sup> removal was enhanced to 91% in simulated wastewater with SeO<sub>4</sub><sup>2-</sup> + NO<sub>3</sub><sup>-</sup> + SO<sub>4</sub><sup>2-</sup> (1 : 40 : 100 SeO<sub>4</sub><sup>2-</sup> : NO<sub>3</sub><sup>-</sup> : SO<sub>4</sub><sup>2-</sup> molar ratios) compared to simulated wastewater with SeO<sub>4</sub><sup>2-</sup> alone (67%). SeO<sub>4</sub><sup>2-</sup> removal was severely impacted by high concentrations of SO<sub>4</sub><sup>2-</sup> (SeO<sub>4</sub><sup>2-</sup> : SO<sub>4</sub><sup>2-</sup> > 1 : 300). Removal of SeO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>2-</sup> at a 1 : 40 : 100 ratio was studied in a 2 L lab-scale upflow anaerobic sludge blanket (UASB) reactor operated at 20 [degree]C, a 24 h hydraulic retention time and a 2 g COD L<sup>-1</sup> day<sup>-1</sup> organic loading rate using lactate as the electron donor. The removal efficiencies were stabilized at 100, 30 and 80% for NO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup> and total Se, respectively, during 92 days of UASB operation. The total Se removal efficiencies dropped to 47% or even to a negative value when, respectively, SO<sub>4</sub><sup>2-</sup> and NO<sub>3</sub><sup>-</sup> were sequentially excluded from the influent. Speciation of Se, particularly the microbial production of colloidal Se<sub>0</sub> levels, was influenced by both SO<sub>4</sub><sup>2-</sup> and NO<sub>3</sub><sup>-</sup>. The results presented here demonstrate that UASB reactors are capable of removing SeO<sub>4</sub><sup>2-</sup> in the presence of millimolar concentrations of NO<sub>3</sub><sup>-</sup> and SO<sub>4</sub><sup>2-</sup> typically found in Se-contaminated wastewaters.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Chemistry and Bioengineering, UNESCO-IHE Institute for Water Education

Contributors: Tan, L. C., Nanchaiah, Y. V., van Hullebusch, E. D., Lens, P. N. L.

Pages: 303-314  
Publication date: 2018  
Peer-reviewed: Yes  
Early online date: 5 Dec 2017

#### Publication information

Journal: Environmental Science: Water Research & Technology  
Volume: 4  
Issue number: 2  
ISSN (Print): 2053-1400  
Ratings:  
Scopus rating (2018): CiteScore 5.3 SJR 1.104 SNIP 1.081  
Original language: English  
DOIs:  
10.1039/C7EW00307B  
Source: Bibtex  
Source ID: urn:83b997c5e222c3328f8a2e876e3d3da8  
Research output: Contribution to journal > Article > Scientific > peer-review

#### Effect of Inductor Saturation on the Harmonic Currents of Grid-Connected Three-Phase VSI in PV Application

The optimal design of a VSI based photovoltaic (PV) inverter has been studied extensively during the last years. The focus in these studies has been in the selection of the reactive components of the LCL-filter, leaving the inductor design out from the discussion. However, the inductor design plays important role when the design target is to minimize the size and the cost of the filter. Unfortunately, the minimization of the filter size might yield saturating inductors. In this paper, the effect of inductor saturation on the harmonic currents of grid-connected three-phase PV inverter is studied by simulations and measurements on a prototype inverter. The results indicate that application of saturating inductors increases the fifth and seventh harmonics in the output current of the inverter when it is operating at open-loop. However, these harmonics are effectively attenuated when the inverter is operated at closed-loop.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)  
Contributors: Viinamäki, J., Jokipii, J., Suntio, T.  
Number of pages: 8  
Pages: 1209-1216  
Publication date: 2015

#### Host publication information

Title of host publication: 2015 9th International Conference on Power Electronics and ECCE Asia (ICPE-ECCE Asia), 1-5 June 2015, Seoul  
Publisher: IEEE  
ISBN (Print): 978-89-5708-254-6  
Keywords: Inductor nonlinearity, inductor saturation, PV inverter design, three-phase inverter  
DOIs:  
10.1109/ICPE.2015.7167934  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Effect of Laser Power on Yield of TiO<sub>2</sub> Nanoparticles Synthesized by Pulsed Laser Ablation in Water

In this study, the pulsed laser ablation in liquids (PLAL) technique was used on titanium in deionized water at different laser powers to understand its effect on the synthesis yield of nanoparticles. A 500-ns 1062-nm fiber laser at 25 kHz was used to effect PLAL of titanium to produce nanoparticles. TEM images of the synthesized nanoparticles showed spherical particles ranging from 332 nm in diameter. The electron diffraction pattern and high peaks in the wide-angle x-ray scattering (WAXS) pattern indicated high crystallinity of nanoparticles. WAXS results showed nanoparticles were allotropes of titania: rutile and anatase. Synthesis yield measurements indicated an increase in yield with the increase in laser power as long as the increase in laser fluence remains proportional to the increase in laser power. However, the yield increased proportionally with the increase in laser fluence. The analysis of the chosen laser pulse duration and repetition rate showed an increase in the yield with longer pulse duration and higher repetition rate.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Materials Science, Research group: Ceramic materials, Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation, Research group: Surface Engineering, Research group: Materials Characterization, Research group: Ceramic materials

Contributors: Singh, A., Vihinen, J., Frankberg, E., Hyvärinen, L., Honkanen, M., Levänen, E.  
Number of pages: 5  
Pages: 39-43  
Publication date: Mar 2017  
Peer-reviewed: Yes

#### Publication information

Journal: Journal of Ceramic Science and Technology

Volume: 8

Issue number: 1

ISSN (Print): 2190-9385

Ratings:

Scopus rating (2017): CiteScore 1.8 SJR 0.374 SNIP 0.778

Original language: English

Keywords: Nanoparticles, synthesis yield, pulsed laser ablation in liquids, WAXS, laser fluence, WAVELENGTH, GOLD

Electronic versions:

10.4416\_JCST2016-00071-1

DOIs:

10.4416/JCST2016-00071

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910183944>

Source: WOS

Source ID: 000397702900008

Research output: Contribution to journal > Article > Scientific > peer-review

#### Effect of radiation inside square hollow section under moderate non-symmetric fire

The temperature calculation of hollow steel sections at elevated temperatures is a well-documented and standard procedure. Through this standard procedure, the temperature can be calculated by assuming a uniform gas temperature all around the section, which is called a symmetric fire in this paper. Embedding in surrounding structures or connecting to another steel member results in non-symmetric heat distribution in the member. This non-symmetry of the surrounding temperature may cause surface-to-surface heat radiation inside the member, thus affecting the steel section temperature distribution. This effect is considered in this paper by adopting analytical and finite element method analysis.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Metal and Light-weight structures, Research group: Metal and Light-weight structures

Contributors: Baczkiewicz, J., Pajunen, S., Heinisuo, M.

Number of pages: 6

Pages: 25-30

Publication date: 27 Jul 2018

Peer-reviewed: Yes

#### Publication information

Journal: Fire Research

Volume: 2

Issue number: 1

Article number: 2:42

ISSN (Print): 2532-4748

Original language: English

Keywords: Steel member, Hollow section, Heat transfer, Radiation

Electronic versions:

42-Article Text-486-2-10-20180822-1

DOIs:

10.4081/fire.2018.42

URLs:

<http://urn.fi/URN:NBN:fi:tty-201811192630>

Research output: Contribution to journal > Article > Scientific > peer-review

#### Effects of adiabatic heating estimated from tensile tests with continuous heating

The mechanical behavior of metastable austenitic stainless steels is strongly influenced by the strain induced phase transformation of austenite into martensite. The phase transformation rate is significantly affected by the strain rate and by

the adiabatic heating at higher strain rates. Uncoupling of the effects of strain rate and adiabatic heating can lead to a better understanding of the strain-induced martensitic transformation and allow more accurate material modeling. This paper presents a preliminary analysis of the effects of adiabatic heating during a tensile test. The adiabatic heating as a function of strain was calculated from the stress-strain curves obtained in adiabatic conditions. Then the tensile tests were carried out at a lower strain rate while continuously heating the specimen at the same rate as obtained in the adiabatic conditions. With this method, the thermal conditions of the adiabatic tests were reproduced in the low rate conditions, which would normally be isothermal without the external heating. The martensite fraction was evaluated using the magnetic balance method. In this paper, we present a detailed description of the experimental procedure and discuss the observed changes in the mechanical behavior and microstructure of the studied steel.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, Research group: Materials Characterization

Contributors: Vazquez Fernandez, N., Isakov, M., Hokka, M., Kuokkala, V. T.

Number of pages: 7

Pages: 1-7

Publication date: 2018

#### **Host publication information**

Title of host publication: Dynamic Behavior of Materials - Proceedings of the 2017 Annual Conference on Experimental and Applied Mechanics

Volume: 1

Publisher: Springer New York LLC

ISBN (Print): 9783319629551

#### **Publication series**

Name: Conference Proceedings of the Society for Experimental Mechanics

ISSN (Print): 2191-5644

ASJC Scopus subject areas: Engineering(all), Computational Mechanics, Mechanical Engineering

Keywords: Adiabatic heating, Magnetic balance method, Martensite transformation, Metastable austenite, Stainless steel  
DOIs:

10.1007/978-3-319-62956-8\_1

#### **Bibliographical note**

jufoid=72540

Source: Scopus

Source ID: 85033464703

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Effects of Social Media on Consumers' Sports Brand Experiences and Loyalty**

Brand experience has been noted as a key attribute affecting buying behavior. Although research into the determinants of brand loyalty in sport context has grown in recent years, the focus has predominantly been on brand experience, brand personality and satisfaction, not on social media variables. In addition, we lack empirically verified evidence of the brand experience and brand loyalty relationship mediated through brand identification. In this research the authors address the role of four different social media platforms and how they drive brand loyalty through different types of brand experiences, brand identification and satisfaction to the brand experience. Structural equation modelling is used to test the model based on data from a survey of 815 ice hockey fans of a particular ice hockey team. The results show that brand experience is positively affected by brand engagement in social media and the relationship is strengthened when more different social media platforms are used for following the brand. Brand experience affects brand loyalty mainly indirectly through brand identification and satisfaction constructs.

#### **General information**

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Industrial and Information Management

Contributors: Munnukka, J., Karjaluoto, H., Mahlamäki, T., Hokkanen, V.

Number of pages: 14

Pages: 1051-1064

Publication date: 2017

#### **Host publication information**

Title of host publication: Creating Marketing Magic and Innovative Future Marketing Trends : Proceedings of the 2016 Academy of Marketing Science (AMS) Annual Conference

Publisher: Springer International Publishing

Editor: Stieler, M.

ISBN (Print): 978-3-319-45596-9

### Publication series

Name: Developments in Marketing Science: Proceedings of the Academy of Marketing Science

ISSN (Print): 2363-6165

DOIs:

10.1007/978-3-319-45596-9\_194

### Bibliographical note

jufoid=85075

Source: Bibtex

Source ID: urn:531c45abc12e7076a1ecfdb73d8ebcbb

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### Effects of subsampling on characteristics of RNA-seq data from triple-negative breast cancer patients

Background: Data from RNA-seq experiments provide a wealth of information about the transcriptome of an organism. However, the analysis of such data is very demanding. In this study, we aimed to establish robust analysis procedures that can be used in clinical practice. Methods: We studied RNA-seq data from triple-negative breast cancer patients. Specifically, we investigated the subsampling of RNA-seq data. Results: The main results of our investigations are as follows: (1) the subsampling of RNA-seq data gave biologically realistic simulations of sequencing experiments with smaller sequencing depth but not direct scaling of count matrices; (2) the saturation of results required an average sequencing depth larger than 32 million reads and an individual sequencing depth larger than 46 million reads; and (3) for an abrogated feature selection, higher moments of the distribution of all expressed genes had a higher sensitivity for signal detection than the corresponding mean values. Conclusions: Our results reveal important characteristics of RNA-seq data that must be understood before one can apply such an approach to translational medicine.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Signal Processing, Queen's University, Belfast, Northern Ireland, University of Arkansas for Medical Sciences

Contributors: Stupnikov, A., Glazko, G. V., Emmert-Streib, F.

Publication date: 8 Sep 2015

Peer-reviewed: Yes

### Publication information

Journal: Chinese Journal of Cancer

Volume: 34

Issue number: 10

ISSN (Print): 1944-446X

Ratings:

Scopus rating (2015): CiteScore 4.8 SJR 1.081

Original language: English

ASJC Scopus subject areas: Oncology

Keywords: Computational genomics, High-dimensional biology, RNA-seq data, Statistical robustness, Triple-negative breast cancer

DOIs:

10.1186/s40880-015-0040-8

Source: Scopus

Source ID: 84944199836

Research output: Contribution to journal › Article › Scientific › peer-review

### Effects of surface cracks and strain rate on the tensile behavior of Balmoral Red granite

This paper presents an experimental procedure for studying the effects of surface cracks on the mechanical behavior of Balmoral Red granite under dynamic and quasi-static loading. Three different thermal shocks were applied on the surface of the Brazilian Disc test samples by keeping a flame torch at a fixed distance from the sample surface for 10, 30, and 60 seconds. Microscopy clearly shows that the number of the surface cracks increases with the duration of the thermal shock. After the thermal shock, the Brazilian Disc tests were performed using a servohydraulic materials testing machine and a compression Split Hopkinson Pressure Bar (SHPB) device. The results show that the tensile strength of the rock decreases and the rate sensitivity of the rock increases as more cracks are introduced to the structure. The DIC analysis of the Brazilian disc tests shows that the fracture of the sample initiates at the center of the samples or slightly closer to the incident bar contact point. This is followed by crushing of the samples at both contact points with the stress bars.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Materials Science, Research group: Materials Characterization, Engineering materials science and solutions (EMASS)

Contributors: Mardoukhi, A., Hokka, M., Kuokkala, V.

Publication date: Sep 2015

### Host publication information

Title of host publication: 11th International Conference on the Mechanical and Physical Behaviour of Materials Under Dynamic Loading

Publisher: EDP Sciences

Article number: 02007

ISBN (Print): 978-2-7598-1817-4

URLs:

[http://epjwoc.epj.org/articles/epjconf/abs/2015/13/epjconf-dymat2015\\_02007/epjconf-dymat2015\\_02007.html](http://epjwoc.epj.org/articles/epjconf/abs/2015/13/epjconf-dymat2015_02007/epjconf-dymat2015_02007.html)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### E-learning of ethics, awareness, hacking and research by information security majors

Some earlier courses were reorganized in 2013 to construct a syllabus for the information security major at Tampere University of Technology, a 30 ECTS credit unit package in the 300-cu master's degree. As their other subjects the students may have for instance communications or software engineering, or information management. This paper describes how the compulsory courses introduce four important but not very technical engineering skills using mainly an e-learning approach. The reasons for such an approach is to save resources in the very beginning – because of the large number of students heading for other majors – and after that to offer flexibility in scheduling to serve the elective courses, as well as the studies of other disciplines – those that provide a need for security. The four topic areas are ethics of individuals and organizations, personal awareness of security issues, hacking, i.e. offensive way of thinking, and The described introductory stage of exposing the students' minds to these matters does not forget innovativeness, but that remains more in the background before the students start working with cases and hands-on experiments later. The description covers four separate courses, forming a prerequisite chain. The first and last one are lecture-based and it takes at least two years to pass them; 3–4 years is more normal. The academic units are not essential here. Instead, one of the main points is the repeated exposure to the various ways of thinking. In the following summary of the succession the numbers 1–4 refer to the courses, but they can be just thought of as time-separated occasions: Ethics: 1. Laws 2. Laws 3. Ethical questions in one's own environment – technology-related ethical questions for individuals – ethical questions for organizations. 4. Interview a security professional, ethical point of view included. Awareness: 1 & 2. Policies, guidelines and web-sites of security information. 3. Daily observations (own or from news) and actions regarding information security, 4. Campaigns etc. Hacking: 1. By-pass authentication by changing the source code of a web page. 2. -- 3. Carry out and report an exercise found at one of listed sites, 4. Laboratory exercises in hacking. Research: 1. Fill in a questionnaire resembling the one from 3rd stage. 2. -- 3. A questionnaire to five acquaintances, completed by interviewing them; deal with the results. 4. Read research papers, interview a security professional trying to generalize together with peers. The paper explains the rationale of these exposures and how they are delivered. It must be noted that not everything is compulsory for passing the courses. The paper reports observations concerning the student choices and feedback. The course #3 appears in its earlier form in [1]. The current version was updated to be two times larger and more professionally oriented. Reference: [1] Jukka A. Koskinen, Tomi O. Kelo: Pure e-learning course in information security. Proc. 2nd Int. Conf. on Security of Information and Networks, 2009. 8–13.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Information security, Intelligent dexterity for secure networked infrastructure and applications (IDSNIA)

Contributors: Koskinen, J. A.

Number of pages: 8

Publication date: 29 Jun 2015

### Host publication information

Title of host publication: Proceedings of SEFI Annual Conferences

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 978-2-87352-004-5

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Electrically small UHF RFID tag antenna based on an inductively coupled resonant LC tank

We introduce two LC tank based electrically small UHF RFID tag antennas with a stacked configuration ( $0.04 \lambda$  times  $0.04 \lambda$  times  $0.02 \lambda$ ) and a coplanar configuration ( $0.08 \lambda$  times  $0.04 \lambda$ ). The method of using a resonant LC tank to minimize the antenna footprint is analysed with the antenna equivalent circuit and the electromagnetic simulations. The performance of the proposed antennas are verified in the wireless measurement with a maximum read range of 3.2 m and 2.5 m of the stacked and coplanar ones, respectively. The influence of antenna size on its

performance is analysed with a parametric studies. The results indicate that the antennas feature a readily scalable size-performance ratio that makes it easy to adapt the tag according to different application requirements.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: BioMediTech  
Contributors: Ma, S., Sydänheimo, L., Ukkonen, L., Björninen, T.  
Number of pages: 3  
Publication date: 10 Dec 2019

#### Host publication information

Title of host publication: Proceedings of the 2019 IEEE Asia-Pacific Microwave Conference, APMC 2019  
Publisher: IEEE  
ISBN (Electronic): 9781728135175  
DOIs:  
10.1109/APMC46564.2019.9038618  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Electricity Distribution Network Tariffs - Present Practices, Future Challenges and Development Possibilities

In this paper, we discuss the pricing of electricity distribution. In the paper, the present practices concerning the forming of tariffs are examined. The possible directions and main future challenges of the energy sector can present challenges for the business of Distribution System Operators (DSOs). These change directions and challenges are examined and explained in the paper. The development opportunities from the alternative distribution network tariff structure and implementation possibility point of view are briefly discussed in the paper.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electrical Engineering, Research area: Power engineering, Helen Electricity Network Ltd.  
Contributors: Lummi, K., Rautiainen, A., Järventausta, P., Heine, P., Lehtinen, J., Hyvärinen, M.  
Number of pages: 4  
Publication date: Jun 2016

#### Host publication information

Title of host publication: CIRED Workshop 2016  
ISBN (Electronic): 978-1-78561-202-2  
URLs:  
[http://www.cired.net/publications/workshop2016/pdfs/CIRED2016\\_0112\\_final.pdf](http://www.cired.net/publications/workshop2016/pdfs/CIRED2016_0112_final.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Electronic Exam in Electronics Studies

Electronic exams will become more common the following years as new students studying at universities are more and more used to digital devices. Students' working methods as well as the teaching will thus be digitalized, which will directly create expectations of and requirements for teaching and exams in universities. Thus, electronic exam systems need to take into account the needs of different users and the various features needed by the different fields. This paper introduces an electronic exam project that has been carried out by the department of Electronics and Communications Engineering at Tampere University of Technology during academic years 2014 – 2015 and 2015 – 2016. In this project the final exam of a pilot course in electronics intermediate studies was implemented with EXAM electronic exam system. The EXAM system has been developed in cooperation with Finnish universities and universities of applied sciences. The results presented in the paper are based on the feedback that was gathered from the participated students. The results of this project indicate that flexibility of scheduling is one of the key advantages of electronic exams. As electronic exams enable the possibility for students to choose their exam time, overlapping of exams is avoided and students have more time to prepare for exams. The results also confirm that with a computer answering essay questions is pleasant and quick, and due to computer's text editing options the essay answers are more structured than in pen-and-paper exams. In electronics studies mathematical problem solving is an integral part of studies, and this needs to be taken into consideration when designing and executing electronic exams. According to the results of this project the EXAM electronic exam system has not been able to meet these demands as satisfyingly as hoped. However, students, who used MATLAB software in the electronic exam, considered the software helpful when solving mathematical problems. The possibility to use software as part of an exam is thus another key advantage of electronic exams.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, Research group: Personal Electronics Group, Research group: Wireless Identification and Sensing Systems Research Group, Tampere University of Technology IT



Services Teaching and Learning Services  
Contributors: Laine, K., Sipilä, E., Anderson, M., Sydänheimo, L.  
Number of pages: 10  
Publication date: 15 Sep 2016

#### Host publication information

Title of host publication: SEFI Annual Conference 2016 : Engineering Education on Top of the World: Industry University Cooperation  
ISBN (Print): 9782873520144  
URLs:  
[http://www.sefi.be/conference-2016/papers/Engineering\\_Education\\_Research\\_\\_I\\_feel\\_brilliant/laine-electronic-exam-in-electronics-studies-9.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Education_Research__I_feel_brilliant/laine-electronic-exam-in-electronics-studies-9.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Electro-optic steering of random laser emission in liquid crystals

Using an external low-frequency electric field applied to dye-doped nematic liquid crystals, we demonstrate that random lasing obtained by optical pumping can be steered in an angular direction by routing an all-optical waveguide able to collect the emitted light. By varying the applied voltage from 0 to 2 V, we reduce the walk-off and sweep the random laser guided beam over 7 degrees.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Physics, Research group: Nonlinear Optics, University of Rome Roma Tre, University "Roma Tre"  
Contributors: Assanto, G., Perumbilavil, S., Piccardi, A., Kauranen, M.  
Number of pages: 3  
Pages: 103-105  
Publication date: 2018  
Peer-reviewed: Yes

#### Publication information

Journal: Photonics Letters of Poland  
Volume: 10  
Issue number: 4  
ISSN (Print): 2080-2242  
Ratings:  
Scopus rating (2018): CiteScore 0.8 SJR 0.214 SNIP 0.357  
Original language: English  
ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials  
DOIs:  
10.4302/plp.v10i4.852  
Source: Scopus  
Source ID: 85062032353  
Research output: Contribution to journal › Article › Scientific › peer-review

#### Electrostatic discharge characteristics of conductive polymers

ESD control items are generally characterized by direct current measurements at certain voltage levels. Discharge resistance may, however, have a remarkable voltage and frequency dependency. We have assessed conductive polymers by comparing the resistivities of the solid planar objects with the resistances of electrostatic discharges. Conductive polymers may have applicable characteristics of current attenuation for ESD control items.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Faculty of Biomedical Sciences and Engineering, Cascade Metrology, Premix Oy, Infenion Technologies AG  
Contributors: Viheriäkoski, T., Kärjä, E., Gärtner, R., Tamminen, P.  
Publication date: 18 Oct 2017

#### Host publication information

Title of host publication: Electrical Overstress/Electrostatic Discharge Symposium Proceedings 2017, EOS/ESD 2017  
Publisher: ESD Association  
ISBN (Electronic): 1585372935  
ASJC Scopus subject areas: Electrical and Electronic Engineering

Source: Scopus

Source ID: 85037810021

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Electrostatic Threats in Hospital Environment**

Uncontrolled electrostatic discharge (ESD) sources may cause unpleasant experiences as well as more serious hazards to health. We have observed surprisingly high energy ESD sources in the hospital environment. These findings are analyzed and discussed in this article. In addition, electrostatic attraction and charge relaxation of materials for medical purposes are studied and solutions are proposed.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Cascade Metrol, Kanta Hame Cent Hosp, Premix Oy, Ion Phase, Electrostat Solut Ltd

Contributors: Viheriäkoski, T., Kokkonen, M., Tamminen, P., Karja, E., Hillberg, J., Smallwood, J.

Number of pages: 9

Publication date: 2014

#### **Host publication information**

Title of host publication: 2014 36TH Electrical overstress/electrostatic discharge symposium (EOS/ESD)

Publisher: IEEE COMPUTER SOC

#### **Publication series**

Name: Electrical Overstress Electrostatic Discharge Symposium

Publisher: IEEE COMPUTER SOC

ISSN (Print): 0739-5159

Source: WOS

Source ID: 000355792800054

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Elementary math to close the digital skills gap**

All-encompassing digitalization and the digital skills gap pressure the current school system to change. Accordingly, to 'digi-jump', the Finnish National Curriculum 2014 (FNC-2014) adds programming to K-12 math. However, we claim that the anticipated addition remains too vague and subtle. Instead, we should take into account education recommendations set by computer science organizations, such as ACM, and define clear learning targets for programming. Correspondingly, the whole math syllabus should be critically viewed in the light of these changes and the feedback collected from SW professionals and educators. These findings reveal an imbalance between supply and demand, i.e., what is over-taught versus under-taught, from the point of view of professional requirements. Critics claim an unnecessary surplus of calculus and differential equations, i.e., continuous mathematics. In contrast, the emphasis should shift more towards algorithms and data structures, flexibility in handling multiple data representations, logic; in summary - discrete mathematics.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Jyväskylän yliopisto

Contributors: Niemelä, P., Valmari, A.

Number of pages: 12

Pages: 154-165

Publication date: 2018

#### **Host publication information**

Title of host publication: CSEDU 2018 - Proceedings of the 10th International Conference on Computer Supported Education

Volume: 2

Publisher: SCITEPRESS

ISBN (Electronic): 9789897582912

ASJC Scopus subject areas: Computer Science Applications, Information Systems, Education

Keywords: Computing in math syllabus, Continuous vs. discrete math, Digital skills gap, Effectiveness of education, K-12 computer science education, Professional development of software professionals

DOIs:

10.5220/0006800201540165

#### **Bibliographical note**

EXT="Valmari, Antti"

Source: Scopus

Source ID: 85047771637

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Embroidered antennas and antenna-electronics interfaces for wearable RFID tags**

We summarize the possibilities of embroidery with conductive yarn in the fabrication of antennas and antenna-electronics interconnections for wearable RFID tags. Based on our results, both fabrication time and amount of conductive yarn used in fabrication of a dipole antenna can be saved by selecting dense or parse stitching for different regions of the antenna, or by sewing only the antenna borderline. Moreover, we fabricated the antenna-IC interconnection by sewing through the pads of the fixture carrying the IC during the antenna fabrication. Our wearable prototype tag showed excellent wireless performance, and was detectable at distances of 6 and 2 meters, in air and on the human body, respectively.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Wireless Identification and Sensing Systems Research Group

Contributors: Virkki, J., Chen, X., Björninen, T., Ukkonen, L.

Number of pages: 3

Publication date: 20 Sep 2017

#### **Host publication information**

Title of host publication: IMWS-AMP 2017 International Microwave Workshop Series on Advanced Materials and Processes

Publisher: IEEE

ISBN (Print): 978-1-5386-0480-9

DOIs:

10.1109/IMWS-AMP.2017.8247437

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **EMCCD imaging of strongly ionizing radioactive materials for safety and security**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research area: Optics, Frontier Photonics

Contributors: Sand, J., Ihantola, S., Peräjärvi, K., Toivonen, H., Nicholl, A., Hrnccek, E., Toivonen, J.

Pages: JSII\_P\_1

Publication date: 12 May 2013

#### **Host publication information**

Title of host publication: 2013 Conference on Lasers and Electro-Optics - International Quantum Electronics Conference

Publisher: Optical Society of America

ISBN (Electronic): 978-1-4799-0594-2

Keywords: Radioluminescence, Imaging of alpha emitters

URLs:

[http://www.osapublishing.org/abstract.cfm?URI=CLEO\\_Europe-2013-JSII\\_P\\_1](http://www.osapublishing.org/abstract.cfm?URI=CLEO_Europe-2013-JSII_P_1)

Source: Bibtex

Source ID: urn:29a089b7818f19ccf28db64b192d34f6

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **Emergence of relationship triads in construction project networks**

Research is increasingly addressing attention to project networks, in terms of inter-organizational relationships. Very often, research is focused on customers and contractors at the center of the project networks and their strong dyadic relationships. Less attention has been paid to the non-central actors and triadic relationships, which might have significant role in project delivery and in the construction innovations. This research focuses on the emergence of relationship triad between contractor, supplier and designer. The goal of this research is to identify contractors' motives to engage in triadic relationship, and practices to adopt contractor-supplier-designer triads in the construction project networks. Qualitative, exploratory research strategy is employed in the context of construction project networks, with contractors as adopters of relationship triads. Interviews are conducted with contractors, to discover the specifics of contractor-supplier-designer relationship triads in construction projects. The results indicate that contractors are motivated to enhance their dyadic relationships with suppliers and designer, but they are also motivated and capable to adopt triadic relationships with these actors. The research contributes by showing that relationship triads promote development and innovations in construction projects. As key contributions, this research suggests practices and project conditions through which beneficial relationship triads can be adopted.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Sariola, R.

Number of pages: 13

Pages: 1-13

Publication date: 2015

### Host publication information

Title of host publication: 23rd Nordic Academy of Management conference, NFF, 12-14 August 2015, Copenhagen, Denmark

Place of publication: Copenhagen, Denmark

Publisher: Nordic Academy of Management

### Publication series

Name: Nordic Academy of Management Conference

URLs:

<https://nordicacademy.hi.is/>

URLs:

<https://conference.cbs.dk/index.php/NFF2015/NFF2015/schedConf/presentations>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### Emergency Voice/Stress - level Combined Recognition for Intelligent House Applications

Legacy technologies for word recognition can benefit from emerging affective voice retrieval, potentially leading to intelligent applications for smart houses enhanced with new features. In this work we introduce the implementation of a system, capable to react to common spoken words, taking into account the estimated vocal stress level, thus allowing the realization of a prioritized, affective aural interaction path. Upon the successful word recognition and the corresponding stress level estimation, the system triggers particular affective-prioritized actions, defined within the application scope of an intelligent home environment. Application results show that the established affective interaction path significantly improves the ambient intelligence provided by an affective vocal sensor that can be easily integrated with any sensor-based home monitoring system.

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Research Community on Data-to-Decision (D2D), Technological Educational Institute of Piraeus, Ionian University, BLUE dev Ltd.

Contributors: Drossos, K., Floros, A., Agavanakis, K., Tatlas, N., Kanellopoulos, N.

Number of pages: 11

Publication date: Apr 2012

### Host publication information

Title of host publication: Audio Engineering Society Convention 132

Publisher: AES Audio Engineering Society

URLs:

<http://www.aes.org/e-lib/browse.cfm?elib=16253>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### Emotion-Gauge: Analyzing affective experiences in B2B customer journeys

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Knowledge and Learning Research Center, Tampere University of Applied Science

Contributors: Andersson, T., Boedeker, M., Vuori, V.

Number of pages: 6

Pages: 31-36

Publication date: 2017

#### Host publication information

Title of host publication: Strategic Innovative Marketing : 5th IC-SIM, Athens, Greece, September 23-26, 2016

Publisher: Springer  
Editors: Kavoura, A., Sakas, D., Tomaras, P.  
ISBN (Print): 978-3-319-56287-2  
ISBN (Electronic): 978-3-319-56288-9

#### **Publication series**

Name: Springer Proceedings in Business and Economics

ISSN (Print): 2198-7246

URLs:

<http://www.springer.com/us/book/9783319562872>

<https://www.aueb.gr/en/content/5th-international-conference-strategic-innovative-marketing>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Emotion measurement services for knowledge workers**

In order to understand and manage how emotions affect knowledge work, organizations need proper tools to become aware of emotions. Measuring emotions is an approach to consider. In this paper, three different emotion measurement services are tested: daily experience survey, electrodermal activity ring and self-tracking of emotions. The paper provides new insights and user experiences of emotion measurement services and their applicability in daily knowledge work. Managerial guidelines are drawn up for planning and executing emotion measurement services in an organization for two purposes – self-development and measuring company pulse.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Information Management and Logistics, Research group: Novi, Department of Information Management and Logistics, Intopalo Oy

Contributors: Vuolle, M., Salonius, H., Lintinen, J., Mäkinen, J.

Number of pages: 20

Publication date: 2015

#### **Host publication information**

Title of host publication: RESER2015 : 25th Annual RESER Conference, September 10-12, 2015 Copenhagen, Denmark

Place of publication: Copenhagen

Publisher: RESER European Association for Research on Services

ISBN (Electronic): 978-87-7349-921-4

Keywords: Knowledge work , Emotions, Measurement, self-management

URLs:

<https://ruconf.ruc.dk/index.php/RESER2015/RESER2015/index>

#### **Bibliographical note**

AUX=tlo,"Lintinen, Johanna"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### **Empirical study of good, bad and ugly modular engineering solutions in machinery manufacturing industry**

This study examines the relationship between the product structuring principles chosen in modular product families and the business results of companies. In the three case studies of the article, it can be seen that products that meet the modularity definitions discussed in the literature have been able to utilise the benefits of modularity in a very varied way. In one business case, the effect of modularity on business has been negative. In two other cases, the effect has been positive - in one of these even the profitability of the business has significantly improved. The aim of this article is to identify whether product designing consistently has been following some product structuring principles previously mentioned in modularisation literature or whether case studies bring new principles to consciousness. In all case studies, the product structuring principles used are also discussed in the previous modularisation studies at a varying extent. In the discussion section, we raise the question of whether the recording and use of product structuring principles in design briefs could lead to making the product design decisions that affect the business positively.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Automation Technology and Mechanical Engineering, Research area: Design, Development and LCM

Contributors: Juuti, T., Pakkanen, J., Lehtonen, T.

Number of pages: 10

Pages: 2981-2990

Publication date: 26 Jul 2019

### Host publication information

Title of host publication: Proceedings of the Design Society: International Conference on Engineering Design : The 22nd International Conference on Engineering Design, ICED19, Delft, The Netherlands, 5-8 August 2019  
Publisher: Cambridge University Press

### Publication series

Name: Proceedings of the Design Society: International Conference on Engineering Design

ISSN (Electronic): 2220-4342

DOIs:

10.1017/dsi.2019.305

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Empowerment in construction: a qualitative analysis of subcontractors' quality assurance

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Capacity Development of Water and Environmental Services CADWES

Contributors: Viita, J., Junnonen, J.

Pages: 436-448

Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016: Volume II - Environmental Opportunities and Challenges. Constructing Commitment and Acknowledging Human Experiences

Publisher: Tampere University of Technology. Department of Civil Engineering

ISBN (Electronic): 978-952-15-3742-4

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3742-4>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Enablers and barriers of inter-organizational network's formation for new market entry: case Finnish maritime industry

Failures of networking attempts are rarely reported in the literature. This study examined an intentionally formed, non-successful case network in its formation phase by using Lowensberg' holistic conceptual model for strategic alliance issues that links six organizational theories to the network management processes. This empirical study of a whole network at network level involved one survey (n=20) and 61 semi-structured interviews in more than 20 Finnish maritime industry organizations and observations in six workshops, while the network aimed at joint market entry. The paper presents 11 enablers

and six barriers discovered in the networks formation phase. The findings contribute to understanding the enablers and barriers in network formation affecting failure, especially the significance of network strategy formulation and communication to network organizations in intentionally formed networks. Presenting conclusions for academics and managers, the paper fulfils the gap in the literature of whole networks, particularly their failures in their formation phase.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations

Contributors: Suominen, A.

Number of pages: 30

Publication date: 3 Jul 2015

### Host publication information

Title of host publication: 31st EGOS Colloquium, General Theme, Organizations and the Examined Life: Reason, Reflexivity and Responsibility, July 2-4, 2015 Athens, Greece

Publisher: SAGE Publications

### Publication series

Name: Organization Studies

ISSN (Print): 0170-8406

ISSN (Electronic): 1741-3044

ASJC Scopus subject areas: Social Sciences(all), Business, Management and Accounting(all)

Keywords: network strategy, network formation, network failure, whole network, market entry

### **Bibliographical note**

xoa Enablers and barriers of inter-organizational networks formation 14.7.2015 ei tarkistettu, siirretty kohdasta additional files

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Enablers and Restraints of Knowledge Work – Does profession make a difference?**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, University of Tampere

Contributors: Helander, N., Okkonen, J., Vuori, V., Paavilainen, N., Kujala, J.

Number of pages: 13

Pages: 40-52

Publication date: 10 Jun 2016

#### **Host publication information**

Title of host publication: Towards a new architecture of knowledge : Big Data, culture and creativity : IFKAD 2016-11th

International Forum on Knowledge Asset Dynamics, Dresden 15-17.6.2016, Germany

ISBN (Print): 978-88-96687-09-3

URLs:

<http://10times.com/ifkad>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Enabling cybersecurity incident reporting and coordinated handling for maritime sector**

The maritime industry is experiencing a new era of digital transformation. At the same time as the number of cyberattacks and cybersecurity incidents are increasing, cybersecurity awareness and incident reporting in this sector remains low. In this paper, we describe a cybersecurity incident reporting system for the maritime industry that aims to address this issue. The work focuses on autonomous and unmanned vessels, but can be equally applied to other areas of the maritime industry. The proposed approach has been evaluated experimentally and the results demonstrate its applicability and feasibility.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, Research area: Information security

Contributors: Silverajan, B., Vistiaho, P.

Number of pages: 8

Pages: 88-95

Publication date: 1 Aug 2019

#### **Host publication information**

Title of host publication: 2019 14th Asia Joint Conference on Information Security, AsiaJCIS 2019

Publisher: IEEE

ISBN (Electronic): 9781728125565

ASJC Scopus subject areas: Software, Information Systems and Management, Computer Networks and Communications, Safety, Risk, Reliability and Quality

Keywords: Cybersecurity incident exchange, Maritime cybersecurity, Smart ports, Smart ships

DOIs:

[10.1109/AsiaJCIS.2019.000-1](https://doi.org/10.1109/AsiaJCIS.2019.000-1)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Energiaomavaraiset anturiverkot**

#### **General information**

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Electrical Engineering, Research group: Laboratory for Future Electronics

Contributors: Keskinen, J., Vanhala, J., Mäntysalo, M., Ruuskanen, P.

Number of pages: 3

Pages: 24-26

Publication date: 2019

Peer-reviewed: Unknown

## Publication information

Journal: Promaint

Issue number: 2

ISSN (Print): 1797-2000

Original language: Finnish

Electronic versions:

Energiaomavaraisuus ja anturit Promaint\_läh181115

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202001301686>

Research output: Contribution to journal > Article > Professional

## Energiatehokkuusinformaatio palvelurakennuksissa

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Civil Engineering, Research group: Capacity Development of Water and Environmental Services CADWES

Contributors: Sorri, J., Heljo, J., Uotila, U., Ruusala, A.

Number of pages: 6

Pages: 325-330

Publication date: 2017

### Host publication information

Title of host publication: Rakennusfysiikka 2017: Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut : 24.-26.10.2017, Tampere

Volume: 1

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, Rakennustekniikka, Rakennusfysiikka

ISBN (Print): 978-952-15-4022-6

### Publication series

Name: Tampereen teknillinen yliopisto. Rakennustekniikka. Rakennusfysiikka.

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@l102/@web/@p/documents/liit/x229242.pdf](http://www.tut.fi/cs/groups/public_news/@l102/@web/@p/documents/liit/x229242.pdf)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

## Energiatehokkuus on entistä enemmän sähkötehon hallintaa

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Civil Engineering, Research group: Real estate development, Research group: Capacity Development of Water and Environmental Services CADWES, Tampere University of Applied Science

Contributors: Heljo, J., Sorri, J., Harsia, P.

Number of pages: 6

Pages: 281-286

Publication date: 2017

### Host publication information

Title of host publication: Rakennusfysiikka 2017: Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut : 24.-26.10.2017, Tampere

Volume: 1

Publisher: Tampereen teknillinen yliopisto, Rakennustekniikka, Rakennusfysiikka

Editors: Vinha, J., Kivioja, H.

ISBN (Print): 978-952-15-4022-6

### Publication series

Name: Tampereen teknillinen yliopisto. Rakennustekniikka. Rakennusfysiikka.

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

## Energiatehokkuus rakennusalan ammattityövoiman täydennyskoulutuksessa

### General information

Publication status: Published



MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Civil Engineering, Research group: Capacity Development of Water and Environmental Services CADWES  
Contributors: Teriö, O., Sorri, J.  
Number of pages: 6  
Pages: 97-102  
Publication date: 20 Oct 2015

#### Host publication information

Title of host publication: Rakennusfysiikka 2015. Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut. 20.-22.10.2015, Tampere  
Place of publication: Tampere  
Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka  
Editors: Vinha, J., Ruuska, T.  
ISBN (Print): 978-952-15-3580-2  
Keywords: Double skin facade, Energy efficiency, New renovation concepts, Innovative HVAC, Earth to air heat exchanger  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Energy efficiency evaluation method for machine tools

The energy efficiency of machine tools is typically poor and there is potential to increase it. It is possible to effect the energy consumption of a cutting process by selecting suitable process parameters and tools. When the power usage of the machine tool is measured by cutting experiments, the energy efficiency of the machine tool effect of the results and the cutting process has an influence. This paper presents the impact of several cutting parameters affecting the cutting power, the machine tool electric power usage and the efficiency. Furthermore, the possibilities to adjust the cutting power by changing the process parameters is used in developing a shop floor level method for evaluating and comparing performance of different machine tools.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation  
Contributors: Ikkala, K., Lanz, M., Kiviö, J., Coatanéa, E.  
Number of pages: 8  
Pages: 58-65  
Publication date: 2015

#### Host publication information

Title of host publication: Flexible Automation and Intelligent Manufacturing 2015  
Publisher: The Choir Press  
ISBN (Print): 9781910864005  
URLs:  
<http://www.mendeley.com/research/energy-efficiency-evaluation-method-machine-tools>

#### Bibliographical note

INT=MEI, "Coatanéa, Eric"  
Source: Mendeley  
Source ID: 4d2d0cbd-8088-335d-bdbe-19e87e0899f4  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Energy Retrofits in Multi-family Buildings in North-east Europe: The Impacts on Thermal Conditions

We have conducted a project to develop a common protocol for indoor environmental quality (IEQ) assessment and to assess the effects of energy retrofits on IEQ. This paper focuses on thermal comfort, which was first assessed based on 2-month continuous monitoring in 16 multi-family buildings (94 apartments) in Finland and 20 buildings (96 apartments) in Lithuania during heating season before retrofits. In addition, corresponding data after retrofits were available from three buildings (17 apartments) from Finland and seven (30 apartments) from Lithuania. Two data loggers per apartment were placed to evaluate  $T_w$  and  $RH_w$  (warm area), and  $T_c$  and  $RH_c$  (coldest spot). Questionnaire data regarding housing quality and health were collected from the occupants. The results before retrofits indicated high  $T_w$  (>23 °C) for a large proportion of time in Finnish apartments, whereas opposite trend was observed in Lithuania. After retrofits, proportion of time with high  $T_w$  was higher while proportion of apartments with low  $RH_w$  was lower in Finland, whereas in Lithuania, about one fourth of the apartments had higher  $T_w$  and  $RH_w$ , hence fulfilling the national guidelines. The average absolute humidity was higher after retrofits in both countries, especially in Lithuania (by 15%). Occupant responses indicated improved thermal comfort. Therefore, potential effects of energy retrofits on occupants' thermal environment and satisfaction were demonstrated, and simply adjusting indoor temperature could help to save energy. Further analysis is needed to include the effects of outdoor conditions, as well as overall IEQ to the assessment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Life Cycle Effectiveness of the Built Environment (LCE@BE), Research group: Concrete and Bridge Structures, Research area: Structural Engineering, Department of Civil Engineering, Research group: Building Physics, Natl Inst Hlth & Welf, Finland National Institute for Health & Welfare, Dept Hlth Protect, Kaunas Univ Technol, Kaunas University of Technology, Dept Environm Technol

Contributors: Du, L., Leivo, V., Prasauskas, T., Turunen, M., Kiviste, M., Martuzevicius, D., Haverinen-Shaughnessy, U.

Number of pages: 5

Pages: 860-864

Publication date: Nov 2015

Peer-reviewed: Yes

### Publication information

Journal: Energy Procedia

Volume: 78

ISSN (Print): 1876-6102

Ratings:

Scopus rating (2015): CiteScore 1.2 SJR 0.359 SNIP 0.562

Original language: English

Keywords: retrofits;

Electronic versions:

Energy Retrofits in Multi-family Buildings in North-east Europe

DOIs:

10.1016/j.egypro.2015.11.008

URLs:

<http://urn.fi/URN:NBN:fi:ty-201605023901>

Research output: Contribution to journal › Article › Scientific › peer-review

## Engaging facts and feelings in management accounting practices

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Cost Management Center

Contributors: Laine, T., Suomala, P., Saukkonen, N.

Publication date: 2015

### Host publication information

Title of host publication: IFKAD 2015 : 10th International Forum on Knowledge Asset Dynamics, Bari, Italy, June 10th-12th

Place of publication: Italy

Publisher: Institute of Knowledge Asset Management & Arts for Business Institute

### Publication series

Name: International forum on knowledge asset dynamics

Publisher: Institute of Knowledge Asset Management & Arts for Business Institute

ISSN (Print): 2280-787X

URLs:

<http://www.knowledgeasset.org/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Engelin teatterin huoneakustiikan mallintaminen

### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Building Acoustics, A-Insinöörit Suunnittelu Oy, Helsinki City Museum

Contributors: Kylliäinen, M., Niemi, H., Jäppinen, J., Lindqvist, M.

Number of pages: 6

Pages: 145-150

Publication date: 1 Sep 2015

### Host publication information

Title of host publication: Akustiikkapäivät 2015

Publisher: Akustinen seura

### Publication series

Name: Akustiikkapäivät

ISSN (Print): 1236-8202

ASJC Scopus subject areas: Acoustics and Ultrasonics

URLs:

[http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015\\_Paperin\\_palautus\\_9.pdf](http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015_Paperin_palautus_9.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### Enhanced outdoor to indoor propagation models and impact of different ray tracing approaches at higher frequencies

The main target of this article is to study the provision of indoor service (coverage) using outdoor base station at higher frequencies i.e. 10 GHz, 30 GHz and 60 GHz. In an outdoor to indoor propagation, an angular wall loss model is used in the General Building Penetration (GBP) model for estimating the additional loss at the intercept point of the building exterior wall. A novel angular wall loss model based on a separate incidence angle in azimuth and elevation plane is proposed in this paper. In the second part of this study, an Extended Building Penetration (EBP) model is proposed, and the performance of EBP model is compared with the GBP model. In EBP model, the additional fifth path known as the "Direct path" is proposed to be included in the GBP model. Based on the evaluation results, the impact of the direct path is found significant for the indoor users having the same or closed by height as that of the height of the transmitter. For the indoor users located far away from the exterior wall of building, a modified and enhanced approach of ray tracing type is proposed in this article. In the light of acquired simulation results, the impact of a modified ray tracing approach is emphasized.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electrical Engineering, Research group: Laboratory of Radio Network Planning, Research group: Wireless Communications and Positioning, Ericsson Research

Contributors: Sheikh, M. U., Hiltunen, K., Lempinen, J.

Number of pages: 11

Pages: 58-68

Publication date: 2018

Peer-reviewed: Yes

### Publication information

Journal: Advances in Science, Technology and Engineering Systems

Volume: 3

Issue number: 2

ISSN (Print): 2415-6698

Ratings:

Scopus rating (2018): CiteScore 0 SNIP 0.297

Original language: English

ASJC Scopus subject areas: Engineering (miscellaneous), Management of Technology and Innovation, Physics and Astronomy (miscellaneous)

Keywords: Angular loss, Building penetration loss, Outdoor to indoor, Propagation, Ray tracing, Wall loss model

DOIs:

10.25046/aj030207

Source: Scopus

Source ID: 85061801748

Research output: Contribution to journal › Article › Scientific › peer-review

### Enhancement mechanisms for second-harmonic generation from metal nanostructures

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Optics, Univ Eastern Finland, University of Eastern Finland, Inst Photon, Institute of Photonics, Univ Eastern Finland, University of Eastern Finland, Sch Pharm

Contributors: Kauranen, M., Czaplicki, R., Mäkitalo, J., Lehtolahti, J., Koskinen, K., Laukkanen, J., Kuittinen, M.

Publication date: 2015

#### Host publication information

Title of host publication: PROCEEDINGS OF SPIE : Ultrafast Phenomena and Nanophotonics XX  
Volume: 9746  
ISBN (Electronic): 9781628419818  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### **Enhancing old laboratory experiment using flipped learning: Towards self-regulating collaborative groups in blended learning environment**

This paper demonstrates how learning outcome of a traditional student laboratory has been improved using blended and flipped learnings in a cost-effective way. The innovation process was based on four important elements: the subject matter, educational theory, redefinition of the roles of teacher and students, and technology-driven utilities intended for education. Also, prelab activities were refurbished in order to better prepare students for the actual experiments. Teaching and learning relationship was redesigned to support learner-centred model of education, and on-site activities occurring in the laboratory room were reformulated to advance self-regulation and learner autonomy. As a consequence, the role of teacher is steered towards mentor-like activity, and hence, a teacher-mentor can use his own expertise to strengthen the knowledge level of students via on-site professional facilitation.

To be more specific, prelab activities were delivered using a virtual laboratory and a teaser video. The main role of the teaser video is to allow a remote visit to the physical laboratory room before students actually enter there. The teaser video delivers interesting visual information of the laboratory equipment when it is fully operational, and hence, students can identify causal connections of all devices affecting the physical system from anyplace at any time. The virtual laboratory, on the other hand, enables students to observe several physical quantities and their curvatures which cannot be observed nor displayed by the physical devices in the laboratory room. Furthermore, the open-ended nature of the virtual laboratory also enables students to use it as a subject for their own active research. The teaser video and virtual laboratory help students to develop intuition, and they also strengthen students' preparation in a timely fashion manner. As a result, more time is released for active on-site student collaboration and teacher facilitated intellectual discussion. Interestingly, the virtual laboratory is key to establish highly collaborative and activity-based learning environment inside the laboratory room. Finally, it is shown that the new implementation of the laboratory work significantly reduces implementation costs.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Automation Science and Engineering, Research area: Information Systems in Automation, Research area: Dynamic Systems  
Contributors: Pyrhönen, V.  
Number of pages: 9  
Publication date: 2016

#### **Host publication information**

Title of host publication: SEFI conference 2016 : Engineering Education on Top of the World: Industry University Cooperation

ISBN (Electronic): 9782873520144

ASJC Scopus subject areas: Education

Keywords: Blended Learning, Cost Reduction, Flipped Learning, Laboratory

Electronic versions:

Enhancing old laboratory experiment using flipped learning

URLs:

<http://sefibenvwh.cluster023.hosting.ovh.net/wp-content/uploads/2017/09/pyrhonen-enhancing-old-laboratory-experiment-using-flipped-learning-towards-self-regulating-collaborative-.pdf>

<http://urn.fi/URN:NBN:fi:tuni-201912106720>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Enhancing the acceptance of advanced services among users of complex systems**

**Purpose:** In order to succeed in servitization, manufacturing firms need to understand the mechanisms through which their customers accept advanced services. This research explores the customers' readiness towards more advanced services. The goal is increased knowledge on the aspects that manufacturers need to consider when bringing advanced services into market and ways to enhance the customer acceptance of these services.

**Design/methodology/approach:** A qualitative case study design is used, to analyse readiness for advanced services and service acceptance in a manufacturer's three customer firms. Interview data were collected among 14 persons at the different customer sites and were content analysed.

**Findings:** The results show that customers accustomed to purchasing basic services or implementing them in-house may not yet be ready to purchase advanced services from manufacturers. Customers are uncertain about the benefits and the complete costs of the service. Manufacturers can enhance the customers' acceptance of advanced services by certain activities within the organisation and in relation to the customers e.g. by training service employees and educating the customers.

**Originality/value:** The results offer new knowledge on customer service acceptance in a business-to-business context and, thereby, complement previous studies on the supplier perspective to servitization and service acceptance in consumer business. The contributions help manufacturers to identify practices for enhancing the customer firms' readiness and acceptance of advanced services.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Vaittinen, E., Martinsuo, M., Nenonen, S.

Number of pages: 9

Pages: 162-170

Publication date: May 2016

#### **Host publication information**

Title of host publication: Servitization: Shift, Transform, Grow : Proceedings of the Spring Servitization Conference, 16-17 May 2016 (SSC2016)

Editors: Baines, T., Harrison, D., Zolkiewski, J.

ISBN (Print): 978-185-44-9403-0

Electronic versions:

SSC, Vaittinen, Martinsuo & Nenonen

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708171686>

URLs:

<http://www.aston.ac.uk/aston-business-school/research/events/ssc2016/>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Enhancing the supplier's third-party relationships in construction projects**

Project delivery involves networks of customers, contractors, suppliers, and various third parties. Previous research has focused on contractual relationships in the direct supply chains, with less attention to third parties and non-contractual relationships. This study develops and tests a framework of relationship strength and its antecedents in the non-contractual relationship of component suppliers and designers as third parties. The intent is to identify factors relevant to enhancing the supplier's third party relationships. The results reveal the supplier's activeness and technical capability as antecedents to trust, and supplier's technical capability and supplier-designer cooperation outside projects as antecedents to commitment.

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Sariola, R., Martinsuo, M.

Number of pages: 21

Publication date: Jun 2015

#### **Host publication information**

Title of host publication: The Bartlett IRNOP 2015 : International Research Network on Organizing by Projects Conference

Publisher: IRNOP

Keywords: project networks, supplier relationships, relationship strength

URLs:

<https://www.bartlett.ucl.ac.uk/cpm/irnop-2015/programme>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

#### **Enterprise architecture and organizational reform: a project debrief**

##### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Industrial and Information Management, Research group: Business Data Research Group

Contributors: Dang, D., Pekkola, S.

Number of pages: 16

Publication date: 20 Jul 2017

### Host publication information

Title of host publication: Proceedings the 21st Pacific Asian Conference on Information Systems 2017 (PACIS'2017) : Langkawi, Malay, 16-20 July, 2017  
Publisher: Association for Information Systems AIS  
URLs:  
<http://www.pacis2017.org/>  
<http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1217&context=pacis2017>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### Enterprise architecture as strategy, practice, or approach

#### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Information Management and Logistics, Research group: Novi  
Contributors: Pekkola, S.  
Publication date: 13 Oct 2015

### Host publication information

Title of host publication: 4th Innovation in Information Infrastructures (III) Workshop  
Place of publication: Warwick, UK  
Publisher: University of Warwick  
URLs:  
<http://www.wbs.ac.uk/events/view/4751>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### Entropy of weighted graphs with Randić weights

Shannon entropies for networks have been widely introduced. However, entropies for weighted graphs have been little investigated. Inspired by the work due to Eagle et al., we introduce the concept of graph entropy for special weighted graphs. Furthermore, we prove extremal properties by using elementary methods of classes of weighted graphs, and in particular, the one due to Bollobás and Erdős, which is also called the Randić weight. As a result, we derived statements on dendrimers that have been proven useful for applications. Finally, some open problems are presented.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Signal Processing, BioMediTech, Research Community on Data-to-Decision (D2D), Department of Computer Science & Information Systems, University of Limerick, Ireland, College of Computer and Control Engineering, Nankai University, Universität der Bundeswehr München, Department of Mechatronics and Biomedical Computer Science, UMIT, Center for Combinatorics and LPMC-TJKLC  
Contributors: Chen, Z., Dehmer, M., Emmert-Streib, F., Shi, Y.  
Number of pages: 14  
Pages: 3710-3723  
Publication date: 2015  
Peer-reviewed: Yes

#### Publication information

Journal: Entropy  
Volume: 17  
Issue number: 6  
ISSN (Print): 1099-4300  
Ratings:  
Scopus rating (2015): CiteScore 2.5 SJR 0.551 SNIP 1.15  
Original language: English  
ASJC Scopus subject areas: Physics and Astronomy(all)  
Keywords: Extremal value, Graph entropy, Randić weight, Shannon's entropy, Weighted graphs  
DOIs:  
10.3390/e17063710  
Source: Scopus  
Source ID: 84934300047  
Research output: Contribution to journal › Article › Scientific › peer-review

## **Environment Interpretation for Business Continuity in a Project Supplier's Networks – Critical Factors in International Industrial Upgrades**

Project suppliers operate in temporary networks of stakeholders with limited visibility outside of the project's dyadic relationships. Environment interpretation can reveal opportunities but also fatal risks in complex networks. Therefore, a wider view is needed for the project supplier to develop their business continuity in networks.

Environment interpretation and business continuity of project suppliers have been given limited attention in project business and industrial networks literature, especially from business opportunity and risk recognition perspectives. This research pursues an increased understanding and introduces the concept and process of network picture alignment in a temporary project's business as a possible tool for environment interpretation and a source of business continuity in networks. The goal is to construct a framework for a project supplier's network picture alignment in a value system. A qualitative, constructivist research design was selected to study a real life problem, and to advance the scientific knowledge in management both in international project business and in industrial marketing in networks.

The market research collects and analyses data to comprehend the significance of a business environment change in the paper industry and its influence on the paper machinery business. Thereafter, as a special case, six similar paper machinery upgrade projects from Finland to Italy are empirically studied to perceive critical factors in temporary projects. The critical factors are deductively established for the development of network picture alignment framework. The developed framework on network picture alignment is evaluated with three industrial change cases as post mortem analysis.

The market research revealed that the competitive situation among three dominant paper machinery project suppliers changed significantly between 2008 and 2012. The Austrian Andritz suffered the most from the economic downturn but they were capable of interpreting the business environment and rapidly reached the two market dominators, the Finnish Metso and the German Voith. Andritz concentrated successfully on uncertain upgrade projects and managed to change the situation in competition.

The empirical contribution was the map of the critical factors and steps to construct the framework of market-driven network picture alignment. The theoretical contribution is that a project supplier needs to critically interpret the environment and broaden their temporary projects' and project business boundaries outside of the focal project networks for business opportunity recognition and risk reveal. Moreover, a supplier or other focal stakeholder in the value system is suggested to align its situated network picture to other stakeholders' network pictures in dyadic, triadic and extended networked collaboration and relationships for continuous cooperation, with the constructed market-driven network picture alignment framework. In addition, network pictures are conceptually suggested to become flexible and dynamic, with market-driven mindsets and consecutive successful network picture alignments in the context specific value system.

The business opportunity identification for a machinery upgrade requires tight interactive technical collaboration in a customer's production process. Continuous cooperation can be reached with harmonious relationships and repetitive network picture alignments between stakeholders. However, cultural distance matters in the reach of business objectives. A project supplier's organization and persons have to follow a market-driven mindset in context specific network picture alignment. A market-driven mindset attached to collectivistic, and entrepreneurial activities advances the business performance. Thus, a supplier can create their own path for continuous business utilizing market-driven network picture alignment framework as the core of the strategic market management in networks.

Forthcoming research should study the question "why" salience is caused in global level environment interpretation in addition to "what" and "who" cause stakeholder salience. Moreover, network picture alignments should be studied in other social interaction processes, for example in business acquisition integrations. When the situated network picture version is the focus of this research, the representationalist and mentalist alignment versions would need further understanding. As the dissertation reveals network picture dynamization and consecutive network picture alignments as features of evolving project businesses, they are suggested as topics of future research.

### **General information**

Publication status: Published

MoE publication type: G4 Doctoral dissertation (monograph)

Organisations: Department of Industrial Management

Contributors: Halinoja, M.

Number of pages: 237

Publication date: 4 Sep 2015

### **Publication information**

Place of publication: Tampere

Publisher: Tampere University of Technology

ISBN (Print): 978-952-15-3557-4

ISBN (Electronic): 978-952-15-3566-6

Original language: English

### **Publication series**

Name: Tampere University of Technology. Publication  
Publisher: Tampere University of Technology  
Volume: 1313  
ISSN (Print): 1459-2045  
Electronic versions:  
halinoja\_1313\_errata  
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URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3566-6>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology  
Version: 14.12.2015  
Research output: Book/Report > Doctoral thesis > Monograph

### **Erosion testing of filled and/or reinforced vinyl ester composites in water medium at elevated temperature**

#### **General information**

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Materials Science, Research group: Plastics and Elastomer Technology, Outotec Research Center  
Contributors: Siljander, S., Kiviniemi, M., Sarlin, E., Lindgren, M., Suihkonen, R., Vuorinen, J.  
Number of pages: 10  
Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the 20th International Conference on Composite Materials  
URLs:  
<http://iccm20.org/fullpapers/file?f=BJk14rEQqP>

#### **Bibliographical note**

ISBN kysytty, ei löydy / TL  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

### **ESD and Disturbance Cases in Electrostatic Protected Areas**

Electrostatic protected area (EPA) can effectively prevent ESD failures from charged operators, work benches and tools. However, electrical disturbances and ESD events from other sources can still exist in well-built EPAs. In this paper failures found in electronic assembly environments are analyzed to improve coverage of ESD control programs.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Sensing Systems for Wireless Medicine (MediSense), Department of Electronics and Communications Engineering, Research group: Wireless Identification and Sensing Systems Research Group, Cascade Metrology  
Contributors: Tamminen, P., Viheriäkoski, T., Ukkonen, L., Sydänheimo, L.  
Number of pages: 7  
Publication date: 27 Sep 2015

#### **Host publication information**

Title of host publication: Electrical Overstress / Electrostatic Discharge Symposium Proceedings 2015  
Volume: 2015  
Place of publication: USA  
Publisher: IEEE COMPUTER SOC  
Article number: 5B.2  
ISBN (Print): 9781479988952  
ASJC Scopus subject areas: Engineering(all)  
Keywords: EPA, ESD, DISTURBANCES, EMI, failure  
Electronic versions:  
5B.2\_Tamminen\_2015  
DOIs:  
[10.1109/EOSESD.2015.7314792](https://doi.org/10.1109/EOSESD.2015.7314792)  
URLs:



<http://urn.fi/URN:NBN:fi:tty-201603013599>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **ESD Sensitivity of 01005 Chip Resistors and Capacitors**

Miniaturization of passive surface mount components has decreased the package size down to 01005. These tiny components are ESD sensitive and can get ESD damages on a system board. In this paper ESD sensitivities of 01005 chip resistors and capacitors are studied on a system board.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Sensing Systems for Wireless Medicine (MediSense), Department of Electronics and Communications Engineering, Research group: Wireless Identification and Sensing Systems Research Group

Contributors: Tamminen, P., Sydänheimo, L., Ukkonen, L.

Number of pages: 9

Publication date: 2014

#### **Host publication information**

Title of host publication: 2014 36TH Electrical Overstress/Electrostatic Discharge Symposium (EOS/ESD)

Publisher: IEEE COMPUTER SOC

#### **Publication series**

Name: Electrical Overstress Electrostatic Discharge Symposium

Publisher: IEEE COMPUTER SOC

ISSN (Print): 0739-5159

Source: WOS

Source ID: 000355792800042

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Evaluating organizational commitment in support of organizational leadership**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pori Department

Contributors: Einolander, J.

Number of pages: 5

Pages: 668–673

Publication date: 2015

#### **Host publication information**

Title of host publication: 6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the Affiliated Conferences, AHFE 2015

Publisher: Elsevier

#### **Publication series**

Name: Procedia Manufacturing

Volume: 3

ISSN (Print): 2351-9789

DOIs:

10.1016/j.promfg.2015.07.300

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Evaluating the contrast of planar periodic patterns on paper**

Certain paper products contain functional or decorative periodic patterns. Such patterns can be e.g. the 3 D structure variations in tissue paper or the decorative structure in tobacco paper. At present, the contrast of such patterns is not measured online and thus the uniformity of the end-products may vary. This paper introduces two contrast estimation methods based on Fourier and histogram analysis. The performance of the estimation methods was evaluated with the reference results made by the human panel. It was noticed that both methods estimate the contrast rather reliably. However, if the wavelength of the pattern was close to the size of the image, the Fourier method was not working appropriately. The image data available in this work was collected online at the tobacco and tissue paper machines. The tobacco paper was measured with light transmittance imaging system and the tissue paper was measured with photometric stereo imaging system that estimates the 3 D surface of the paper. It was noticed that the present imaging systems can be utilized as such in the estimation of contrast.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Automation and Hydraulic Engineering, Valmet Automation Oy  
Contributors: Raunio, J., Makela, I., Mäntylä, M., Ritala, R.  
Number of pages: 9  
Pages: 294-302  
Publication date: 2018

### Host publication information

Title of host publication: Paper Conference and Trade Show, PaperCon 2018  
Publisher: TAPPI Press  
ISBN (Electronic): 9781510871892  
ASJC Scopus subject areas: Forestry, Plant Science, Industrial and Manufacturing Engineering  
Source: Scopus  
Source ID: 85060386224  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Evaluating the electrode measurement sensitivity of subdermal electroencephalography electrodes

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electronics and Communications Engineering, Research group: Wireless Identification and Sensing Systems Research Group  
Contributors: Mendes, M. R., Subramaniam, N. P., Wendel-Mitoraj, K.  
Number of pages: 4  
Pages: 1092-1095  
Publication date: 1 Jul 2015

### Host publication information

Title of host publication: International IEEE/EMBS Conference on Neural Engineering, NER  
Volume: 2015-July  
Publisher: IEEE COMPUTER SOCIETY PRESS  
ISBN (Print): 9781467363891  
ASJC Scopus subject areas: Artificial Intelligence, Mechanical Engineering  
DOIs:  
10.1109/NER.2015.7146818

### Bibliographical note

AUX=elt,"Mendes, Miguel Rodrigues"  
Source: Scopus  
Source ID: 84940367793  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Evaluation of Median Root Prior for Robust In-Beam PET Reconstruction

Dose delivery verification in proton beam radiotherapy is used to ensure the delivery of the dose to the correct location. A positron emission tomography (PET) scanner can be used to detect the secondary radiation during the treatment, so-called in-beam PET. This is a challenging application for PET due to the low counts and limited angular coverage. We propose a maximum a posteriori (MAP) reconstruction with median root prior (MRP) for the reconstruction of in-beam PET data. The proposed method was compared against MAP with total variation (TV) prior and maximum likelihood expectation maximization (MLEM), which have previously been used for this application. The effects of different ring configurations and time-of-flight information were tested with simulations of a geometrical phantom and a realistic patient treatment plan. The results indicate that both MAP methods produced sharper edges than MLEM, allowing more accurate edge localization in the reconstructed images. Even for the partial ring configurations, no elongation was observed with MAP methods. MAP-MRP successfully reduced the noise, whereas MAP-TV resulted in checkerboard artifacts. MAP-MRP was also more stable against the selection of the reconstruction parameters. In conclusion, MAP-MRP offers a simple and robust alternative for the reconstruction of in-beam PET data.

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Mathematics, Signal Processing, Research group: M2oBSI, University of Groningen

Contributors: Us, D., Brzezinski, K., Buitenhuis, T., Dendooven, P., Ruotsalainen, U.  
Number of pages: 8  
Pages: 490-498  
Publication date: 5 Sep 2018  
Peer-reviewed: Yes

#### Publication information

Journal: IEEE Transactions on Radiation and Plasma Medical Sciences  
Volume: 2  
Issue number: 5  
ISSN (Print): 2469-7303  
Original language: English  
DOIs:  
10.1109/TRPMS.2018.2854231  
Research output: [Contribution to journal](#) › [Article](#) › [Scientific](#) › [peer-review](#)

#### Evaluation of visual object trackers on equirectangular panorama

Equirectangular (360° spherical) panorama is the most widely adopted format to store and broadcast virtual reality (VR) videos. Equirectangular projection provides a new challenge to adapt existing computer vision methods for the novel input type. In this work, we introduce a new dataset which consists of high quality equirectangular videos captured using a high-end VR camera (Nokia OZO). We also provide the original wide angle (8× 195°) videos and densely annotated bounding boxes for evaluating object detectors and trackers. In this work, we introduce the dataset, compare state-of-the-art trackers for object tracking in equirectangular panorama and report detailed analysis of the failure cases which reveal potential factors to improve the existing visual object trackers for the new type of input.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Signal Processing, Nokia Technologies  
Contributors: Kart, U., Kämäräinen, J. K., Fan, L., Gabbouj, M.  
Number of pages: 8  
Pages: 25-32  
Publication date: 2018

#### Host publication information

Title of host publication: VISIGRAPP 2018 - Proceedings of the 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications  
Volume: 5  
Publisher: SCITEPRESS  
ISBN (Electronic): 9789897582905  
ASJC Scopus subject areas: Computer Vision and Pattern Recognition, Computer Graphics and Computer-Aided Design, Artificial Intelligence  
Keywords: 360°-video, Equirectangular, Tracking  
DOIs:  
10.5220/0006526200250032  
Source: Scopus  
Source ID: 85047804481  
Research output: [Chapter in Book/Report/Conference proceeding](#) › [Conference contribution](#) › [Scientific](#) › [peer-review](#)

#### Evolutionary multiobjective optimization for adaptive dataflow-based digital predistortion architectures

In wireless communication systems, high-power transmitters suffer from nonlinearities due to power amplifier (PA) characteristics, I/Q imbalance, and local oscillator (LO) leakage. Digital Predistortion (DPD) is an effective technique to counteract these impairments. To help maximize agility in cognitive radio systems, it is important to investigate dynamically reconfigurable DPD systems that are adaptive to changes in the employed modulation schemes and operational constraints. To help maximize effectiveness, such reconfiguration should be performed based on multidimensional operational criteria. With this motivation, we develop in this paper a novel evolutionary algorithm framework for multiobjective optimization of DPD systems. We demonstrate our framework by applying it to develop an adaptive DPD architecture, called the adaptive, dataflow-based DPD architecture (ADDA), where Pareto-optimized DPD parameters are derived subject to multidimensional constraints to support efficient predistortion across time-varying operational requirements and modulation schemes. Through extensive simulation results, we demonstrate the effectiveness of our proposed multiobjective optimization framework in deriving efficient DPD configurations for run-time adaptation.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Pervasive Computing, Electronics and Communications Engineering, Research group: Wireless Communications and Positioning, Research area: Computer engineering, University of Oulu  
Contributors: Li, L., Ghazi, A., Boutellier, J., Anttila, L., Valkama, M., Bhattacharyya, S. S.  
Publication date: 23 Feb 2017  
Peer-reviewed: Yes

#### Publication information

Journal: EAI Endorsed Transactions on Cognitive Communications  
Volume: 17  
Issue number: 10  
Article number: e3  
ISSN (Print): 2313-4534  
Original language: English  
Electronic versions:  
eai.23-2-2017.152187-1  
DOIs:  
10.4108/eai.23-2-2017.152187  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201907151962>  
Research output: Contribution to journal > Article > Scientific > peer-review

#### Evolution equations based approach for modeling of fatigue in amorphous glassy polymers. On the investigation of fatigue damage development in polycarbonate

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics  
Contributors: Holopainen, S.  
Number of pages: 13  
Pages: 6675-6687  
Publication date: 2016

##### Host publication information

Title of host publication: Proc. of VII European Congress on Computational Methods in Applied Sciences and Engineering , ECCOMAS Congress 2016. : M. Papadrakakis, V. Papadopoulos, G. Stefanou, V. Plevris (eds.) . Crete Island, Greece, 5 – 10 June 2016  
Editors: Papadrakakis, M., Papadopoulos, V., Stefanou, G., Plevris, V.  
ISBN (Print): 978-618-82844-0-1  
DOIs:  
10.7712/100016.2289.11047  
URLs:  
<https://www.eccomas2016.org/proceedings/pdf/11047.pdf>  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Examining Innovation Barriers along Innovation Process in Multi-Industry Hygiene-Technology Network.

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Industrial Management, University of Turku, Turku School of Economics  
Contributors: Mäkitalo-Keinonen, T., Aarikka-Stenroos, L.  
Number of pages: 15  
Publication date: 14 Jun 2015

##### Host publication information

Title of host publication: The Proceedings of the XXVI ISPIM Conference 2015 Budapest, Hungary  
Place of publication: Denmark  
Publisher: International Society for Professional Innovation Management ISPIM  
ISBN (Electronic): 978-952-265-779-4  
Keywords: innovation, barriers  
URLs:

[http://conference.ispim.org/wp-content/uploads/sites/2/XXVI\\_ISPIM\\_Call\\_for\\_Papers.pdf](http://conference.ispim.org/wp-content/uploads/sites/2/XXVI_ISPIM_Call_for_Papers.pdf)

#### **Bibliographical note**

EXT="Mäkitalo-Keinonen, Tiina"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Exhaust Particles and NO<sub>x</sub> Emission Factors of a Modern Heavy Duty Truck equipped with the SCR in Real-world Driving Conditions**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, Research group: The Instrumentation, Emissions, and Atmospheric Aerosols Group, Metropolia University of Applied Sciences

Contributors: Saari, S., Karjalainen, P., Pirjola, L., Ntziachristos, L., Keskinen, J., Rönkkö, T.

Publication date: Sep 2015

#### **Host publication information**

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

URLs:

<http://www.eac2015.it/index.php/final-programme>

#### **Bibliographical note**

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Experiences from development of security audit criteria**

Cyber-attacks have grown in importance to become a matter of national security. A growing number of states and organisations around the world have been developing defensive and offensive capabilities for cyber warfare. Security criteria are important tools for defensive capabilities of critical communications and information systems (CIS). Various criteria have been developed for designing, implementing and auditing CIS. The paper is based on work done from 2008 to 2016 at FICORA, the Finnish Communications Regulatory Authority. FICORA has actively participated in development and usage of three versions of Katakri, the Finnish national security audit criteria. Katakri is a tool for assessing the capability of an organisation to safeguard classified information. While built for governmental security authorities, usefulness for the private sector has been a central design goal of the criteria throughout its development. Experiences were gathered from hundreds of CIS security audits conducted against all versions of Katakri. Feedback has been gathered also from CIS audit target organisations including governmental authorities and the private sector, from other Finnish security authorities, from FICORA's accredited third party Information Security Inspection Bodies, and from public sources. This paper presents key lessons learnt and discusses recommendations for the design and implementation of security criteria. Security criteria have significant direct impacts on CIS design and implementation. Criteria design is always a trade-off between the varying goals of the target users. Katakri has tried to strike a balance between the different needs for security criteria. The paper recommends that criteria design should stem from a small set of strictly defined use cases. Trying to cover the needs of a wide variety of different use cases quickly renders the criteria useless as an assessment tool. In order to provide sufficient information assurance, security criteria should describe requirements on a reasonably concrete level, but also provide support for the security and risk management processes of the target users.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Univ of Oulu

Contributors: Kelo, T., Eronen, J.

Number of pages: 8

Pages: 208-215

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 16th European Conference on Cyber Warfare and Security, ECCWS 2017

Publisher: TAPPI Press; Curran Associates, Inc

ISBN (Electronic): 9781911218432

ASJC Scopus subject areas: Information Systems, Information Systems and Management, Safety, Risk, Reliability and Quality

Keywords: Auditing, Criteria, Cyber security, Information assurance, Katakri

#### **Bibliographical note**

JUF0ID=71915

Source: Scopus

Source ID: 85028004488

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Experimental and numerical dataset of Microbond test using optical fibres for strain**

This data article provides useful information often required for numerical modeling of the so-called microbond tests. It includes the experimental and simulation data of the microbond testing using Fibre Bragg Grating (FBG) fibres for optical strains. Microbond testing was performed on five different droplets of varying embedded length and diameter to collect the data. Finite element simulation was carried out and modelling was validated, by using two variables force and strain, to collect the data. The output data of the fitted models is given and is also visualized via graphs of force-strain derivative curves. The data of the simulations is provided for different finite element mesh densities. Here, to clarify the type and form of the data for the use by readers, the energy distribution curves describing various functionalities of the droplet, fibre and interface are presented. For further reading, the interpretation and analysis of this data can be found in a research article titled "3D interfacial debonding during microbond testing: Advantages of local strain recording" (R. Dsouza et al., 2020) [1].

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Materials Science and Environmental Engineering, Research group: Plastics and Elastomer Technology, BioMediTech, Research group: Micro and Nanosystems Research Group, I3N & Aveiro Physics Department and Instituto de Telecomunicações, Campus Universitário de Santiago, Fibrobotics Oy

Contributors: Dsouza, R., Antunes, P., Kakkonen, M., Jokinen, J., Sarlin, E., Kallio, P., Kanerva, M.

Number of pages: 13

Publication date: 13 Jul 2020

Peer-reviewed: Yes

### **Publication information**

Journal: Data in Brief

Volume: 31

Article number: 106017

ISSN (Print): 2352-3409

Original language: English

Keywords: Optical fibres, Finite element analysis (FEA), Cohesive Zone Modelling, Debonding, Interface

Electronic versions:

Experimental and numerical dataset of Microbond 2020

DOIs:

10.1016/j.dib.2020.106017

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202008126449>

### **Bibliographical note**

EXT="Kakkonen, M."

Research output: Contribution to journal > Article > Scientific > peer-review

### **Experimental behaviour of stainless steel cellular beam in fire**

This paper presents a description and the analysis of a fire test on a cellular beam made from grade 1.4301 stainless steel. Cellular beams are increasingly popular in the construction as they provide a structurally and materially efficient design solution as well as allowing the passage of services. In addition, stainless steel is also increasing in popularity for structural applications owing to its inherent durability and ductility, as well as other attractive properties such as structural efficiency and low maintenance requirements. However, the behaviour of stainless steel cellular beams in fire has received little attention from the research community until recently. In the current paper, a description is presented of an experimental investigation into the fire behaviour of grade 1.4301 stainless steel cellular beams. The experimental arrangements are described together with the details of the specimen. The test occurred at the fire testing laboratory at Tampere University, Finland. For the member test, the beam spanned 4,3 m, with an overall depth of 290 mm and 200 mm diameter openings along the span. It was found that the unprotected beam lasted for 29 minutes during the test, after being exposed to a standard fire, and the experiment was eventually stopped due to excessive rate of deflection. The test specimen has been analysed using available design methods and the results are presented herein.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering, Research group: Metal and Light-wight structures, Brunel University London  
Contributors: Malaska, M., Cashell, K., Alanen, M., Mela, K., Afshan, S.  
Number of pages: 6  
Pages: 901-906  
Publication date: 2019

#### Host publication information

Title of host publication: Special Issue: Proceedings of Nordic Steel 2019 : Wiley Online Library  
Volume: 3  
Place of publication: Berlin  
Publisher: Wilhelm Ernst und Sohn  
Editor: Jesse, D.  
Article number: 18.02

#### Publication series

Name: ce/papers  
Publisher: Wiley  
ISSN (Electronic): 2509-7075  
Electronic versions:  
2019-09 Nordic Steel - Experimental behaviour of stainless steel cellular beam in fire. Embargo ended: 16/09/20  
DOIs:  
10.1002/cepa.1151  
URLs:  
<http://urn.fi/URN:NBN:fi:tuni-202001311718>. Embargo ended: 16/09/20  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Experimental demonstration of temporal ghost imaging

We report on the first experimental demonstration of time-domain ghost imaging using different types of temporally incoherent light sources. Our results open novel perspectives for dynamic imaging of ultra-fast waveforms with high resolution.

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Fiber Optics, Institut FEMTO-ST, Université de Franche-Comté, Institut FEMTO-ST, UMR 6174 CNRS-Université de Franche-Comté  
Contributors: Ryczkowski, P., Barbier, M., Friberg, A. T., Dudley, J. M., Genty, G.  
Publication date: 2015

#### Host publication information

Title of host publication: 2015 European Conference on Lasers and Electro-Optics - European Quantum Electronics Conference  
Publisher: OSA  
Article number: CF6\_3  
ISBN (Electronic): 978-1-4673-7475-0  
URLs:  
[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CF\\_6\\_3](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CF_6_3)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Experimental moment resistance of rectangular hollow section T joints

Resistance is the main property of tubular joints. The determination of the joint resistance from the experimental load-deformation curve always represents a challenging task. Currently there are two main methods to find the experimental resistance, which are called plastic and ultimate resistance. However, there is no single opinion on which one should be commonly used. Based on the experimental results, this paper directly compares the two existed approaches. The study is restricted to welded square hollow section T joints under in-plane bending moment. The paper considers only the joints with  $\beta < 0.85$ , i.e. when the behaviour of the joint is governed by chord face failure. The results show that plastic resistance leads to more conservative results than ultimate resistance, providing thus safer results. However, attention should be also paid to the difference between the labour intensity of the presented methods.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Civil Engineering  
Contributors: Garifullin, M.

Publication date: 5 Dec 2018

Peer-reviewed: Yes

### Publication information

Journal: MATEC Web of Conferences

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<http://urn.fi/URN:NBN:fi:tty-201901091034>

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Source ID: 85058463414

Research output: [Contribution to journal](#) › [Conference article](#) › [Scientific](#) › [peer-review](#)

### Experimental study of bispectrum-based encoding in radio communication system

This paper is devoted to a novel multi-frequency and bispectrum-based encoding technique designed for radio communication systems. An experimental study of an interference resistance in digital communication is performed using a novel bispectrum-based strategy. Test statistics evaluated in the form of peak values of magnitude bispectrum estimates are proposed for triplet-signals discrimination. Bit error rates assessed experimentally in a radio communication link contaminated by additive Gaussian noise and fading are studied within a wide range of input signal-to-noise ratio (SNR). Advantages of the proposed bispectral-based signal processing as compared with common phase and frequency shift keying are demonstrated and discussed.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Algebraic and Algorithmic Methods in Signal Processing AAMSP, Signal Processing Research Community (SPRC), National Aerospace University

Contributors: Naumenko, V. V., Solodovnik, V. F., Totsky, A. V., Zelensky, A. A., Astola, J. T.

Number of pages: 3

Publication date: 25 Jun 2015

### Host publication information

Title of host publication: 2015 International Conference on Antenna Theory and Techniques: Dedicated to 95 Year Jubilee of Prof. Yakov S. Shifrin, ICATT 2015 - Proceedings

Publisher: The Institute of Electrical and Electronics Engineers, Inc.

ISBN (Print): 9781479985579

ASJC Scopus subject areas: Electrical and Electronic Engineering, Computer Science Applications

Keywords: bispectrum, digital communication system, fading, interference immunity, phase coupling, triplet-signal

DOIs:

10.1109/ICATT.2015.7136853

Source: Scopus

Source ID: 84939448255

Research output: [Chapter in Book/Report/Conference proceeding](#) › [Conference contribution](#) › [Scientific](#) › [peer-review](#)

### Experimental study on temperature distribution of sandwich panel joints in fire

Previous research have demonstrated that significant cost savings can be achieved, if cladding panels forming the building envelope are used to provide stability. There is research information and design guidance available for normal temperature design. However, the information available for fire conditions is very limited and it is not known if the panels are able to stabilize steel frame members also at elevated temperatures. The stiffness and resistance of joints, cladding panels and connectors are required for the assessment of interaction between cladding and frame in fire. Temperatures of those components are in important role when evaluating the stabilization effect. This paper presents an experimental research conducted to determine the temperature fields in sandwich panels, supporting structural steel members and screw connectors. Eight full-scale fire tests were carried out where the structural steel sections supporting sandwich panels were exposed to ISO 834 fire attack on three sides. The test specimen consisted of a fire protected steel beam and load-bearing sandwich panels with both mineral wool and polyisocyanurate (PIR) core. Two different steel beam sections were used in the tests: HEA 160 (S355) and RHS 150x150x8 (S420). This paper introduces the experimental research



and the main observations related to the temperatures. The results show that at failure of the specimens the measured screw temperatures were very different in HEA and RHS tests. The temperatures in HEA tests were much higher than in RHS tests the maximum difference in screw point temperatures being over 400°C. In all the specimens, screw head temperatures were very low throughout the tests, well below 100°C. The tests were part of ongoing RFCS project STABFI.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering, Research group: Metal and Light-wight structures, Research group: Metal and Light-wight structures, Czech Technical University in Prague

Contributors: Malaska, M., Alanen, M., Cabova, K., Liskova, N., Mela, K., Pajunen, S., Wald, F.

Number of pages: 6

Pages: 695-700

Publication date: 16 Sep 2019

#### Host publication information

Title of host publication: Proceedings of Nordic Steel 2019 : CE/papers Special Issue

Volume: 3

Publisher: Wilhelm Ernst und Sohn

Article number: 11.09

#### Publication series

Name: CE/papers

ISSN (Electronic): 2509-7075

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Experimenting traditional and modern reliability models in a 3-years european software project

Reliability is a very important non-functional aspect for software systems and artefacts. In literature, several definitions of software reliability exist and several methods and approaches exist to measure reliability of a software project. However, in the literature no works focus on the applicability of these methods in all the development phases of real software projects. In this paper, we describe the methodology we adopted during the S-CASE FP7 European Project to predict reliability for both the S-CASE platform as well as for the software artefacts automatically generated by using the S-CASE platform. Two approaches have been adopted to compute reliability: The first one is the Rome Lab Model, a well adopted traditional approach in industry; the second one is an empirical approach defined by the authors in a previous work. An extensive dataset of results has been collected during all the phases of the project. The two approaches can complement each other, to support to prediction of reliability during all the development phases of a software system in order to facilitate the project management from a non-functional point-of-view.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Università degli Studi Dell'Insubria, Former organisation of the author

Contributors: Tosi, D., Lenarduzzi, V., Morasca, S., Taibi, D.

Number of pages: 11

Pages: 304-314

Publication date: 2017

#### Host publication information

Title of host publication: Proceedings of the 11th European Conference on Information Systems Management, ECISM 2017

Publisher: Academic Conferences and Publishing International Limited

ISBN (Electronic): 9781911218524

ASJC Scopus subject areas: Computer Science Applications, Information Systems, Management Information Systems

Keywords: Early Reliability, Perceived Reliability, Predictive Models, Reliability by design, Rome Lab Model, Static Analysis

URLs:

<http://www.scopus.com/inward/record.url?scp=85039850001&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85039850001

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Exploration and exploitation of sensorimotor contingencies for a cognitive embodied agent

The modelling of cognition is playing a major role in robotics. Indeed, robots need to learn, adapt and plan their actions in order to interact with their environment. To do so, approaches like embodiment and enactivism propose to ground sensorimotor experience in the robot's body to shape the development of cognition. In this work, we focus on the role of

memory during learning in a closed loop. As sensorimotor contingencies, we consider a robot arm that moves a baby mobile toy to get visual reward. First, the robot explores the continuous sensorimotor space by associating visual stimuli to motor actions through motor babbling. After exploration, the robot uses the experience from its memory and exploits it, thus optimizing its motion to perceive more visual stimuli. The proposed approach uses Dynamic Field Theory and is integrated in the GummiArm, a 3D printed humanoid robot arm. The results indicate a higher visual neural activation after motion learning and show the benefits of an embodied babbling strategy.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Automation Technology and Mechanical Engineering, Research group: Robotics and Automation

Contributors: Houbre, Q., Angleraud, A., Pieters, R.

Number of pages: 9

Pages: 546-554

Publication date: 2020

#### Host publication information

Title of host publication: ICAART 2020 - Proceedings of the 12th International Conference on Agents and Artificial Intelligence

Volume: 2

Publisher: SCITEPRESS

Editors: Rocha, A., Steels, L., van den Herik, J.

ISBN (Electronic): 9789897583957

ASJC Scopus subject areas: Artificial Intelligence, Software

Keywords: Cognitive Robotics, Dynamic Neural Fields, Embodiment, Sensorimotor Contingencies

Electronic versions:

Exploration and Exploitation of Sensorimotor 2020

DOIs:

10.5220/0008951205460554

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202006166105>

URLs:

<http://www.icaart.org/?y=2020>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Exploration of different boundary conditions in the sideways falling situation in hip fracture finite element modelling

##### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Applied Mechanics, Department of Electronics and Communications Engineering, Research group: Computational Biophysics and Imaging Group, BioMediTech, UKK Institute for Health Promotion Research, Jyväskylän yliopisto, Jyväskylä Central Hospital

Contributors: Abe, S., Ylinen, A., Narra Girish, N., Nikander, R., Hyttinen, J., Kouhia, R., Sievänen, H.

Number of pages: 6

Pages: 130-135

Publication date: 2015

##### Host publication information

Title of host publication: Proceeding of the XII Finnish Mechanics Days

Publisher: Rakenteiden Mekaniikan Seura ry

ISBN (Print): 978-952-93-5608-9

ISBN (Electronic): 978-952-93-5609-6

URLs:

[http://rmseura.tkk.fi/smp\\_proceedings/SMP12\\_Proceedings.pdf](http://rmseura.tkk.fi/smp_proceedings/SMP12_Proceedings.pdf)

##### Bibliographical note

ORG=mei,0.5

ORG=elt,0.5

EXT="Sievänen, Harri"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Exploring Attitudes, Knowledge and Competencies for Security Technology: A Cross-Cultural Survey in Higher Education

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Department of Pervasive Computing, Research area: Information security, University of Tampere, University of Patras, Department of Computer Science and Information Systems, University of Jyväskylä, Department of Computer Engineering and Information Technology of College of Information and Communication Technology at the University of Dar Es Salaam, Beijing Institute of Petrochemical Technology

Contributors: Chaudhary, S., Zhao, Y., Berki, E., Valtanen, J., Li, L., Helenius, M., Mystakidis, S., Nalam, T., Thapa, R. B.

Number of pages: 8

Pages: 11-18

Publication date: 2015

### Host publication information

Title of host publication: 8th International Conference on ICT, Society and Human Beings 2015

ISBN (Print): 978-989-8533-41-8

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Exploring customer value of Circular Economy innovations and solutions

To enhance the environmental responsibility of technology business, much innovation is taking place around sustainability, resource efficiency, and the Circular Economy (CE). A growing amount of companies provide CE products, technologies, services and solutions, where sustainability is a relevant part of the value proposition. Similarly, a growing amount of research has analysed sustainable and CE business models providing knowledge on CE technology business. However, this research has focused almost solely on the providers' perspective, remaining silent on the customer perspective. Therefore, this study contributes by focusing on the customer value of CE innovations and solutions, conducting a qualitative multiple case study among customers of diverse CE businesses, and exploratively mapping economic, functional, emotional and symbolic value dimensions. Our conceptual maps for customer value of CE develop theoretical understanding of the CE from customer perspective and provide insights for managers on how to argue the value of their CE solutions.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Center for Innovation and Technology Research, Industrial Engineering and Management

Contributors: Aarikka-Stenroos, L., Ranta, V., Welanathanthri, M.

Publication date: 9 Jun 2020

### Host publication information

Title of host publication: The 31st ISPIIM Conference: Innovating in Times of Crisis. : 7-10 June 2020 - Virtual Event

Publisher: International Society for Professional Innovation Management ISPIIM

Editor: L. S. A. E. P.

ISBN (Print): 978-952-335-466-1

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Exploring effects of ecosystem clockspeed on product performance

The performance of any technological system is dependent on the performance of its subsystems. The evolution of the entire technological systems performance is determined by the performance improvements in deficient sub-systems. In this paper, we extend earlier notions of clockspeed measurement [6, 7] in our examination of the evolutionary dynamics of technological systems. We study the time lag in reverse salience improving the overall system performance and its relation with subsequent product performance. Our empirical study of the product performance investigates the product performance of the PC (personal computer) games. Our findings suggest that the evolution of the PC technological system with respect to computer gaming function is losing forward momentum on the processing speed performance front, while maintaining momentum on the graphics performance front.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Managing digital industrial transformation (mDIT), Leiden University, Delft University of Technology

Contributors: Mäkinen, S., Dedehayir, O., Ortt, R.

Number of pages: 5

Pages: 1457-1461

Publication date: 11 Mar 2015

### Host publication information

Title of host publication: IEEE International Conference on Industrial Engineering and Engineering Management

Volume: 2015-January

Publisher: IEEE COMPUTER SOCIETY PRESS

Article number: 7058880

ISBN (Print): 9781479964109

ASJC Scopus subject areas: Business, Management and Accounting (miscellaneous), Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality

Keywords: business ecosystems, product performance

DOIs:

10.1109/IEEM.2014.7058880

URLs:

<http://www.scopus.com/inward/record.url?scp=84940371264&partnerID=8YFLogxK> (Link to publication in Scopus)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Exploring how brand experience measurement could be used for integrating marketing and R&D**

Based on a brand experience survey done on global mobile phone brands, we have analysed how brand experiences impact brand loyalty and are associated to prior product selections. We have created two conceptual models after doing exploratory factor analysis (EFA) on data collected from Finland (N=468). Our findings indicate that brand experiences of mobile phone brands consist of intellectual, sensory, behavioural, and eco-friendliness related aspects, and that the affective dimension that has earlier been linked to brand experiences is in fact associated more with brand loyalty. Also the perception of eco-friendliness in the brand experience can have an impact on brand loyalty and it is reflected in the product selection. Thus we suggest that integrated marketing and innovation management concentrate on improving the emotions consumers have towards a brand and measure this dimension to track how the brand has succeeded to deliver intellectual, sensory, behavioural and eco-friendliness related brand experiences.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research

Contributors: Saari, U. A., Mäkinen, S. J.

Number of pages: 14

Publication date: 19 Jun 2016

#### **Host publication information**

Title of host publication: XXVII ISPIM Innovation Conference 2016 : Porto, 19-22 June, 2016

ISBN (Print): 978-952-265-929-3

Keywords: brand experience, brand experience measurement, stakeholders, product development

Electronic versions:

ISPIM2016\_Saari\_Makinen\_Exploring how brand experience measurement

URLs:

<http://urn.fi/URN:NBN:fi:tty-201607254337>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Extending Professional Fields. Architectural Research and Regional Development**

In this article, architectural research work is studied as an effective operations model in regional innovation networks of building clusters. The study focuses on the projects of an academic research team working at the University Centre of Seinäjoki, as well as on the innovation environment of the surrounding South Ostrobothnian region in Western Finland. There is no actual university in the region, but the University Centre hosts some twenty professors and their research teams from six Finnish universities. The head of the subject team is also the author of this article. Because of this, the method applied in the article is a reflective action research approach.

The actions and impacts of the research work will be analysed through three case projects. The first case is the development of the large railway station area that will form a new 20-hectare multifunctional part of the city centre of Seinäjoki. The project has strong linkages to the economic policies of the city. The second case is related to the boom in new timber construction, which has been going on in Central Europe and Scandinavia for some time, but not so strongly in the subject region of this study. The aim of the project was to train small and medium-sized building cluster firms to take advantage of the emerging business potential in timber construction. The third case is closely related to the real speciality of the region. The city of Seinäjoki is home to one of the most complete building groups of architect Alvar Aalto, the famous civic centre that consists of the town hall, library, theatre, office building, church and the parish centre. At the moment there is a very demanding renovation project going on, which was also the main subject of the recent research and development project.

The descriptions of the projects are meant to illustrate the operational field of the research team, but the main focus of the article is to analyse the innovation environment that the researchers join as players among others, thus deviating from the more conventional role of architectural professionals.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: School of Architecture, Research group: Urban Laboratory  
Contributors: Hynynen, A.  
Number of pages: 12  
Pages: 372-383  
Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016. : Volume I - Creating built environments of new opportunities

Volume: I

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Kähkönen, K., Keinänen, M.

ISBN (Print): 978-952-15-3741-7

URLs:

[https://tutcris.tut.fi/portal/files/6186667/WBC16\\_Vol\\_1.pdf](https://tutcris.tut.fi/portal/files/6186667/WBC16_Vol_1.pdf)

URLs:

<http://www.wbc16.com/wbc16/welcome.html>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Extreme Nonlinear Signal Amplification

Using the extreme sensitivity of supercontinuum generation to input pulse power fluctuations, we demonstrate experimentally the regeneration and amplification of a weak signal by up to 46 dB.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Fiber Optics, Optoelectronics Research Centre  
Contributors: Närhi, M., Genty, G., Steinmeyer, G., Sand, J., Orsila, L.  
Publication date: 2015

### Host publication information

Title of host publication: 2015 European Conference on Lasers and Electro-Optics - European Quantum Electronics Conference

Publisher: OSA

ISBN (Print): 978-1-4673-7475-0

Keywords: supercontinuum, signal amplification

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CD\\_1\\_2](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CD_1_2)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Eye tracking studies focusing on mathematics: a literature review

It is generally agreed that mathematics is a critical skill for all. To support learning of mathematics, eye tracking can reveal why do students struggle with it. The method can be utilized to investigate different phases in the processing of mathematical representations. For example, the number of fixations and gaze points can inform about the amount of processing devoted to specific mathematical components. The scan path might be particularly informative with regard to viewing and comparison strategy. Altogether, based on the literature review eye tracking studies focusing on mathematics include topics such as arithmetic, word problems, dyscalculia, geometry, algebraic expressions and the role of representations in learning. However, despite of conducted research and promising results, recent eye tracking technology could be used at greater degree in studying ways to improve mathematical skills and detect misconceptions. This paper reviews published eye tracking studies focusing on mathematics, identifies directions for further research, and makes research based recommendations for ways to improve learning of mathematics.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Research group: TUT Game Lab, Pervasive Computing  
Contributors: Perttula, A.  
Publication date: 2017

### Host publication information

Title of host publication: INTED2017. The 11th annual International Technology, Education and Development Conference : Valencia, 6th - 8th of March, 2017.

Publisher: IATED Academy

Article number: 2166-2173

ISBN (Electronic): 978-84-617-8491-2

DOIs:

10.21125/inted.2017.0639

### Bibliographical note

jufoid=85044

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Fabrication and characterization of broadband superluminescent diodes for 2 $\mu\text{m}$ wavelength

Single-mode superluminescent diodes operating at 2  $\mu\text{m}$  wavelength are reported. The structures are based on GaSb material systems and were fabricated by molecular beam epitaxy. Several waveguide designs have been implemented. A continuous-wave output power higher than 35 mW is demonstrated for a spectrum centered at around 1.92  $\mu\text{m}$ . We show that the maximum output power of the devices is strongly linked to spectrum width. Device having low output power exhibit a wide spectrum with a full-width half-maximum (FWHM) as large as 209 nm, while devices with highest output power exhibit a narrower spectrum with about 61 nm FWHM.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Zia, N., Viheriälä, J., Koskinen, R., Koskinen, M., Suomalainen, S., Guina, M.

Publication date: 2016

### Host publication information

Title of host publication: Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XX

Publisher: SPIE

Article number: 97680Q

ISBN (Electronic): 9781510600034

### Publication series

Name: Proceedings of SPIE

Volume: 9768

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: Gallium antimonide, SLD design, Superluminescent diodes, Tilt waveguide

Electronic versions:

Proc\_SPIE\_9768\_97680Q\_N\_Zia\_et\_al\_author\_prepared\_version

DOIs:

10.1117/12.2209720

URLs:

<http://urn.fi/URN:NBN:fi:tty-201706201608>

### Bibliographical note

INT=orc,"Koskinen, Mervi"

Source: Scopus

Source ID: 84978727362

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Fabrication and Practical Evaluation of Glove-integrated Passive UHF RFID Tags

Passive RFID-based technology is a convincing approach to achieve versatile energy- and cost-efficient wireless platforms for future wearable applications. In this paper, we present passive UHF RFID tags integrated into normal work gloves for wearable RFID applications. We introduce embroidery as a new efficient antenna fabrication method for glove-integrated tags as well as establish reference glove-tag antennas from electro-textiles and copper tape. The performance of the three types of glove-tags is evaluated on a male test subject in an anechoic room and in an office environment. Based on the wireless measurement results, the read ranges of the embroidered glove-tags were around 1 meter in an anechoic chamber and in an office, when measured near the human body. These results meet the requirements of many practical applications of glove-tags, although the read ranges are shorter than those of the electro-textile and copper tape tags that showed read ranges of 2-2.5 meters. Finally, the developed glove-tags were successfully tested in actual use

situations for identification and access control. These results are very promising, especially considering the cost effectiveness of embroidered tag antennas and the easiness of their integration into different types of gloves.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Wireless Identification and Sensing Systems Research Group

Contributors: Chen, X., He, H., Ukkonen, L., Virkki, J., Xu, J., Wang, T., Cheng, L.

Number of pages: 5

Publication date: Sep 2018

#### Host publication information

Title of host publication: 2018 IEEE International Conference on RFID Technology Application (RFID-TA)

Publisher: IEEE

ISBN (Print): 978-1-5386-5058-5

ISBN (Electronic): 978-1-5386-5057-8

Keywords: anechoic chambers (electromagnetic), radiofrequency identification, textile products, UHF antennas, wearable antennas, passive RFID-based technology, cost-efficient wireless platforms, wearable RFID applications, glove-integrated tags, electro-textile, embroidered glove-tags, practical applications, copper tape tags, embroidered tag antennas, wireless measurement, glove-integrated passive UHF RFID tags, antenna fabrication method, anechoic chamber, Antennas, Copper, Antenna measurements, Meters, Yarn, Frequency measurement, Radiofrequency identification, RFID, wearable antenna, glove-tag, embroidery electronics, electro-textile antenna

DOIs:

10.1109/RFID-TA.2018.8552814

#### Bibliographical note

JUF0ID=72031

Source: Bibtex

Source ID: urn:7ff8bf18c5235d84d462120f1392fdd5

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Fabrication and reliability evaluation of passive UHF RFID T-shirts

In this paper, we present textile antennas fabricated for T-shirt RFID applications by cutting from commercially available electro-textile, by sewing with conductive thread, and by 3D printing with stretchable silver ink on a 100 % cotton fabric. The ready tags with attached ICs are coated with a protective stretchable encapsulant. The wireless performance of the T-shirt tags is evaluated initially as well as after seven washing cycles, followed by nine washing-drying cycles in a household washing and drying machines. The initial read ranges of all kinds of tags, when measured on-body, are around 3.5 meters. Based on the reliability testing results, the coating effectively protects the components from cyclic washing and drying.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Wireless Identification and Sensing Systems Research Group, Department of Electronic Engineering, City University of Hong Kong

Contributors: Chen, X., He, H., Ukkonen, L., Virkki, J., Lu, Y., Lam, H.

Number of pages: 4

Pages: 1-4

Publication date: 8 Jun 2018

#### Host publication information

Title of host publication: 2018 IEEE International Workshop on Antenna Technology, iWAT2018 - Proceedings

Publisher: IEEE

ISBN (Electronic): 9781538618516

ASJC Scopus subject areas: Instrumentation, Computer Networks and Communications, Electronic, Optical and Magnetic Materials

Keywords: 3D Printing, electro-textiles, embroidery, passive UHF RFID, T-shirts, textiles, washing, wearable electronics

DOIs:

10.1109/IWAT.2018.8379146

#### Bibliographical note

jufoid=79362

Source: Scopus

Source ID: 85050037887

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## **Fabrication of Fluorescent Silver Nanoclusters-based Micro-Label in Polymers**

### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Physics, Research group: Nonlinear Optics, Research area: Optics, Research group: Applied Optics

Contributors: Kunwar, P., Hassinen, J., Bautista, G., Ras, R. H., Toivonen, J.

Publication date: 2015

### **Host publication information**

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: OSA

Article number: CM\_P\_5

ISBN (Print): 978-1-4673-7475-0

### **Publication series**

Name: European Conference on Lasers and Electro-Optics Europe and International Quantum Electronics Conference

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=cleo\\_europe-2015-CM\\_P\\_5&origin=search](https://www.osapublishing.org/abstract.cfm?uri=cleo_europe-2015-CM_P_5&origin=search)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

## **Farm detection based on deep convolutional neural nets and semi-supervised green texture detection using VIS-NIR satellite image**

Farm detection using low resolution satellite images is an important topic in digital agriculture. However, it has not received enough attention compared to high-resolution images. Although high resolution images are more efficient for detection of land cover components, the analysis of low-resolution images are yet important due to the low-resolution repositories of the past satellite images used for timeseries analysis, free availability and economic concerns. The current paper addresses the problem of farm detection using low resolution satellite images. In digital agriculture, farm detection has significant role for key applications such as crop yield monitoring. Two main categories of object detection strategies are studied and compared in this paper; First, a two-step semi-supervised methodology is developed using traditional manual feature extraction and modelling techniques; the developed methodology uses the Normalized Difference Moisture Index (NDMI), Grey Level Co-occurrence Matrix (GLCM), 2-D Discrete Cosine Transform (DCT) and morphological features and Support Vector Machine (SVM) for classifier modelling. In the second strategy, high-level features learnt from the massive filter banks of deep Convolutional Neural Networks (CNNs) are utilised. Transfer learning strategies are employed for pretrained Visual Geometry Group Network (VGG-16) networks. Results show the superiority of the high-level features for classification of farm regions.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electrical Engineering, Coventry University

Contributors: Sharifzadeh, S., Tata, J., Tan, B.

Number of pages: 9

Pages: 100-108

Publication date: 2019

### **Host publication information**

Title of host publication: DATA 2019 - Proceedings of the 8th International Conference on Data Science, Technology and Applications

Publisher: SCITEPRESS

Editors: Hammoudi, S., Quix, C., Bernardino, J.

ISBN (Electronic): 9789897583773

ASJC Scopus subject areas: Hardware and Architecture, Information Systems, Software, Computer Networks and Communications

Keywords: Classification, Convolutional Neural Nets (CNNs), Digital Agriculture, Satellite Image, Supervised Feature Extraction

Electronic versions:

DATA\_2019\_68

DOIs:

10.5220/0007954901000108

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910234035>



## Fault Tolerance of Digital Hydraulics in High Dynamic Hydraulic System

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Digital hydraulics, Robert Bosch GmbH, Germany, Tamlink Ltd

Contributors: Siivonen, L., Linjama, M., Huova, M., Försterling, H., Stamm, E., Deubel, T.

Number of pages: 11

Publication date: 20 May 2015

### Host publication information

Title of host publication: The Fourteenth Scandinavian International Conference on Fluid Power

Volume: 1

Place of publication: Tampere, Finland

Edition: 1

ISBN (Print): 978-952-15-3530-7

ISBN (Electronic): 978-952-15-3530-7

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3530-7>

### Bibliographical note

EXT="Siivonen, Lauri"

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Feasibility characterization of cryptographic primitives for constrained (wearable) IoT devices

The Internet of Things (IoT) employs smart devices as its building blocks for developing a ubiquitous communication framework. It thus supports a wide variety of application domains, including public safety, healthcare, education, and public transportation. While offering a novel communication paradigm, IoT finds its requirements closely connected to the security issues. The role of security following the fact that a new type of devices known as wearables constitute an emerging area. This paper delivers an applicability study of the state-of-the-art cryptographic primitives for wearable IoT devices, including the pairing-based cryptography. Pairing-based schemes are well-recognized as fundamental enablers for many advanced cryptographic applications, such as privacy protection and identity-based encryption. To deliver a comprehensive view on the computational power of modern wearable devices (smart phones, watches, and embedded devices), we perform an evaluation of a variety of them utilizing bilinear pairing for real-time communication. In order to deliver a complete picture, the obtained bilinear pairing results are complemented with performance figures for classical cryptography (such as block ciphers, digital signatures, and hash functions). Our findings show that wearable devices of today have the needed potential to efficiently operate with cryptographic primitives in real time. Therefore, we believe that the data provided during this research would shed light on what devices are more suitable for certain cryptographic operations.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno

Contributors: Ometov, A., Masek, P., Malina, L., Florea, R., Hosek, J., Andreev, S., Hajny, J., Niutanen, J., Koucheryavy, Y.

Publication date: 19 Apr 2016

### Host publication information

Title of host publication: IEEE International Conference on Pervasive Computing and Communication Workshops, PerCom Workshops 2016

Publisher: IEEE

ISBN (Print): 9781509019410

ASJC Scopus subject areas: Computer Science Applications, Computer Networks and Communications, Human-Computer Interaction

Keywords: Bilinear Pairing, Cryptography, Group Signatures, IoT, Performance evaluation, Wearables

Electronic versions:

Feasibility characterization of cryptographic primitives 2016

DOIs:

10.1109/PERCOMW.2016.7457161

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202003092613>

### **Bibliographical note**

INT=elt,"Florea, Roman"

EXT="Niutanen, Jussi"

Source: Scopus

Source ID: 84966546696

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Feasibility of electric buses in public transport**

This study examines the economic feasibility of electric buses in a mid-sized city, where public transport is currently organized with buses only. The difference in lifetime cost of electric buses and diesel buses was calculated with the chosen parameters that were selected after careful background analysis. A viable business case can be created when the battery and the charging infrastructure are selected shrewdly. The electricity is much cheaper fuel than diesel but with the current battery technologies and battery prices the significant cost from operating an e-bus comes from the wear of the battery. Two types of Li-ion batteries were compared, LFP (Lithium Iron Phosphate) and LTO (Lithium Titanate). Also different conductive opportunity charging strategies were examined: 1. Charging at the depot. 2. Charging at the end stop(s). 3.

Charging at the line stops.

The round trip line length assessed was 20 km. Calculations show that the LTO buses and a fast charger at the end stop complemented with low power overnight chargers at the depot is the best investment combination based on the given assumptions. The 200 kW charging power is sufficient to ensure the charging in the normal end stop breaks. Due to a longer cycle life the wear cost per km was lower for LTO than for LFP. LTO is also better adapted for fast charging. The battery size has to be sufficient compared to the required driving range during peak consumption, to the charging current and to the performance requirements of the e-bus. Oversizing the battery has some positive effects (improved cycle life, less heating and better flexibility) but the negative effects were estimated to be more significant (higher investment cost, increased weight and space requirement).

### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Electrical Engineering, Research area: Power engineering

Contributors: Vilppo, O., Markkula, J.

Number of pages: 9

Publication date: 3 May 2015

### **Host publication information**

Title of host publication: EVS28 28th International Electric Vehicle Symposium and Exhibition

URLs:

<http://www.a3ps.at/site/sites/default/files/downloads/evs28/papers/C4-03.pdf>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Feasibility study of the THz band for communications between wearable electronics**

Emerging wearable nano sensor networks enable a set of valuable applications in biomedical and environmental fields. At the same time, the current state of communication technologies significantly limits the processing capabilities of prospective nanomachines. Consequently, implying that all the analysis of collected data needs to be performed on a macro device. Therefore, to effectively enable long-awaited applications of nanonetworks their seamless integration into existing networking infrastructure is required, leading to the concept of Internet of Nano Things. In this paper, the interoperability between already deployed macro networks and emerging nano networks is preliminary investigated. The solution for this problem is nontrivial, as the existing macro wireless networks use primarily the carrier-based electromagnetic communications, while nanomachines must rely on ultra-low-power pulse-based EM radiation or inherently mobile objects as information carriers. Thus, the direct interaction between macro and nano networks is currently not feasible, forcing using special gateway nodes. Moreover, the modern solutions for nano communications have to be rapidly improved to enable construction of large-scale networks on top of existing link level techniques. Numerous theoretical questions are to be addressed to achieve this goal, ranging from the design of a proper modulation and coding technique to mitigation of noise and interference effects.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno

Contributors: Petrov, V.

Number of pages: 6  
Pages: 157-162  
Publication date: 3 Jun 2015

#### Host publication information

Title of host publication: 2015 17th Conference of Open Innovations Association (FRUCT), 20-24 April 2015, Yaroslavl.  
Publisher: IEEE

#### Publication series

Name: Conference of Open Innovations Association (FRUCT)  
ISSN (Print): 2305-7254  
ASJC Scopus subject areas: Computer Science(all), Electrical and Electronic Engineering  
DOIs:  
10.1109/FRUCT.2015.7117987  
Source: Scopus  
Source ID: 84936947872  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Field Collapse Event ESD Test Method

A novel field collapse event ESD test method is presented in this paper. The device under test is continuously grounded in an electrostatic field and when the field is removed it drives current through the device. We show with measurements and simulations how to use this method to test ESD immunity of electronic products.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Sensing Systems for Wireless Medicine (MediSense), Department of Electronics and Communications Engineering, Research group: Wireless Identification and Sensing Systems Research Group, Cascade Metrol, Microsoft  
Contributors: Tamminen, P., Viheriäkoski, T., Reinvoio, T., Sydänheimo, L., Ukkonen, L.  
Number of pages: 6  
Publication date: 2014

#### Host publication information

Title of host publication: 2014 36TH Electrical overstress/electrostatic discharge symposium (EOS/ESD)  
Publisher: IEEE COMPUTER SOC

#### Publication series

Name: Electrical Overstress Electrostatic Discharge Symposium  
Publisher: IEEE COMPUTER SOC  
ISSN (Print): 0739-5159  
Source: WOS  
Source ID: 000355792800014  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Finite temperature path-integral modeling of quantum dot cellular automata

#### General information

Publication status: Published  
Organisations: Department of Physics, Research group: Semiconductor Technology and Applications, Optoelectronics Research Centre, Research area: Computational Physics, Research group: Electronic Structure Theory  
Contributors: Tiihonen, J., Schramm, A., Kylänpää, I., Rantala, T.  
Publication date: 29 Mar 2016  
Peer-reviewed: Unknown  
Event: Paper presented at PHYSICS DAYS / FYSIIKAN PÄIVÄT : ANNUAL MEETING OF THE FINNISH PHYSICAL SOCIETY, .  
URLs:  
<http://hbar.kapsi.fi/proceedings.pdf> (Proceedings)  
Research output: Other conference contribution › Paper, poster or abstract › Scientific

#### Finnish Engineering Education for Sustainable Development in 2016 - Call for collaborative learning

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, The Education Fund  
Contributors: Takala, A., Korhonen-Yrjänheikki, K.  
Publication date: Sep 2016

#### Host publication information

Title of host publication: SEFI 2016 Annual Conference Proceedings : Engineering Education on Top of the World: Industry University Cooperation

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 9782873520144

URLs:

[http://www.sefi.be/conference-2016/papers/Sustainability\\_and\\_Engineering\\_Education/takala-finnish-engineering-education-for-sustainable-development-135\\_a.pdf](http://www.sefi.be/conference-2016/papers/Sustainability_and_Engineering_Education/takala-finnish-engineering-education-for-sustainable-development-135_a.pdf)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Finnish Round Robin Test on Airborne Sound Insulation

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering

Contributors: Lietzen, J., Kylliäinen, M.

Number of pages: 6

Pages: 1677-1682

Publication date: May 2018

#### Host publication information

Title of host publication: Proceedings of the 11th European Congress and Exposition on Noise Control Engineering, Euronoise 2018, May 27-31 2018, Hersonissos, Crete, Greece : Reduce Noise to Improve Life

Place of publication: Hersonissos, Crete, Greece

Publisher: European Acoustic Association EAA

Article number: 282.162

#### Publication series

Name: European Congress and Exposition on Noise Control Engineering

ISSN (Print): 2226-5147

URLs:

[http://www.euronoise2018.eu/docs/papers/282\\_Euronoise2018.pdf](http://www.euronoise2018.eu/docs/papers/282_Euronoise2018.pdf)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### First-principles data set of 45,892 isolated and cation-coordinated conformers of 20 proteinogenic amino acids

We present a structural data set of the 20 proteinogenic amino acids and their amino-methylated and acetylated (capped) dipeptides. Different protonation states of the backbone (uncharged and zwitterionic) were considered for the amino acids as well as varied side chain protonation states. Furthermore, we studied amino acids and dipeptides in complex with divalent cations ( $\text{Ca}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Pb}^{2+}$ , and  $\text{Hg}^{2+}$ ). The database covers the conformational hierarchies of 280 systems in a wide relative energy range of up to 4 eV (390 kJ/mol), summing up to a total of 45,892 stationary points on the respective potential-energy surfaces. All systems were calculated on equal first-principles footing, applying density-functional theory in the generalized gradient approximation corrected for long-range van der Waals interactions. We show good agreement to available experimental data for gas-phase ion affinities. Our curated data can be utilized, for example, for a wide comparison across chemical space of the building blocks of life, for the parametrization of protein force fields, and for the calculation of reference spectra for biophysical applications.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Fritz Haber Institute of the Max Planck Society, COMP Centre of Excellence, Department of Applied Physics, Aalto University, Aalto University, Duke University

Contributors: Ropo, M., Schneider, M., Baldauf, C., Blum, V.

Publication date: 16 Feb 2016

Peer-reviewed: Yes

#### Publication information

Journal: Scientific Data

Volume: 3

Article number: 160009

ISSN (Print): 2052-4463

Ratings:

Scopus rating (2016): CiteScore 4.7 SJR 3.261 SNIP 2.208

Original language: English

ASJC Scopus subject areas: Education, Library and Information Sciences, Computer Science Applications, Information Systems, Statistics, Probability and Uncertainty, Statistics and Probability

Electronic versions:

ropo et al - First-principles data set

DOIs:

10.1038/sdata.2016.9

URLs:

<http://urn.fi/URN:NBN:fi:itty-201607294339>

Source: Scopus

Source ID: 84961184519

Research output: Contribution to journal > Article > Scientific > peer-review

### **First principles prediction of the solar cell efficiency of chalcopyrite materials $\text{AgMX}_2$ (M=In, Al; X=S, Se, Te)**

Using the spectroscopic limited maximum efficiency, and Shockley and Queisser predictor models, we compute the solar efficiency of the chalcopyrites  $\text{AgMX}_2$  (M = In, Al; X = S, Se, Te). The results presented are based on the estimation of the electronic and optical properties obtained from first principles density functional theory as well as the many-body perturbation theory calculations. The results from this report were consistent with the experimental data. The optical bandgap was accurately estimated from the absorption spectra, obtained by solving the Bethe and Salpeter equation. Fitting the Tauc's plot on the absorption spectra, we also predicted that the materials studied have a direct allowed optical transition. The theoretical estimations of the solar cell performance showed that the efficiencies from the Shockley and Queisser model are higher than those from the spectroscopic limited maximum efficiency model. This improvement is attributed to the absorption, the recombination processes and the optical transition accounted in the calculation of the efficiency.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electrical Engineering, University of South Africa, University of Witwatersrand

Contributors: Dongho-Nguimdo, G. M., Igumbor, E., Zambou, S., Joubert, D. P.

Publication date: 1 Dec 2019

Peer-reviewed: Yes

#### **Publication information**

Journal: Computational Condensed Matter

Volume: 21

Article number: e00391

ISSN (Print): 2352-2143

Ratings:

Scopus rating (2019): CiteScore 1.7 SJR 0.341 SNIP 0.706

Original language: English

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Materials Science (miscellaneous), Condensed Matter Physics, Materials Chemistry

Keywords: Chalcopyrites, First principles, Solar cell efficiency

DOIs:

10.1016/j.cocom.2019.e00391

Source: Scopus

Source ID: 85065198754

Research output: Contribution to journal > Article > Scientific > peer-review

### **Fractional Ornstein-Uhlenbeck Processes**

In this monograph, we are mainly studying Gaussian processes, in particularly three different types of fractional Ornstein – Uhlenbeck processes. Pioneers in this field may be mentioned, e.g. Kolmogorov (1903-1987) and Mandelbrot (1924-2010). The Ornstein – Uhlenbeck diffusion can be constructed from Brownian motion via a Doob transformation and also from a solution of the Langevin stochastic differential equation. Both of these processes have the same finite dimensional distributions. However the solution of the Langevin stochastic differential equation, which driving process is fractional Brownian motion and a Doob transformation of fractional Brownian motion do not have same finite dimensional distributions. Indeed we verify, that the covariance of the fractional Ornstein – Uhlenbeck process of the first kind (which we call the solution of the Langevin stochastic differential equation in which the driving process is fractional Brownian motion) behaves at infinity like a power function and the covariance of the fractional Ornstein – Uhlenbeck process (constructed by a Doob transformation of fractional Brownian motion) behaves at infinity like an exponential function. Moreover we study

the behaviour of the covariances of these fractional Ornstein – Uhlenbeck processes. We also calculate the spectral density function for the Doob transformation of fractional Brownian motion using a Bochner theorem. We present the Doob transformation of fractional Brownian motion via solution of the Langevin stochastic differential equation. One of the main aims of our research is to analyse its driving process. This driving process is  $Y^\alpha(\alpha) = e^{-\alpha t} x_{\tau_t}$ , where  $\tau_t = (He^{\alpha t/H})/\alpha$  and  $\{Z_t: t \geq 0\}$  is fractional Brownian motion. We find out that the process  $Y^\alpha(\alpha) := \{Y_{\tau_t}^\alpha(\alpha): t \geq 0\}$ , if scaled properly, has the same finite dimensional distributions as the process  $Y^\alpha(1) := \{Y_{t^\alpha}^\alpha(1): t \geq 0\}$ . The main result in this monograph is that we define a stationary fractional Ornstein – Uhlenbeck process of the second kind as a process with a two-sided driving process  $\{Y_{t^\alpha}^\alpha(1): t \in \mathbb{R}\}$  and create a new family of fractional Ornstein-Uhlenbeck processes. We study many properties of the fractional Ornstein – Uhlenbeck process of the second kind. For example, we show that the fractional Ornstein – Uhlenbeck process of the second kind is Hölder continuous of any order  $\beta < H$  and find the kernel representation of its covariance. We research many properties of the processes  $Y^\alpha(\alpha)$  and  $Y^\alpha(1)$  since they are quite interesting themselves. We represent these processes as stochastic integrals with respect to Brownian motion and prove that the sample paths of the process  $Y^\alpha(\alpha)$  are Hölder continuous of any order  $\beta < H$ . In the case  $H \in (1/2, 1)$ , we find out the covariance kernel of increment process of  $Y^\alpha(\alpha)$ , and using that we investigate the covariance of  $Y^\alpha(\alpha)$  and the variance of  $Y^\alpha(\alpha)$ , when  $t$  tends to infinity. One of our main results is that the increment process of  $Y^\alpha(\alpha)$  is short-range dependent. We also study weak convergence and tightness and then finally prove that  $1/\sqrt{\alpha} Y_{\alpha t^\alpha}^\alpha(\alpha)$  converges weakly to scaled Brownian motion. In the case  $H \in (1/2, 1)$ , fractional Brownian motion and the fractional Ornstein – Uhlenbeck process of the first kind both exhibit a long-range dependence, but the fractional Ornstein–Uhlenbeck process of the second kind exhibits a short-range dependence. This offers more opportunities to model network traffic or economic time series via tractable fractional processes. The fractional Ornstein – Uhlenbeck process of the first kind and the fractional Ornstein – Uhlenbeck process of the second kind are quite similar to simulate, since they can both be represented via stochastic differential equations.

### General information

Publication status: Published  
 MoE publication type: G4 Doctoral dissertation (monograph)  
 Organisations: Department of Mathematics  
 Contributors: Kaarakka, T.  
 Number of pages: 102  
 Publication date: 6 Nov 2015

### Publication information

Publisher: Tampere University of Technology  
 ISBN (Print): 978-952-15-3604-5  
 ISBN (Electronic): 978-952-15-3620-5  
 Original language: English

### Publication series

Name: Tampere University of Technology. Publication  
 Publisher: Tampere University of Technology  
 Volume: 1338  
 ISSN (Print): 1459-2045  
 Electronic versions:  
 kaarakka\_1338  
 URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3620-5>

### Bibliographical note

Awarding institution: Tampere University of Technology  
 Versio ok 14.12.2015  
 Research output: Book/Report › Doctoral thesis › Monograph

### Framework for optimization and scheduling of a copper production plant

This work presents a nonlinear optimization and scheduling approach applied to a copper production plant. The solution maximizes smelting furnace production and provides valid converting schedules by simulating the evolution of the process over the optimization horizon. The production process is briefly described and the main models used to predict and calculate furnace and converter parameters are detailed. Though the solution is concentrated on the main elements, copper and iron, the optimization framework enables easy future augmentation with more complex models. A schedule optimization case is presented.

### General information

Publication status: Published  
 MoE publication type: A3 Part of a book or another research book  
 Organisations: Department of Automation Science and Engineering, Research area: Dynamic Systems, Research area: Measurement Technology and Process Control

Contributors: Suominen, O., Mörsky, V., Ritala, R., Vilkkö, M.  
Number of pages: 6  
Pages: 1243-1248  
Publication date: 25 Jun 2016

#### Host publication information

Title of host publication: 26th European Symposium on Computer Aided Process Engineering, 2016  
Volume: 38  
Publisher: Elsevier Science B.V.  
ISBN (Print): 9780444634283

#### Publication series

Name: Computer Aided Chemical Engineering  
ISSN (Print): 1570-7946  
ASJC Scopus subject areas: Chemical Engineering(all), Computer Science Applications  
Keywords: copper smelting, modelling, nonlinear optimization, Scheduling  
DOIs:  
10.1016/B978-0-444-63428-3.50212-5  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84994385954&partnerID=8YFLogxK> (Link to publication in Scopus)

#### Bibliographical note

JUFOID=70254  
Source: Scopus  
Source ID: 84994385954  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

#### Frequency Comb Generation in a Continuous-Wave Pumped Second-Order Nonlinear Waveguide Resonator

Optical frequency comb generation has been experimentally studied using an integrated system based on a lithium niobate waveguide resonator featuring a strong quadratic nonlinearity. Our theoretical model shows good agreement with the experimental results.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Physics, Paderborn University, University of Helsinki, VTT Technical Research Centre of Finland  
Contributors: Abdallah, Z., Stefszky, M., Ulvila, V., Silberhorn, C., Vainio, M.  
Publication date: 1 May 2019

#### Host publication information

Title of host publication: 2019 Conference on Lasers and Electro-Optics, CLEO 2019 - Proceedings  
Publisher: IEEE  
ISBN (Electronic): 9781943580576  
ASJC Scopus subject areas: Spectroscopy, Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality, Management, Monitoring, Policy and Law, Electronic, Optical and Magnetic Materials, Radiology Nuclear Medicine and imaging, Instrumentation, Atomic and Molecular Physics, and Optics  
DOIs:  
10.23919/CLEO.2019.8750403  
Source: Scopus  
Source ID: 85069196416  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Frequency-doubled VECSEL employing a Volume Bragg Grating for linewidth narrowing

We report on a frequency-doubled VECSEL emitting at 512.6 nm. The laser spectrum was narrowed with a Volume Bragg Grating and the intracavity frequency-doubling was achieved with a periodically poled MgO-doped lithium niobate.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Photonics  
Contributors: Kantola, E., Penttinen, J., Leinonen, T., Ranta, S., Guina, M.  
Publication date: 2018

#### Host publication information

Title of host publication: CLEO : Applications and Technology, CLEO\_AT 2018

Publisher: OSA - The Optical Society

ISBN (Electronic): 9781557528209

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Mechanics of Materials

DOIs:

10.1364/CLEO\_AT.2018.JTu2A.17

Source: Scopus

Source ID: 85052561135

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Frequency-doubled wafer-fused 638 nm VECSEL with an output power of 5.6 W**

We report on a frequency doubled vertical-external-cavity surface-emitting laser emitting 5.6 W at 635 nm. The cavity employed a wafer-fused AlInGaAs/InP-AlAs/GaAs gain mirror in a V-shaped configuration. The heatsink temperature was 20 °C.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, RTI-Research SA

Contributors: Kantola, E., Leinonen, T., Rantamäki, A., Guina, M., Sirbu, A., Iakovlev, V.

Publication date: 2018

#### **Host publication information**

Title of host publication: CLEO : Applications and Technology, CLEO\_AT 2018

Publisher: OSA - The Optical Society

ISBN (Electronic): 9781557528209

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Mechanics of Materials

DOIs:

10.1364/CLEO\_AT.2018.JTu2A.10

Source: Scopus

Source ID: 85049146963

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **From monolithic systems to microservices: A decomposition framework based on process mining**

Decomposition is one of the most complex tasks during the migration from monolithic systems to microservices, generally performed manually, based on the experience of the software architects. In this work, we propose a 6-step framework to reduce the subjectivity of the decomposition process. The framework provides software architects with a set of decomposition options, together with a set of measures to evaluate and compare their quality. The decomposition options are identified based on the independent execution traces of the system by means of the application of a process-mining tool to the log traces collected at runtime. We validated the process, in an industrial project, by comparing the proposed decomposition options with the one proposed by the software architect that manually analyzed the system. The application of our framework allowed the company to identify issues in their software that the architect did not spot manually, and to discover more suitable decomposition options that the architect did not consider. The framework could be very useful also in other companies to improve the quality of the decomposition of any monolithic system, identifying different decomposition strategies and reducing the subjectivity of the decomposition process. Moreover, researchers could extend our approach increasing the support and further automating the decomposition support.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, TASE - Tampere Software Engineering Research Group

Contributors: Taibi, D., Systä, K.

Number of pages: 12

Pages: 153-164

Publication date: 2019

#### **Host publication information**

Title of host publication: CLOSER 2019 - Proceedings of the 9th International Conference on Cloud Computing and Services Science

Publisher: SCITEPRESS

Editors: Ferguson, D., Munoz, V. M., Helfert, M., Pahl, C.

ISBN (Electronic): 9789897583650

ASJC Scopus subject areas: Computer Science (miscellaneous), Computer Science Applications

Keywords: Cloud-native, Microservice decomposition, Microservice migration, Microservice slicing, Microservices



DOIs:

10.5220/0007755901530164

Source: Scopus

Source ID: 85067463647

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **From theories to game mechanics: Developing a game for training rational numbers**

The paper reports the results from an ongoing project that aims to develop an engaging and effective digital game for training conceptual rational number knowledge. The overall research approach is design science. In the paper we report the results of an iteration in which we studied how students used a Semideus School game prototype and how they experienced the core mechanics of the game. 20 fourth graders and 32 sixth graders played Semideus School game for approximately 2.5 hours. Students were allowed to freely play the game with their iPads. Playing experience was studied with a digital questionnaire that included items about flow experience (Flow Short Scale), perceived playability, and acceptance of game-based math training. Additionally, a researcher observed the playing sessions and discussed with the students about the implementation of the game. Students experienced reasonable high flow experience while playing the game. The results revealed that 4th graders would be more willing to study rational numbers with a game and they also appreciated the playability of the game more than sixth graders. Moreover, sixth graders demanded more complex game mechanics, but 4th graders were happy with the core mechanics. We redesigned the game mechanics based on the findings. The paper describes the new mechanics and the theoretical basis of the new design.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing

Contributors: Kiili, K.

Number of pages: 7

Pages: 328-334

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 11th European Conference on Games Based Learning, ECGBL 2017

Publisher: Academic Conferences and Publishing International Limited

ISBN (Electronic): 9781911218562

ASJC Scopus subject areas: Software, Computer Graphics and Computer-Aided Design, Computer Networks and Communications, Artificial Intelligence, Human-Computer Interaction, Control and Systems Engineering, Education

Keywords: Game design, Game mechanic, Game-based learning, Mathematics, Playing experience, Rational numbers

Source: Scopus

Source ID: 85036471818

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Full-Field Temperature and Strain Measurement in Dynamic Tension Tests on SS 304**

The thermomechanical response of 304-stainless steel tension specimens to a range of strain rates from  $7 \times 10^{-3} \text{ s}^{-1}$  to  $2600 \text{ s}^{-1}$  was investigated. Quasi-static tests ( $7 \times 10^{-3}$  to  $0.8 \text{ s}^{-1}$ ) were completed on a hydraulic load frame, intermediate tests ( $200 \text{ s}^{-1}$ ) were performed with a modified pressure bar, and high strain rate tests ( $2600 \text{ s}^{-1}$ ) on a split Hopkinson pressure bar. Full-field infrared thermography and strain measurements were recorded during each test. Infrared measurements were taken using the Telops FAST-IR 1000 infrared camera at rates up to 30,000 frames per second. 2D-DIC was used to compute strain from simultaneously recorded visible images taken at rates up to 90,000 frames per second. Max temperatures of  $290 \text{ }^\circ\text{C}$  were recorded in the necking region of a uniaxial specimen at a strain rate of  $2600 \text{ s}^{-1}$ . These measurements can be used to investigate the transition of isothermal deformation to adiabatic deformation and to determine the portion of plastic work converted to heat at each strain rate.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Materials Science, Research group: Materials Characterization, The Ohio State University, Columbus, OH, USA, Department of Mechanical Engineering

Contributors: Smith, J., Kuokkala, V., Seidt, J., Gilat, A.

Number of pages: 8

Pages: 37-44

Publication date: 2016

#### **Host publication information**

Title of host publication: Dynamic Behavior of Materials, Volume 1 : Proceedings of the 2016 Annual Conference on Experimental and Applied Mechanics

Publisher: Springer International Publishing

ISBN (Print): 978-3-319-41131-6  
ISBN (Electronic): 978-3-319-41132-3

### Publication series

Name: Conference proceedings of the Society for Experimental Mechanics  
ISSN (Electronic): 2191-5644  
DOIs:  
10.1007/978-3-319-41132-3\_6

### Bibliographical note

JUFOID=72540

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Fully printed memristors for a self-sustainable recorder of mechanical energy

Memristors have attracted significant interest in recent years because of their role as a missing electronic component and unique functionality that has not previously existed. Since the first discoveries of the existence of memristive materials, various different fabrication processes for memristors have been presented. Here, a simple additive fabrication process is demonstrated where memristors were deposited on a polymer substrate by conventional inkjet printing. The memristor structure was printed on a 125  $\mu$  m thick polyethylene terephthalate (PET) substrate by sandwiching a thin layer of TiO<sub>x</sub> between two silver nanoparticle ink electrodes. Current–voltage (I–V) characterization measurements were performed and they showed clear memristive behavior when voltage pulse amplitude varied between –1.5 V and 1.5 V. The corresponding resistance change is approximately between 150  $\Omega$  and 75 k $\Omega$ . In order to demonstrate the switching scheme in practical application, printed memristors and a printed voltage doubler were connected with a piezoelectric element. The element was subjected to impact-type excitation thus producing an electric charge that was able to switch the memristor between high and low resistive states. These results pave the way for an exploitation of cost-efficient, self-sufficient, all-printable memory elements for wide utilization in future electronics applications.

### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Electronics and Communications Engineering, Department of Automation Science and Engineering, Research area: Microsystems, Research area: Measurement Technology and Process Control  
Contributors: Vilmi, P., Nelo, M., Voutilainen, J., Palosaari, J., Pörhönen, J., Tuukkanen, S., Jantunen, H., Juuti, J., Fabritius, T.  
Number of pages: 8  
Publication date: 19 Apr 2016  
Peer-reviewed: Yes

### Publication information

Journal: Flexible and Printed Electronics  
Volume: 1  
Issue number: 2  
Article number: 025002  
ISSN (Print): 2058-8585  
Original language: English  
Electronic versions:  
Vilmi\_2015\_Printed\_memristor\_preprint  
DOIs:  
10.1088/2058-8585/1/2/025002  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201606134229>  
Source: Bibtex  
Source ID: urn:93364f0c9fc6d11e220f8d004617b3a2  
Research output: Contribution to journal > Article > Scientific > peer-review

### Functionalizing Surface Electrical Potential of Hydroxyapatite Coatings

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Materials Science, Research group: Surface Engineering, Riga Technical University, University of Adelaide  
Contributors: Pluduma, L., Freimanis, E., Gross, K., Koivuluoto, H., Algate, K., Haynes, D., Vuoristo, P.  
Number of pages: 6

Pages: 12-17  
Publication date: 2016

#### **Host publication information**

Title of host publication: 11th International Conference Medical Applications of Novel Biomaterials and Nanotechnology  
Volume: 102  
ISBN (Print): 978-3-0357-1125-7

#### **Publication series**

Name: Advances in Science and Technology  
Volume: 102  
ISSN (Print): 1661-819X

#### **Bibliographical note**

JUFOID=75599

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Functional model for organisational and safety culture**

Cultures are usually defined as shared values, attitudes and behaviour of certain group. The core of culture is inside person's mind. Only through behaviour or other actions of persons the culture becomes visible and shareable. Cultural artefacts and all other perceptible signs of culture are formed through action. From this perspective culture requires functionality. It does not exist nor spread without activity of individuals. In systems theory there is a methodological distinction between theoretical system and empirical system. Theoretical system "is a complex of concepts, suppositions, and propositions having both logical integration and empirical reference". Empirical system is "a set of phenomena in the observable world that is amenable to description and analysis by means of a theoretical system". However, in cultural context, theoretical models usually describe only properties of the empirical system. Usually the functionality of the culture is left undefined. Therefore theoretical models may have flaws in their ability to describe the functionality of the culture, which is essential part of the culture. In this paper we use a novel functional model to explore the functionality of the most commonly used culture models. We inspect Schein's organizational culture model, Cooper's reciprocal safety culture model and Johnson's cultural web. We study them and their functionality with our own functional model, which integrates person to sociotechnical system and shows person-sociotechnical system interaction. This study clearly shows that if culture's basis is in shared mental models, then the question whether organization is or has culture is absurd. As Antonsen has pointed out certain mandatory organizational features are clearly structural and not cultural. We also emphasize the behavioural aspect when defining cultural issues. The shared mental model alone is not sufficient requirement to define a feature as a cultural artefact, nor is the behaviour all employees share. Behaviour or action is cultural artefact only when the members of the culture have truly free will to choose their behaviour.

#### **General information**

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Pori Department  
Contributors: Porkka, P. L.  
Number of pages: 6  
Pages: 907-912  
Publication date: 2016

#### **Host publication information**

Title of host publication: Chemical Engineering Transactions  
Publisher: Italian Association of Chemical Engineering AIDIC  
ISBN (Print): 9788895608396

#### **Publication series**

Name: Chemical Engineering Transactions  
Volume: 48  
ISSN (Electronic): 2283-9216  
ASJC Scopus subject areas: Chemical Engineering(all)  
DOIs:  
10.3303/CET1648152

#### **Bibliographical note**

JUFOID=70222

Source: Scopus

Source ID: 84976878615

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### **Future in wood? Timber construction in boosting local development.**

Large scale timber construction has been on the upswing for some time in many European countries. Besides the building cluster, also regions and cities have taken advantage of the ongoing timber boom in their economic and spatial development. In this article the focus is on the South Ostrobothnia region and the city of Seinäjoki in Western Finland, where the potential of the business is quite weakly exploited regardless of favourable preconditions. By studying the key actors of the innovation network we are able to better understand the premises of the local development platform that should aim at boosting timber construction.

#### **General information**

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: School of Architecture, Research group: Urban Laboratory

Contributors: Hynynen, A.

Number of pages: 13

Pages: 127-139

Publication date: 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: European Spatial Research and Policy

Volume: 23

Issue number: 1

ISSN (Print): 1231-1952

Ratings:

Scopus rating (2016): CiteScore 0.5 SJR 0.152 SNIP 0.378

Original language: English

Keywords: Urban development, regional development, timber construction, innovation network, development platform

DOIs:

10.1515/esrp-2016-0007

Research output: Contribution to journal › Review Article › Scientific › peer-review

### **Gain Scheduling Full State Feedback with D-Implementation for Velocity Tracking of Hydrostatic Drive Transmission**

This paper presents a gain-scheduling based velocity controller for hydrostatic drive transmissions (HSD). We design our controller based a model of the system which captures most of the nonlinear effects and parameter variation. Therefore, we can obtain much better performance compared to existing linear controllers. Our control strategy is based on full state feedback whose gains are scheduled on measured states which are speed and volume pressures, and estimated hydraulic flow. To implement standard state feedback, we would need to calculate operating points of all the states at all time. However, due to modelling uncertainty (specially unknown frictions) pressure equilibrium calculation will be very inaccurate. We will employ D implementation methodology to remedy this problem.

For the proof of concept, we show the efficacy of the controller using a validated simulator of a wheel loader with real machine parameters. The experiments are performed both on flat terrain and slope. The results demonstrate that the performance of velocity tracking is high and the controllability of the machine is maintained in every situation.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Field robotics and control,

Research group: Fluid power automation in mobile machines

Contributors: Backas, J., Ghabcheloo, R., Huhtala, K.

Number of pages: 12

Pages: 64-75

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the Fourteenth Scandinavian International Conference on Fluid Power, SICFP15. May 20-22, 2015. Tampere, Finland

Publisher: Tampere University of Technology. Department of Intelligent Hydraulics and Automation

ISBN (Print): 978-952-15-3529-1

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3530-7>

#### **Bibliographical note**

J. Backas, R. Ghabcheloo, K. Huhtala, "Gain Scheduling Full State Feedback with D-Implementation for Velocity Tracking of Hydrostatic Drive Transmission", 14th Scandinavian International Conference on Fluid Power, May 2015, Tampere/Finland

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Gamification at School**

Traditional teacher-oriented teaching methods in a lecture style are no longer viewed as effective enough for learning and are therefore criticized. It is generally agreed that the modern education should engage students, stimulate interests and maintain a positive attitude. In other words, there should be a way to further learning for example by combining it with playing. This is why many educators and researchers devise new strategies, tools, methods and techniques of novel and engaging activities in order to gamify education. Gamification is often defined as the use of game mechanics and game design techniques in non-game contexts. The present study focuses on investigating possibilities of gamification at school and in a classroom setting. In this study, to complement current research knowledge in the field of classroom and education gamification, students and teachers (n = 120) provided their point of view how to utilize gamification for learning and teaching purposes. As a result, several perfectible and creative concepts were figured out. Implications of the findings for future research are discussed and research based recommendations are presented.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: TUT Game Lab, Pervasive Computing

Contributors: Perttula, A., Tuomi, P.

Pages: 9334-9340

Publication date: 2017

### **Host publication information**

Title of host publication: EDULEARN17 : The 9th International Conference on Education and New Learning Technologies

ISBN (Electronic): 978-84-697-3777-4

DOIs:

10.21125/edulearn.2017.0756

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Gamified coding: Toy robots and playful learning in early education**

This paper explores the activity of coding with smart toy robots Dash and Botley as a part of playful learning in the Finnish early education context. The findings of our study demonstrate how coding with the two toy robots was approached, conducted and played by Finnish preschoolers aged 5-6 years. The main conclusion of the study is that preschoolers used the toy robots with affordances related to coding mainly in developing gamified play around them by designing tracks for the toys, programming the toys to solve obstacle paths, and competing in player-generated contests of dexterity, speed and physically mobile play.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, Research group: TUT Game Lab, University of Turku School of Cultural Production and Landscape Studies, Prizztech Ltd.

Contributors: Heljakka, K., Ihamaki, P., Tuomi, P., Saarikoski, P.

Number of pages: 6

Pages: 800-805

Publication date: 1 Dec 2019

### **Host publication information**

Title of host publication: Proceedings - 6th Annual Conference on Computational Science and Computational Intelligence, CSCI 2019

Publisher: IEEE

Article number: 9071010

ISBN (Electronic): 9781728155845

ASJC Scopus subject areas: Artificial Intelligence, Computer Networks and Communications, Signal Processing, Hardware and Architecture, Computational Theory and Mathematics

Keywords: Coding, Gamification, Physical play, Programming, Toy robots

DOIs:

10.1109/CSCI49370.2019.00152

Source: Scopus

Source ID: 85084738629

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Gas and particle composition and properties of photochemically aged ship plumes using chemical ionization and aerosol mass spectrometry

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, University of Gothenburg

Contributors: Psichoudaki, M., Faxon, C., Kuuluvainen, H., Thomson, E. S., Eriksson, A., Mallqvist, J., Pettersson, J., Hallquist, Å., Kristensson, A., Hallquist, M.

Publication date: 2015

### Host publication information

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

### Bibliographical note

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

## Generalized hyperbolic harmonic functions in the plane

We consider solutions of the equation  $y\Delta h(x,y) - k \frac{ah}{ay} = 0$  in the plane. These functions already have been investigated by Weinstein around 1950 in connection of generalized axially symmetric potential theory. We have found several results concerning these type of functions, called  $k$ -hyperbolic harmonic functions, in higher dimensions. In this paper, we show in the plane case that it is possible to compute the explicit fundamental solutions in terms of the hyperbolic metric. These results may be used to find fundamental solutions in all even dimensional spaces. The key tools are the transformation properties of hyperbolic metric of the Poincaré upper half space model.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mathematics, Research group: MAT Clifford analysis

Contributors: Eriksson, S., Orelma, H., Vuojamo, V.

Publication date: 10 Mar 2015

### Host publication information

Title of host publication: Proceedings of the International Conference on Numerical Analysis and Applied Mathematics 2014 (ICNAAM-2014)

Volume: 1648

Publisher: American Institute of Physics Inc.

Article number: 440007

ISBN (Print): 9780735412873

ASJC Scopus subject areas: Physics and Astronomy(all)

Keywords: axially symmetric, fundamental solution, Hyperbolic, Laplace-Beltrami

DOIs:

10.1063/1.4912658

Source: Scopus

Source ID: 84939648578

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Generalized multivariable small-signal model of three-phase grid-connected inverter in DQ-domain

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)

Contributors: Messo, T., Aapro, A., Suntio, T.

Publication date: 2015

### Host publication information

Title of host publication: IEEE 16th Workshop on Control and Modeling for Power Electronics (COMPEL)

Publisher: IEEE

ISBN (Print): 978-1-4673-6847-6

DOIs:

10.1109/COMPEL.2015.7236460

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Generation of characteristic traffic emission aerosol in particulate filter collection efficiency tests**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, Urban circular bioeconomy (UrCirBio), VTT Technical Research Centre of Finland

Contributors: Saari, S., Karjalainen, P., Kalliohaka, T., Taipale, A., Rönkkö, T.

Publication date: Oct 2015

#### **Host publication information**

Title of host publication: The 11th International Conference on Industrial Ventilation, Shanghai, China

URLs:

<http://www.scopus.com/inward/record.url?scp=84988008282&partnerID=8YFLogxK>

#### **Bibliographical note**

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Generation of Characteristic Traffic Emission Aerosol in Particulate Filter Collection Efficiency Tests**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, VTT Technical Research Centre of Finland

Contributors: Saari, S., Karjalainen, P., Kalliohaka, T., Taipale, A., Rönkkö, T.

Publication date: Sep 2015

#### **Host publication information**

Title of host publication: EAC 2015, European Aerosol Conference, 6-11 September, 2015, Milan, Italy

URLs:

<http://www.eac2015.it/index.php/final-programme>

#### **Bibliographical note**

ISBN kysytty, HO.

Ei ole, HO.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Genesis of Water supply and sanitation services in Finland**

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Capacity Development of Water and Environmental Services CADWES

Contributors: Rajala, R. P., Juuti, P. S., Katko, T. S.

Number of pages: 11

Pages: 18-28

Publication date: Apr 2019

Peer-reviewed: Yes

#### **Publication information**

Journal: Ympäristöhistoria: Finnish Journal of Environmental History

Volume: 8

Issue number: 1

ISSN (Print): 1799-6953

Original language: Finnish

Electronic versions:

YFJEH-1\_2019\_low Copy

URLs:

### **Gibbs Dyadic Differentiation on Groups - Evolution of the Concept**

Differential operators are usually used to determine the rate of change and the direction of change of a signal modeled by a function in some appropriately selected function space. Gibbs derivatives are introduced as operators permitting differentiation of piecewise constant functions. Being initially intended for applications in Walsh dyadic analysis, they are defined as operators having Walsh functions as eigenfunctions. This feature was used in different generalizations and extensions of the concept firstly defined for functions on finite dyadic groups. In this paper, we provide a brief overview of the evolution of this concept into a particular class of differential operators for functions on various groups.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Department of Computer Science, Faculty of Electronic Engineering, Technical University of Dortmund

Contributors: Stankovic, R. S., Astola, J., Moraga, C.

Number of pages: 9

Pages: 229-237

Publication date: 2018

#### **Host publication information**

Title of host publication: Computer Aided Systems Theory – EUROCAST 2017 - 16th International Conference, Revised Selected Papers

Publisher: Springer Verlag

ISBN (Print): 9783319747262

#### **Publication series**

Name: Lecture Notes in Computer Science

Volume: 10672

ISSN (Print): 0302-9743

ISSN (Electronic): 1611-3349

ASJC Scopus subject areas: Theoretical Computer Science, Computer Science(all)

DOIs:

10.1007/978-3-319-74727-9\_27

#### **Bibliographical note**

EXT="Stankovic, Radomir S."

jufoid=79748

Source: Scopus

Source ID: 85041720547

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Glass and Glass-Ceramic Scaffolds: Manufacturing Methods and the Impact of Crystallization on In-Vitro Dissolution**

#### **General information**

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Biomaterials and Tissue Engineering Group

Contributors: Nommeots-Nomm, A., Massera, J.

Number of pages: 19

Publication date: 2017

#### **Host publication information**

Title of host publication: Scaffolds in Tissue Engineering - Materials, Technologies and Clinical Applications

Publisher: InTech Open Access Publisher

ISBN (Electronic): 978-953-51-3642-2

Electronic versions:

56625

DOIs:

10.5772/intechopen.70242

URLs:

<http://urn.fi/URN:NBN:fi:tty-201801091057>



### **Glove-integrated slotted patch antenna for wearable UHF RFID reader**

We present a glove-integrated slotted patch antenna for a wearable Ultra High Frequency Radio Identification Technology (UHF RFID) reader operating at 866

MHz. We tested the prototype antenna made of copper foil adhered on low-permittivity Ethylene Propylene Diene Monomer (EPDM) foam material having the thickness of 4 mm. To characterize the antenna, we tested it wirelessly in communication with a common dipole type RFID tag to estimate its realized gain, radiation pattern and maximum tag read range it provides. We also analyzed the effects of variable separation between the antenna and the body to confirm stable operation required by the application. The results showed that the antenna feasible for the work glove applications providing the read range up to 360 cm with the reader's output power of 28.4 dBm.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Wireless Identification and Sensing Systems Research Group, BioMediTech

Contributors: Ahmed, S., Musfequr Rehman, S. M., Ukkonen, L., Björninen, T.

Number of pages: 4

Publication date: 26 Sep 2018

#### **Host publication information**

Title of host publication: 2018 IEEE International Conference on RFID Technology & Application (RFID-TA)

Publisher: IEEE

ISBN (Electronic): 978-1-5386-5057-8

Electronic versions:

rfidta

DOIs:

10.1109/RFID-TA.2018.8552817

URLs:

<http://urn.fi/URN:NBN:fi:tty-201812192866>

#### **Bibliographical note**

INT=TUT-BMT,"Musfequr Rehman, S. M."

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Glove-Integrated Textile Antenna with Reduced SAR for Wearable UHF RFID Reader**

We present a wearable slotted patch antenna embedded in a glove for wearable UHF RFID reader. The antenna is fully-textile based, small enough to fit on the area in the back of the hand and achieves the realized gain of  $-1.3$  dBi at 866 MHz in body-worn configuration. The paper outlines the numerical optimization of the antenna using a layered hand model and assessment of the specific absorption rate to determine the maximum output power of the reader that complies with the SAR safety limits. As a novel feature, we have designed an isolator layer of conductive textile that is adhered inside the glove underneath the antenna to achieve 10 percent reduction in the specific absorption rate (SAR) and 1.14 dBi improvement in the realized gain compared to our earlier work. With these marked improvements, the output power of the reader is not limited by SAR, but by the regular RFID emission limit. In the wireless testing, we have verified a detection range of 4.7 meters for a regular dipole type RFID tag with 3.19 WEIRP.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: BioMediTech, Research group: Wireless Identification and Sensing Systems Research Group

Contributors: Ahmed, S., Mehmood, A., Sydänheimo, L., Ukkonen, L., Björninen, T.

Number of pages: 5

Pages: 231-235

Publication date: 7 Nov 2019

#### **Host publication information**

Title of host publication: 2019 IEEE International Conference on RFID Technology and Applications (RFID-TA)

Publisher: IEEE

ISBN (Print): 978-1-7281-0590-1

ISBN (Electronic): 978-1-7281-0589-5

Keywords: slotted patch antenna, RFID reader antenna, UHF, wearable antenna, work glove application, e-textile

DOIs:

10.1109/RFID-TA.2019.8892251

Source: Bibtex

Source ID: 8892251

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Grammatical and Semantic Disambiguation of Requirements at Elicitation and Representation Stages

The final outcome of a design process depends a lot on the initial conditions of this process. The initial design conditions can be viewed as the initial definition and representation of the design problem in the form of requirement model.

Describing the requirements involves considering their elicitation and its transformation in a form that can be further used by engineering designers. These two phases of requirements, elicitation and representation, involve by nature linguistic description. Users, stakeholders or designers express themselves through natural language. Semantics considerations involve understanding aspects that comes down to word selection or connotation but also interpretation aspects of written terms used by communities or persons within particular circumstances and contexts. The present research work is constructed around a central hypothesis: Final design outcomes are strongly dependent on the initial design conditions because of the recursive nature of the design activity.

The present article claims that computer tools can support the disambiguation process associated with elicitation and representation. For this reason the authors have developed an experimental process aiming at reducing ambiguity of the parts of the initial conditions of the design process that are expressed in natural language. This disambiguation is considering several levels: the grammar, words selection and context description.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engn Design & Prod, Sch Engn, Aalto Univ, Aalto University, Sch Engn, Dept Engn Design & Prod

Contributors: Christophe, F., Wang, M., Coatanea, E., Zeng, Y., Bernard, A.

Number of pages: 15

Pages: 17-31

Publication date: 2012

### Host publication information

Title of host publication: Proceedings of the ASME International Design Engineering Technical Conferences and Computers and Information in Engineering, 2011, vol 9

Publisher: AMER SOC MECHANICAL ENGINEERS

ISBN (Print): 978-0-7918-5486-0

Keywords: PRODUCT REQUIREMENTS, DESIGN

Source: WOS

Source ID: 000324350600003

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Green (In,Ga,Al)P-GaP light-emitting diodes grown on high-index GaAs surfaces

We report on green (550-560 nm) electroluminescence (EL) from

(Al<sub>0.5</sub>Ga<sub>0.5</sub>)<sub>0.5</sub>In<sub>0.5</sub>P-

(Al<sub>0.8</sub>Ga<sub>0.2</sub>)<sub>0.5</sub>In<sub>0.5</sub>P double p-i-n heterostructures with monolayer-scale tensile strained GaP insertions in the cladding layers and light-emitting diodes (LEDs) based thereupon. The structures are grown side-by-side on high-index and (100) GaAs substrates by molecular beam epitaxy. Cross-sectional transmission electron microscopy studies indicate that GaP insertions are flat, thus the GaP-barrier substrate orientation-dependent heights should match the predictions of the flat model. At moderate current densities (~500 A/cm<sup>2</sup>) the EL intensity of the structures is comparable for all substrate orientations. Opposite to the (100)-grown structures, the EL spectra of (211) and (311)-grown devices are shifted towards shorter wavelengths (~550 nm at room temperature). At high current densities (>1 kA/cm<sup>2</sup>) a much higher EL intensity is achieved for the devices grown on high-index substrates. The integrated intensity of (311)-grown structures gradually saturates at current densities above 4 kA/cm<sup>2</sup>, whereas no saturation is revealed for (211)-grown structures up to the current densities above 14 kA/cm<sup>2</sup>. We attribute the effect to the surface orientation-dependent engineering of the GaP band structure which prevents the escape of the nonequilibrium electrons into the indirect conduction band minima of the p-doped (Al<sub>0.8</sub>Ga<sub>0.2</sub>)<sub>0.5</sub>In<sub>0.5</sub>P cladding layers.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Ultrafast and intense lasers, Frontier Photonics, Technische Universität Berlin, Fakultät VII-Wirtschaft und Management, 25.6.2012, VI Systems GmbH, CEMES-CNRS, A. F. Ioffe Physical Technical Institute, Institut Für Festkörperphysik

Contributors: Ledentsov, N. N., Shchukin, V. A., Lyytikäinen, J., Okhotnikov, O., Cherkashin, N. A., Shernyakov, Y. M., Payusov, A. S., Gordeev, N. Y., Maximov, M. V., Schlichting, S., Nippert, F., Hoffmann, A.

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of SPIE : Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XIX

Volume: 9383

Publisher: SPIE

Article number: 93830E

ISBN (Print): 9781628414738

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: high-index surface, light-emitting diode, tensile strained barrier

DOIs:

10.1117/12.2083953

Source: Scopus

Source ID: 84930074847

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Green picosecond narrow-linewidth tapered fiber laser system

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, Computing Sciences, Research group: Nanophotonics, Ampliconyx Oy

Contributors: Ustimchik, V., Fedotov, A., Rissanen, J., Noronen, T., Gumenyuk, R., Chamorovskii, Y., Filippov, V.

Pages: 246 - 251

Publication date: 2020

##### Host publication information

Title of host publication: Fiber Lasers XVII: Technology and Systems

Publisher: SPIE

Editor: Dong, L.

##### Publication series

Name: Proceedings of SPIE

Volume: 11260

ISSN (Print): 0277-786X

Keywords: Green laser, High peak power, Picosecond, Narrow linewidth, frequency doubling, MOPA, linear-polarized, singlemode tapered PM fiber

DOIs:

10.1117/12.2546003

##### Bibliographical note

jufoid=71479

EXT="Noronen, T."

EXT="Filippov, V."

Source: Bibtex

Source ID: 10.1117/12.2546003

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Growth of Urban Peripheries with Reference to Inconsistent Spatial Planning Policies: South-east Amman as case study

The rapid random spatial growth of the urban peripheries of Amman calls for an immediate reconsideration of the enforced planning policies that govern the spatial growth of those settlements. However, an overall assessment of the current planning mechanisms is urgently needed.

The article addresses some spatial factors which are impacting the peripheral growth at the south-eastern edge of Amman. It includes the urban land policies that are generated by Greater Amman Municipality GAM. The adoption of decentralization as a prevailing framework for urban policy in the latter two GAM master plans forms a turning point at the planning level. Such concept has evolved through the application of rigid frameworks that culminated into complex urban superposition.

This study deals with a marginal settlement which lies at the south-eastern edge of the Greater Amman Municipality, i.e. Muwaqqr. The analysis intends to explore how Muwaqqr has expanded randomly, testing in the meantime the relationship between Amman city core and its peripheral settlements both spatially and functionally. Light shall also be shed on the two major master plans of GAM: The Greater Amman Comprehensive and Development Plan (GACDP) of 1986, and the Amman Master Plan:

Metropolitan Growth of 2008, tackling their impact on the peripheral district in question.

The study proposes some feasible planning measures to pave the way for better control of the rapid urban growth at the

peripheral areas with the aim to mitigate the negative aspects which adversely affecting the urban structure of Amman. However, the paper also examines the urban transformation of the chosen settlement which further aggravates the multi-jurisdictional divisions that initially meant to sustain an urban uniformity for a modern Amman entity.

#### General information

Publication status: Published

MoE publication type: B1 Article in a scientific magazine

Organisations: University of Jordan, Architectural department, Hashemite University, Zarqa-Jordan

Contributors: Amr, A., Saad, M.

Number of pages: 15

Pages: 54-68

Publication date: Mar 2015

Peer-reviewed: No

#### Publication information

Journal: European International Journal of Science and Technology

Volume: 4

Issue number: 3

Article number: 3

ISSN (Print): 2304-9693

Original language: English

ASJC Scopus subject areas: Urban Studies, Geography, Planning and Development, Architecture

Keywords: urban planning, Urban areas, Urban development, regional development, timber construction, innovation network, development platform, Urban form, urban processes

Electronic versions:

Growth of Urban Peripheries with Reference to Inconsistent Spatial

Research output: Contribution to journal > Article > Scientific

#### >8W GaInNAs VECSEL emitting at 615 nm

We report a high-power VECSEL emitting <8W around 615 nm. The gain chip of the laser was grown by plasma-assisted molecular beam epitaxy and it comprised 10 GaInNAs quantum wells. The VECSEL cavity had a V-shaped geometry and a 10-mm-long non-critically phase-matched LBO crystal for second harmonic generation. The cavity incorporated also an etalon and a birefringent filter for controlling the output wavelength. With the aid of the second harmonic output and the infrared light leaking out from the laser cavity, the single-pass conversion efficiency of the crystal was estimated to have a value of 0.75%.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, Frontier Photonics

Contributors: Leinonen, T., Penttinen, J. P., Korpijärvi, V. M., Kantola, E., Guina, M.

Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of SPIE : Vertical External Cavity Surface Emitting Lasers (VECSELs) V

Volume: 9349

Publisher: SPIE

Article number: 934909

ISBN (Print): 9781628414394

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: frequency doubling, high power visible laser, OPSEL, orange-red VECSEL, SDL, SHG

DOIs:

10.1117/12.2079162

Source: Scopus

Source ID: 84925597620

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Guidelines for Designing Human-friendly User Interfaces for Factory Floor Manufacturing Operators

Agility and fast reaction to changes is required in today's turbulent manufacturing environment. Unfortunately, the commonly used user interfaces

(UIs) on the factory floor don't support such rapid reaction. Even though the human involvement improves agility and reactivity of production systems, it is also a source of uncertainty, especially when it comes to information inputting.

Therefore, specific attention should be placed on human-friendly UI design, in order to improve the reliability of collected data and productivity of operations, as well as to make the workplaces more attractive for the future operators. This paper gives generic guidelines for human-friendly UI design and represents a case study in the context of manufacturing IT-system design.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Engineering Intelligence, Research area: Manufacturing and Automation

Contributors: Järvenpää, E., Lanz, M.

Number of pages: 8

Pages: 531-538

Publication date: 2015

#### Host publication information

Title of host publication: Advances in Production Management Systems: Innovative Production Management Towards Sustainable Growth : IFIP WG 5.7 International Conference, APMS 2015, Tokyo, Japan, September 7-9, 2015, Proceedings, Part II

Publisher: Springer International Publishing

ISBN (Print): 978-3-319-22758-0

ISBN (Electronic): 978-3-319-22759-7

#### Publication series

Name: IFIP Advances in Information and Communication Technology

Keywords: User-centric design, human-friendly design, user interface, manufacturing environment, IT-system

Electronic versions:

APMS2015\_Jarvenpaa\_FinalPaper. Embargo ended: 18/08/16

DOIs:

10.1007/978-3-319-22759-7\_61

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201606134234> . Embargo ended: 18/08/16

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Handheld wireless authentication key and secure documents storage for the Internet of Everything

In this paper, a novel approach for user authentication in Internet of Everything, called 'wireless key' is studied. While the majority of existing solutions suggest a wireless key to be a battery-powered device with considerable computational power, we propose to use passive NFC tags instead. In our approach, all the computations are performed by the service the user is authenticating to and thus no computational power and no battery on the key side is required. This approach allows minimizing the device size and significantly reducing the costs. To ensure security of data stored on the tag we propose a transparent data encryption mechanism constructed on top of strong cryptographic primitives. In addition to the authentication-related feature, we have designed a system that enables secure storage of documents on the same tag making it capable of saving ID cards, bank cards, licenses, etc. The presented approach allows on-the-fly validation of any stored document by the entity that issued it as well as by any other entity granted such permissions. Correctness and a security level of the system have been assessed via the analytical study and validated through a hardware prototype. The algorithms and protocols described in the paper are also applicable to any other carrier technology including Bluetooth Low Energy and Wireless USB.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Emerging Technologies for Nano-Bio-Info-Cogno, Department of Electronics and Communications Engineering, Yaroslavl State University, University of Goettingen

Contributors: Komar, M., Edelev, S., Koucheryavy, Y.

Number of pages: 11

Pages: 120-130

Publication date: 6 Sep 2016

#### Host publication information

Title of host publication: Proceedings of the 18th Conference of Open Innovations Association FRUCT and Seminar on Information Security and Protection of Information Technolog, FRUCT-ISPIT 2016

Publisher: IEEE COMPUTER SOCIETY PRESS

ISBN (Electronic): 9789526839721

ASJC Scopus subject areas: Computer Science(all), Electrical and Electronic Engineering

DOIs:

10.1109/FRUCT-ISPIT.2016.7561517

Source: Scopus

Source ID: 84989154385

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Handling exceptional situations in a distribution network congestion management algorithm**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering

Contributors: Kulmala, A., Repo, S.

Publication date: Jun 2016

#### **Host publication information**

Title of host publication: CIRED Workshop 2016

Place of publication: Helsinki, Finland

ISBN (Electronic): 978-1-78561-202-2

DOIs:

10.1049/cp.2016.0663

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Hard Rock (- ei Hallelujah, vaan) Tribology: Pohjoismainen kaivosteollisuuden kulumisongelmiin keskittyvä kurssi ja seminaari Tampereella**

#### **General information**

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Materials Science, Research group: Materials Characterization

Contributors: Valtonen, K., Tiainen, T.

Pages: 30-33

Publication date: 2 Sep 2015

Peer-reviewed: Unknown

#### **Publication information**

Journal: Materia

Volume: 2015

Issue number: 1

ISSN (Print): 1459-9694

Original language: Finnish

URLs:

<http://www.vuorimiesyhdistys.fi/julkaisut/materia>

Research output: Contribution to journal › Article › Professional

### **Harmonic and Imbalance Voltage Mitigation in Smart Grids: A DSTATCOM Based Solution**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering, Smart Energy Systems (SES)

Contributors: Roncero-Sanchez, P., Acha, E.

Publication date: 2015

#### **Host publication information**

Title of host publication: IEEE EUROCON 2015

ISBN (Electronic): 978-1-4799-8568-5

DOIs:

10.1109/EUROCON.2015.7313751

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Heat Loss Rate of the Finnish Building Stock**

This paper presents a bottom-up model for studying the heat loss rate of the building stock. The model is a step towards more complex building-stock power modeling, whose goal is to predict the sources and the amount of demand response potential under different conditions. The heat loss rate is the fraction of thermal power needed to compensate for the heat loss via exterior walls, windows, roofs, floors and ventilation in the buildings. The heat loss rate depends on the physical characteristics of the building envelope and ventilation and on weather conditions.

We first examine the current state of power and energy modeling. We then describe the research object of this study and the calculation method. The calculation results presented in the third section are illustrated at the hourly level, sorted by the main source of the heating energy of the building. In addition to the analysis of the building stock level, the heat loss rate was calculated on a building level using some typical building information models for validation purposes. The validation indicated that the results obtained with the two methods were consistent and that the order of magnitude was reasonable. The Finnish building stock was used as a research object in the demonstration of the model. Finally, some further needs for research are discussed.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering, Research group: Real estate development, Research group: Capacity Development of Water and Environmental Services CADWES, Research group: Service Life Engineering of Structures

Contributors: Vihola, J., Sorri, J., Heljo, J., Kero, P.

Number of pages: 8

Pages: 601-608

Publication date: 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

Keywords: buildings stock, energy systems, heat loss rate, power modeling

Electronic versions:

Heat loss rate of the Finnish building stock

DOIs:

10.1016/S2212-5671(15)00218-X

URLs:

<http://urn.fi/URN:NBN:fi:tty-201604183810>

<http://www.sciencedirect.com/science/article/pii/S221256711500218X>

Source: RIS

Source ID: urn:16F0384ED693DEFF48B71B73D5740E05

Research output: Contribution to journal > Article > Scientific > peer-review

### **Heat protective properties of enclosure structure from thin-wall profiles with foamed concrete**

Receiving the qualitative, energy efficient and economic building is the main tendency in the civil engineering. One of the leading places is occupied by technology of frame-panel construction with use of new non-autoclaved, monolithic foamed concrete technology producing on a building site. On the example of the real samples there were determined the heat-shielding properties of foamed concrete in a condition of setting process and after attainment of strength with a practical and theoretical methods. The results were obtained for a non-autoclaved monolithic foamed concrete wall fragment (lightweight steel concrete structure - LSCS) for the areas with and without rigid reinforcement with steel thin-wall profiles (lightweight gauge steel structure - LGSS). Influence of the thermal bypass on cold-resisting properties of enclosure structures with technology "Intech LB" is revealed. On the basis of the received results, modernization of a design for improvement of its thermotechnical characteristics is made.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research group: Metal and Light-wight structures, St. Petersburg State Polytechnical University, OTSK, Ltd., Airline

Contributors: Rybakov, V. A., Ananeva, I. A., Pichugin, E. D., Garifullin, M.

Number of pages: 10

Pages: 11-20

Publication date: 1 Mar 2020

Peer-reviewed: Yes

## Publication information

Journal: Magazine of Civil Engineering

Volume: 94

Issue number: 2

ISSN (Print): 2071-4726

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

Keywords: Cold-resisting properties, Non-autoclaved monolithic foamed concrete, Rigid reinforcement, Samples, SOVBI technology, Steel thin-wall profiles, Thermotechnical characteristics

Electronic versions:

02

DOIs:

10.18720/MCE.94.2

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202007016284>

Source: Scopus

Source ID: 85083854606

Research output: Contribution to journal > Article > Scientific > peer-review

## HEVC-compliant viewport-adaptive streaming of stereoscopic panoramic video

Virtual reality (VR) provides unprecedented immersive experience using high-resolution spherical stereoscopic panoramic video. Such an experience is achieved by using head-mounted display (HMD) which has very strict latency bounds in order to respond promptly to user movements. Conventional streaming of VR video requires large bandwidth because the entire captured panorama is transmitted. However, only a limited field-of-view (FOV) is displayed by an HMD, resulting in wastage of bandwidth. To alleviate the problem, this paper proposes a High Efficiency Video Coding (HEVC) compliant approach for efficient coding and streaming of stereoscopic VR content. The proposed method is based on partitioning video pictures into tiles, where only the required tiles corresponding to the primary viewport are transmitted in high resolution, while the remaining parts are transmitted in low resolution. Furthermore, this method enables coding stereoscopic video contents using a conventional HEVC codec, while still achieving significant compression gain by means of adopting inter-view prediction only in intra random access point (IRAP) pictures. Using this method, the predicted view can be decoded independently of the main view, hence allowing simultaneous decoding instances. Experimental results demonstrate that the proposed approach is able to substantially improve compression efficiency and streaming bitrate performance.

## General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: Multimedia Research Group - MRG, Nokia

Contributors: Zare, A., Sreedhar, K. K., Vadakital, V. K. M., Aminlou, A., Hannuksela, M. M., Gabbouj, M.

Publication date: 19 Apr 2017

## Host publication information

Title of host publication: 2016 Picture Coding Symposium, PCS 2016

Publisher: IEEE

ISBN (Electronic): 9781509059669

ASJC Scopus subject areas: Media Technology, Signal Processing

DOIs:

10.1109/PCS.2016.7906401

## Bibliographical note

EXT="Vadakital, Vinod Kumar Malamal"

Source: Scopus

Source ID: 85019449939

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## Hiekkatekonurmipintaisten pesäpallokenttien ominaisuuksien muuttuminen ja elinkaari

Tässä tutkimuksessa selvitettiin hiekkatekonurmipintaisten pesäpallokenttien ominaisuuksia (jousto ja pinnan laatu) ja niiden muuttumista verrattuna aikaisempiin vuosina 1993–1997 tehtyihin tutkimuksiin. Tehtävällä tutkimuksella saatu numeerinen tieto hiekkatekonurmen ominaisuuksista on käyttökelpoinen työväline kenttien luokittelussa, käyttöhyväksynnässä ja peruskorjaustarpeen määrittelyssä.

Kentän pinnan jousto-ominaisuudet koostuvat rakennekerrosten joustosta ja hiekkatekonurmipinnoitteen joustosta. Pinnan joustoon vaikuttaa hiekan rakeisuus sekä nukan laatu (nukkatiheys, nukan pituus) ja kunto. Kenttärakenteen jousto-ominaisuuksia mitattiin kannettavalla pudotuspainolaitteella, Loadman II. Laitteen "tehollinen" mittausvyvyys on n. 200 mm. Vuosina 2013–2014 mitattujen 30 hiekkatekonurmipintaisten pesäpallokentän joustomoduulien (E2) keskiarvo



kenttäalueelta Loadmanilla (10 kg paino,  $\varnothing$  132 mm kuormituslevy) mitattuna oli 100,8 MPa. Aikaisemmassa tutkimuksessa pesäpallokentiltä vuosina 1994–1995 mitattujen kymmenen uuden kentän joustomoduulien (E2) keskiarvo kenttäalueelta oli 85,9 MPa ja vuosina 2013–2014 tehdyissä mittauksissa samojen kenttien keskiarvo oli 110,2 MPa. Vuonna 1996 mitattujen 26 kentän joustomoduulien (E2) keskiarvo kenttäalueelta oli 97,3 MPa. Tällöin kentät olivat mittaushetkellä uusia tai keskimäärin 1...3 vuoden ikäisiä poikkeuksena Ikaalisten, Oulun vanha ja Seinäjoen kentät, jotka silloin mitattiin 5...8 vuoden ikäisinä. Uuden kentän joustomoduuli on pienempi kuin vuoden käytössä olleen kentän, koska rakenteet ja etenkin nukan lomassa oleva täyttöhiekkä tiivistyy sään ja kuormituksen vaikutuksesta. Myöhemmin kentän jousto-ominaisuudet eivät merkittävästi muutu. Uusi kenttä koetaan myös pelaajien mielestä usein pehmeäksi.

Pesäpallossa kovasta kentästä (korkea joustomoduularvo) on hyötyä pelillisesti pallon pomppaamisen ja vierinnän kannalta. Toisaalta kova kenttä lisää lihaksille ja nivelille tulevia kuormituksia. Joukkueiden lääkäreille tehdyn, pelaajien jalkoihin kohdistuvia vammoja koskevan kyselyn katsottiin antavan suuntaa pesäpallokentällä tapahtuvista vammoista. Pienimuotoisen kyselytutkimuksen mukaan pelaajalla esiintyviin jalka-vammoihin kentän ominaisuudet eivät juuri vaikuta. Yksi joukkueen lääkäri arvioi, että nilkan nyrjähdysiin kentän ominaisuuksilla saattaa olla oma vaikutuksensa.

Pelaajayhdistyksen kautta tehtyyn kyselyyn kenttien pelillisistä ominaisuuksista saatiin pelaajilta ainoastaan 12 vastausta. Yleisvaikutelmana oli, että kentät koettiin pääsääntöisesti joustoltaan sopiviksi. Uutta kenttää pidettiin kuitenkin pehmeänä. Kentät olivat pidoltaan vähintään tyydyttäviä. Pelaajat katsoivat kentän tasaisuuden ja oikean hiekkamäärän olevan tärkeitä tekijöitä pallon liikkeen ennakoitavuuden kannalta. Sopiva tekonurmen hiekan täyttöaste on sellainen, että nukkaa näkyy noin 1...3 mm.

Pelialueella (etukenttä, takakenttä) nukan kulumisen on mittaustulosten mukaan keskimäärin 0,1...0,4 mm/vuosi. Kentän käytetyimmillä alueilla (pesät) nukan kulumisen voidaan arvioida olevan enintään 0,7 mm/vuosi. Muualla kovan kulutuksen alueella, kuten lyöjän pelipaikalla, nukka voi kuitenkin kulua puhki jo yhden pelikauden aikana. Riittävä nukan hiekkatäyttö pitää nukan pystyssä. Vajaatäyttöisessä tekonurmessa nukka taittuu. Taittunut, laossa oleva nukka hiertyy ja menee poikki herkemmin kuin pystyssä oleva nukka. Kentällä on huolehdittava tarpeellisesta hiekan lisäyksestä (oikea hiekkamäärä) ja hoidosta.

Hoitamalla hiekkatekonurmea harjauksella ja tarvittaessa imulaitteella pidetään te-konurmen täyttöhiekkä ilmavana (irtonaisena) ja nukka pystyssä, jolloin maksimoidaan sen hoitomahdollisuudet ja käyttöikä. Hyvällä hoidolla hiekkatekonurmipintainen pesäpallokenttä on tämän tutkimuksen mukaan käyttökelpoinen yli 20 vuotta. Tämän jälkeenkin vanhaa hiekkatekonurmea voidaan käyttää erilaisissa liikuntapaikoissa, kuten esimerkiksi erilaisilla pienpelikentillä.

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Civil Engineering, Research group: Earth Constructions

Contributors: Jäniskangas, T.

Number of pages: 45

Publication date: 2015

### Publication information

Publisher: Tampereen teknillinen yliopisto. Rakennustekniikan laitos

ISBN (Print): 978-952-15-3512-3

ISBN (Electronic): 978-952-15-3513-0

Original language: Finnish

### Publication series

Name: Tampereen teknillinen yliopisto. Rakennustekniikan laitos. Maa- ja pohjarakenteet. Tutkimusraportti

Publisher: Tampereen teknillinen yliopisto

Volume: 80

ISSN (Print): 1799-1684

Electronic versions:

janiskangas\_hiekkatekonurmipintaisten\_pesapallokenttien\_ominaisuuksien\_muuttuminen\_ja\_elinkaari

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3513-0>

### Bibliographical note

Versio ok 14.12.2015

Research output: Book/Report > Commissioned report > Professional

### Hierarchical deformable part models for heads and tails

Imbalanced long-tail distributions of visual class examples inhibit accurate visual detection, which is addressed by a novel Hierarchical Deformable Part Model (HDPM). HDPM constructs a sub-category hierarchy by alternating bootstrapping and Visual Similarity Network (VSN) based discovery of head and tail sub-categories. We experimentally evaluate HDPM and compare with other sub-category aware visual detection methods with a moderate size dataset (Pascal VOC 2007), and

demonstrate its scalability to a large scale dataset (ILSVRC 2014 Detection Task). The proposed HDPM consistently achieves significant performance improvement in both experiments.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Signal Processing, Research group: Vision  
Contributors: Yancheshmeh, F. S., Chen, K., Kämäräinen, J.  
Number of pages: 11  
Pages: 45-55  
Publication date: 2018

#### Host publication information

Title of host publication: VISIGRAPP 2018 - Proceedings of the 13th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications  
Volume: 5  
Publisher: SCITEPRESS  
ISBN (Electronic): 9789897582905  
ASJC Scopus subject areas: Computer Vision and Pattern Recognition, Computer Graphics and Computer-Aided Design, Artificial Intelligence  
Keywords: Deformable part model, Imbalanced datasets, Localization, Long-tail distribution, Object detection, Sub-category discovery, Visual similarity network  
DOIs:  
10.5220/0006532700450055  
Source: Scopus  
Source ID: 85047826548  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High Dynamic Range Single-Shot Spectral Measurements of Spontaneous Modulation Instability

We demonstrate a mechanical streak camera capturing single-shot spectra with 40 dB dynamic range. We use the technique to identify for the first time breather collisions from spectra of spontaneous modulation instability in a fiber.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Fiber Optics, Research group: Applied Optics, Institut FEMTO-ST, Université de Franche-Comté, Institut FEMTO-ST, UMR 6174 CNRS-Université de Franche-Comté  
Contributors: Närhi, M., Tengvall, M., Toivonen, J., Dudley, J. M., Genty, G.  
Publication date: 2016

#### Host publication information

Title of host publication: Frontiers in Optics 2016  
Publisher: Optical Society of America (OSA)  
Article number: FF2B.1  
ISBN (Print): 978-1-943580-19-4  
URLs:  
<https://www.osapublishing.org/abstract.cfm?uri=FiO-2016-FF2B.1>

#### Bibliographical note

INT=mat,"Tengvall, Mira"  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High efficiency dilute nitride solar cells: Simulations meet experiments

Parameter extraction procedure and simulation of dilute nitride solar cells are reported. Using PC1D simulation and fitting to experimental current-voltage and external quantum efficiency data, we retrieve the phenomenological material parameters for GaInNAs solar cells. Based on these, we have constructed a model that can explain the changes in short circuit current and open circuit voltage of n-i-p solar cells subjected to rapid thermal annealing. The model reveals that non-annealed MBE-grown GaInNAs material has an n-type doping that evolves to p-type upon rapid thermal annealing. The change of doping type and the shift of the physical location of the pn-junction were confirmed by Kelvin-probe force microscopy. The PC1D modelling was found to work well also for GaInNAs p-i-n solar cells with opposite polarity. It was also found that the GaInNAs lower doping levels in p-i-n solar cells grown at lowered As/III flux ratios were associated with increased carrier lifetimes.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Tukiainen, A., Aho, A., Polojärvi, V., Ahorinta, R., Guina, M.

Number of pages: 20

Pages: 113-132

Publication date: 2016

Peer-reviewed: Yes

### Publication information

Journal: Journal of Green Engineering

Volume: 5

Issue number: 3-4

Article number: 8

ISSN (Print): 1904-4720

Ratings:

Scopus rating (2016): CiteScore 0.7 SJR 0.132 SNIP 0.294

Original language: English

ASJC Scopus subject areas: Environmental Engineering, Energy(all), Physics and Astronomy(all), Materials Science(all)

DOIs:

10.13052/jge1904-4720.5348

URLs:

<http://www.scopus.com/inward/record.url?scp=84983050025&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84983050025

Research output: Contribution to journal > Article > Scientific > peer-review

### High-efficiency yellow VECSEL with 20 W output power

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Kantola, E., Leinonen, T., Ranta, S., Tavast, M., Guina, M.

Publication date: 2013

#### Host publication information

Title of host publication: Optics Days 2013, Helsinki, Finland : Oral presentation in Optics Days 2013, Helsinki, Finland

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Highly-efficient Ho:KY(WO<sub>4</sub>)<sub>2</sub> thin-disk lasers at 2.06 μm

The recent advances in the development of Holmium monoclinic double tungstate thin-disk lasers are reviewed. The thin-disk is based on a 250-μm-thick 3 at. % Ho:KY(WO<sub>4</sub>)<sub>2</sub> active layer grown on a (010)-oriented KY(WO<sub>4</sub>)<sub>2</sub> substrate. When pumped by a Tm-fiber laser at 1960 nm with a single-bounce pump geometry, the continuous-wave Ho:KY(WO<sub>4</sub>)<sub>2</sub> thin-disk laser generates an output power of 1.01 W at 2057 nm corresponding to a slope efficiency η of 60% and a laser threshold of only 0.15 W. The thin-disk laser is passively Q-switched with a GaSb-based quantum-well semiconductor saturable absorber mirror. In this regime, it generates an average output power of 0.551 W at ~2056 nm with η = 44%. The best pulse characteristics are 4.1 μJ/201 ns at a repetition rate of 135 kHz. The laser performance, beam quality and thermo-optic aberrations of such lasers are strongly affected by the Ho<sup>3+</sup> doping concentration. For the 3 at.% Ho<sup>3+</sup>-doped thin-disk, the thermal lens is negative (the sensitivity factors for the two principal meridional planes are -1.7 and -0.6 m<sup>-1</sup>/W) and astigmatic. The Ho:KY(WO<sub>4</sub>)<sub>2</sub> epitaxial structures are promising as active elements in mode-locked thin-disk lasers at ~2060 nm.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: ORC, Max Born Institute, Universitat Rovira i Virgili, LISA Laser Products OHG, ITMO University, Institute of Laser Physics of the Siberian Branch of the RAS

Contributors: Mateos, X., Loiko, P., Lamrini, S., Scholle, K., Fuhrberg, P., Suomalainen, S., Härkönen, A., Guina, M., Vatik, S., Vedin, I., Aguiló, M., Díaz, F., Wang, Y., Griebner, U., Petrov, V.

Publication date: 2018

#### Host publication information

Title of host publication: Pacific-Rim Laser Damage 2018 : Optical Materials for High-Power Lasers

Publisher: SPIE, IEEE  
Article number: 107130J  
ISBN (Electronic): 9781510619920

#### Publication series

Name: Proceedings of SPIE

Volume: 10713

ISSN (Print): 0277-786X

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: 2-micron lasers, Ho-lasers, monoclinic double tungstates, Q-switched lasers, thin-disk lasers

DOIs:

10.1117/12.2316822

#### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85051249536

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High performance GaSb superluminescent diodes for tunable light source at 2 $\mu\text{m}$ and 2.55 $\mu\text{m}$

We report on GaSb-based superluminescent diodes emitting an output power of 70 mW at 2  $\mu\text{m}$  and the first demonstration of 2.55 $\mu\text{m}$  SLD with mW-level output power at room temperature for compact gas sensors.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: ORC

Contributors: Zia, N., Viheriälä, J., Koivusalo, E., Aho, A., Suomalainen, S., Guina, M.

Publication date: 2018

#### Host publication information

Title of host publication: CLEO : Applications and Technology, CLEO\_AT 2018

Publisher: OSA - The Optical Society

ISBN (Electronic): 9781557528209

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Mechanics of Materials

DOIs:

10.1364/CLEO\_AT.2018.JTu2A.28

Source: Scopus

Source ID: 85049139256

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High-power 1550 nm tapered DBR lasers fabricated using soft UV-nanoimprint lithography

Paper reports the DBR-RWG surface grating design, the fabrication process, and the output characteristics of tapered DBR laser diodes for the applications, like for example LIDAR and range finding, that require eye-safe high-power single-mode coherent light sources. The fabricated regrowth-free DBR AlGaInAs/InP lasers exhibited a CW output power as high as 560 mW in single-mode operation at room temperature. At maximum output power the SMSR was 38 dB, proving the excellent behavior of the surface gratings. The tapered section enabled scaling the maximum CW power at room temperature from 125 mW to 560 mW, by increasing its length from 0.5 mm to 4.0 mm. The paper discusses the limitations and performance variation associated to the power scaling by using the tapered section length as a scaling parameter.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Nanophotonics, Research group: Semiconductor Technology and Applications, Materials Research Laboratory, Turun Yliopisto/Turun Biomateriaalikeskus

Contributors: Viheriälä, J., Aho, A. T., Mäkelä, J., Salmi, J., Virtanen, H., Leinonen, T., Dumitrescu, M., Guina, M.

Number of pages: 7

Publication date: 2016

#### Host publication information

Title of host publication: High-Power Diode Laser Technology and Applications XIV

Publisher: SPIE

Article number: 97330Q

ISBN (Electronic): 9781628419689

#### Publication series

Name: SPIE Conference Proceedings

Publisher: SPIE

Volume: 9733

ISSN (Print): 0277-786X

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: 1550 nm laser diode, DBR, Power scaling, Tapered laser diode

DOIs:

10.1117/12.2207423

#### Bibliographical note

INT=orc,"Aho, Antti T."

JUFOID=71479

Source: Scopus

Source ID: 84978785955

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High power GaInNAs VECSEL emitting at 1230/615 nm

We report a frequency-doubled VECSEL operating at 1230/615 nm. The gain chip was grown by plasma-assisted MBE and comprised 10 GaInNAs quantum wells. Preliminary experiments show an output power of >8 W at 615 nm.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Penttinen, J., Leinonen, T., Korpijärvi, V., Kantola, E., Guina, M.

Publication date: 22 Jun 2015

#### Host publication information

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: OSA

ISBN (Print): 978-1-4673-7475-0

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=cleo\\_europe-2015-CB\\_P\\_1&origin=search](https://www.osapublishing.org/abstract.cfm?uri=cleo_europe-2015-CB_P_1&origin=search)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### High power picosecond MOPA with anisotropic ytterbium-doped tapered double-clad fiber

Generation of ultrashort pulses with high average power and moderately high pulse energy generally requires a mode-locked laser followed by several fiber amplifiers in a master-oscillator power-amplifier configuration. Recently, gain-switched diode lasers have emerged as a viable replacement to mode-locked oscillators as sources of sub-100 ps pulses in these systems, but the low output power available from the diodes necessitates the use of multiple costly amplifier stages. Here, we demonstrate the generation of 1.7  $\mu$ J pulses at 1030 nm, and 11.7  $\mu$ J pulses at 1064 nm from a gain-switched diode seeded compact MOPA with only two amplification stages. The final stage is a tapered fiber amplifier, whose geometry efficiently suppresses amplified spontaneous emission and allows reaching a gain of similar to 40 dB. This research work is still in progress, and further increase in pulse energy should be possible by optimizing the setup.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: Nanophotonics, Ampliconix Ltd, ITMO Univ, ITMO University, Dept Photon & Opt Informat Technol, Kotelnikov Inst Radio Engn & Elect, Kotelnikov Institute of Radioengineering & Electronics, Tampere Univ Technol, Tampere University of Technology, Peter Great St Petersburg State Polytech Univ, Peter the Great St.Petersburg Polytechnic University

Contributors: Fedotov, A., Noronen, T., Rissanen, J., Gumenyuk, R., Petrov, A., Chamorovskii, Y., Golant, K., Odnoblyudov, M., Filippov, V.

Number of pages: 7

Publication date: 2018

#### Host publication information

Title of host publication: Proceedings of SPIE : Fiber Lasers and Glass Photonics: Materials through Applications

Volume: 10683

Publisher: SPIE-INT SOC OPTICAL ENGINEERING

Editors: Taccheo, S., Mackenzie, J., Ferrari, M.  
ISBN (Print): 9781510618923  
ISBN (Electronic): 9781510618930

#### Publication series

Name: Proceedings of SPIE  
Publisher: SPIE-INT SOC OPTICAL ENGINEERING  
Volume: 10683  
ISSN (Print): 0277-786X  
Keywords: Fiber laser, active fiber, fiber amplifier, COMPACT  
Electronic versions:

Fedotov A. High power picosecond MOPA with anisotropic ytterbium-doped tapered double clad fiber  
DOIs:

10.1117/12.2307693

URLs:

<http://urn.fi/URN:NBN:fi:tty-201908211997>

#### Bibliographical note

EXT="Noronen, Teppo"

EXT="Filippov, Valery"

Source: WOS

Source ID: 000450857500033

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### High-Q resonance train in a plasmonic metasurface

We experimentally demonstrate a plasmonic surface that supports a series of high-quality-factor ( $Q \approx 100$ ) surface lattice resonances. These resonances are enabled by tuning the thickness of the top-cladding layer to confine higher order diffraction-orders.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics, University of Ottawa, Canada, Iridian Spectral Technologies, University of Rochester Institute of Optics

Contributors: Saad-Bin-Alam, M., Reshef, O., Huttunen, M. J., Carlow, G., Sullivan, B., Menard, J. M., Dolgaleva, K., Boyd, R. W.

Publication date: 1 May 2019

#### Host publication information

Title of host publication: 2019 Conference on Lasers and Electro-Optics, CLEO 2019 - Proceedings

Publisher: IEEE

ISBN (Electronic): 9781943580576

ASJC Scopus subject areas: Spectroscopy, Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality, Management, Monitoring, Policy and Law, Electronic, Optical and Magnetic Materials, Radiology Nuclear Medicine and imaging, Instrumentation, Atomic and Molecular Physics, and Optics

DOIs:

10.23919/CLEO.2019.8750206

Source: Scopus

Source ID: 85069156893

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### High repetition rate 1.34 $\mu\text{m}$ Nd:YVO<sub>4</sub> microchip laser Q-switched with GaInNAs SESAM

We demonstrate 1.34- $\mu\text{m}$  Nd:YVO<sub>4</sub> microchip laser Q-switched with a GaInNAs/GaAs-based SESAM. The laser produced 204 ps long pulses with 24 mW average power and 2.3-MHz repetition rate.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Nikkinen, J., Korpijärvi, V., Leino, I., Härkönen, A., Guina, M.

Publication date: 22 Jun 2015

#### Host publication information

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: OSA  
Article number: CA\_5b\_1  
ISBN (Electronic): 978-1-4673-7475-0  
URLs:

[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CA\\_5b\\_1](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CA_5b_1)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## High-speed manufacturing of antimicrobial paper

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Physics, Abo Akademi University, University of Turku, Center for Functional Materials at Biological Interfaces (FUNMAT)  
Contributors: Brobbey, K. J., Haapanen, J., Gunell, M., Mäkelä, J. M., Eerola, E., Saarinen, J. J., Toivakka, M.  
Number of pages: 3  
Pages: 564-566  
Publication date: 2018

### Host publication information

Title of host publication: Paper Conference and Trade Show, PaperCon 2018  
Publisher: TAPPI Press  
ISBN (Electronic): 9781510871892  
ASJC Scopus subject areas: Forestry, Plant Science, Industrial and Manufacturing Engineering  
Source: Scopus  
Source ID: 85060366453  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## High-temperature sliding wear behaviour of thermally sprayed Cr<sub>3</sub>C<sub>2</sub>-based coatings

### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Materials Science, Research group: Surface Engineering, Univ Modena & Reggio Emilia, Università di Modena e Reggio Emilia, Dept Engn Enzo Ferrari, University of Modena and Reggio Emilia, Dipartimento di Ingegneria Enzo Ferrari  
Contributors: Matikainen, V., Bolelli, G., Koivuluoto, H., Sassatelli, P., Lusvarghi, L., Vuoristo, P.  
Number of pages: 10  
Publication date: 2016

### Host publication information

Title of host publication: Proceedings of The 17th Nordic Symposium on Tribology - NORDTRIB 2016  
Keywords: Thermal spraying, sliding wear, Cr<sub>3</sub>C<sub>2</sub>, HVOF, HVOF  
Electronic versions:  
Matikainen et al\_Nordtrib2016  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201712082313>  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

## High Temperature Tension HSB Device Based on Direct Electrical Heating

The effects of strain rate and temperature on the mechanical properties of various engineering materials have been extensively studied within the past few decades. However, the high temperature high strain rate tension Hopkinson Split Bar (HSB) testing is still quite challenging to perform due to the need to fix the sample to the stress bars. Mechanical fixing of a sheet material sample is not very convenient and can produce low quality results. Therefore, the sheet samples are typically glued directly to the stress bars. This glue joint, however, loses strength rapidly if the temperature of the glue joint increases above room temperature, which makes the high temperature testing more difficult. In this paper, we present a tension Hopkinson Split Bar device with a high temperature system that allows the sample to be heated while keeping the glue joint at or close to room temperature. The sample is rapidly heated by a powerful low voltage high amperage DC pulse. When testing stainless steels, test temperatures between 400 and 800 °C are reached in less than one second, and even the melting temperature of the material is reached in less than 2 s. The system is fully computer controlled allowing accurate timing and control of the different actions during the test including heating of the sample, pneumatic manipulation of the heating electrodes, releasing of the striker bar, and recording of the test results. The results obtained with the current high temperature system are high quality and the obtained high temperature stress strain curves are essentially oscillation free. © The Society for Experimental Mechanics, Inc. 2015.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Materials Science, Research group: Materials Characterization, Engineering materials science and solutions (EMASS)

Contributors: Hokka, M., Östman, K., Rämö, J., Kuokkala, V. T.

Number of pages: 7

Pages: 227-233

Publication date: 2015

### Host publication information

Title of host publication: Dynamic Behavior of Materials, Volume 1 : Proceedings of the 2014 Annual Conference on Experimental and Applied Mechanics

Volume: 65

Publisher: Springer

Editors: Song, B., Casem, D., Kimberley, J.

ISBN (Print): 978-3-319-06994-4

ISBN (Electronic): 978-3-319-06995-1

### Publication series

Name: Conference Proceedings of the Society for Experimental Mechanics Series

Publisher: Springer

ISSN (Print): 2191-5644

ASJC Scopus subject areas: Engineering(all), Computational Mechanics, Mechanical Engineering

Keywords: High strain rate, High temperature, Hopkinson split bar, Stainless steels, Tension testing

DOIs:

10.1007/978-3-319-06995-1\_34

URLs:

<http://www.scopus.com/inward/record.url?scp=84906319239&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

siirretään 2015<br/>Contribution: organisation=mol,FACT1=1<br/>Portfolio EDEND: 2015-01-13<br/>publication\_forum:72540

Source: researchoutputwizard

Source ID: 8

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

## HKPro3 - Valtion tukemien homekorjaushankkeiden arviointi: Jatkotutkimus

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures

Contributors: Marttila, T., Annala, P., Kero, P., Suonketo, J., Heino, S., Pentti, M.

Number of pages: 68

Publication date: 2015

### Publication information

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennustekniikka

ISBN (Electronic): 978-952-15-3659-5

Original language: Finnish

### Publication series

Name: Tampereen teknillinen yliopisto. Rakennustekniikan laitos. Rakennetekniikka; Tutkimusraportti

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennustekniikka

Volume: 163

ISSN (Print): 1797-9161

Electronic versions:

hkpro3\_loppuraportti

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3659-5>

### Bibliographical note

pdf ok 11.1.2016 KK

Research output: Book/Report > Commissioned report > Professional



### **Home Network Security: Modelling Power Consumption to Detect and Prevent Attacks on Homenet Routers**

Future home networks are expected to become extremely sophisticated, yet only the most technically adept persons are equipped with skills to secure them. In this paper, we provide a novel solution to detect and prevent attacks on home routers based on anomalous power consumption. We developed a means of measuring power consumption that could be used in a wide variety of home networks, although our primary focus is on profiling Homenet-based residential routers, specifically to detect attacks against homenet routing infrastructure. Several experimental results are presented when the infrastructure is exposed to various types of attacks, which show strong evidence of the feasibility of our approach.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Information security

Contributors: Silverajan, B., Vajaranta, M., Kolehmainen, A.

Pages: 9-16

Publication date: 4 Aug 2016

#### **Host publication information**

Title of host publication: Proceedings of the 11th Asia Joint Conference on Information Security (AsiaJCIS 2016), Fukuoka, Japan, August 4-5, 2016

Publisher: IEEE

ISBN (Electronic): 978-1-5090-2285-4

DOIs:

10.1109/AsiaJCIS.2016.10

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Hometalolle suoritettavat toimenpiteet ja niiden valinta - case-esimerkki**

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures, Tampere University of Technology

Contributors: Kankkunen, T., Kero, P.

Number of pages: 6

Pages: 265-270

Publication date: 20 Oct 2015

#### **Host publication information**

Title of host publication: Rakennusfysiikka 2015. Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut. 20.-22.10.2015, Tampere

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

Editors: Vinha, J., Ruuska, T.

ISBN (Print): 978-952-15-3580-2

Keywords: Double skin facade, Energy efficiency, New renovation concepts, Innovative HVAC, Earth to air heat exchanger

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### **How is it sustainable? Identifying key indicators for sustainable educational design**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Sandström, N., Hytti, V., Nenonen, S., Lonka, K.

Number of pages: 3

Pages: 4217-4219

Publication date: 2016

#### **Host publication information**

Title of host publication: 10th INTED 2016 Conference Proceedings : 7-9 March, 2016, Valencia, Spain

Editors: Gómes Chova, L., López Martínez, A., Candel Torres, I.

ISBN (Electronic): 978-84-608-5617-7

### Publication series

Name: INTED proceedings

ISSN (Electronic): 2340-1079

Keywords: 516 Educational sciences

DOIs:

10.21125/inted.2016.2037

Source: Bibtex

Source ID: urn:6581b3d417d27c5477c844ae889e72da

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### How mono-valent cations bend peptide turns and a first-principles database of amino acids and dipeptides

In this contribution we detail our efforts to investigate the structural effects of cations binding to peptides and amino acids. We perform first-principles studies employing long-range dispersion-corrected approximate density-functional theory and compare to gas-phase experiments.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research area: Computational Physics, Computational Science X (CompX), Fritz Haber Institute of the Max Planck Society, COMP Centre of Excellence, Department of Applied Physics, Aalto University, Duke University

Contributors: Baldauf, C., Ropo, M., Blum, V., Scheffler, M.

Number of pages: 2

Pages: 119-120

Publication date: 6 Oct 2014

### Host publication information

Title of host publication: International Conference of Computational Methods in Sciences and Engineering 2014 (ICCMSE 2014)

Volume: 1618

Publisher: American Institute of Physics Inc.

Editors: Simos, T. E., Kalogiratou, Z., Monovasilis, T.

ISBN (Print): 9780735412552

### Publication series

Name: AIP Conference Proceedings

Volume: 1618

ISSN (Print): 0094-243X

ASJC Scopus subject areas: Physics and Astronomy(all)

Keywords: benchmarks, conformation database, density-functional theory, Peptide conformation, theoretical vibrational spectroscopy

DOIs:

10.1063/1.4897692

Source: Scopus

Source ID: 84947544071

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### How to benefit from learning logs in engineering education?

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Mechanical Engineering and Industrial Systems, Research area: Design, Development and LCM, MEI Laboratory, Ita-Suomen yliopisto

Contributors: Juuti, T., Kopra, M. J., Rättyä, K., Lehtonen, T.

Publication date: 2016

### Host publication information

Title of host publication: 44th Annual Conference of the European Society for Engineering Education - Engineering Education on Top of the World: Industry-University Cooperation, SEFI 2016

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 9782873520144

ASJC Scopus subject areas: Engineering(all), Education

URLs:

[http://www.sefi.be/conference-2016/papers/Engineering\\_Education\\_Research\\_\\_Engineering\\_Skills/juuti-learning-logs-and-reflecting-in-engineering-education-39\\_a.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Education_Research__Engineering_Skills/juuti-learning-logs-and-reflecting-in-engineering-education-39_a.pdf)

URLs:

<http://www.scopus.com/inward/record.url?scp=85014063424&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85014063424

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **How to co-learn in campus.**

### **General information**

Publication status: Published

MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material

Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector

Contributors: Salmisto, A.

Number of pages: 18

Pages: 320-337

Publication date: 2015

### **Host publication information**

Title of host publication: Oppiva kampus - How to co-create campus?

Place of publication: Tampere

Publisher: Suomen Yliopistokiinteistöt Oy

Editors: Nenonen, S., Kärnä, S., Junnonen, J., Tähtinen, S., Sandström, N.

ISBN (Print): 978-952-15-3478-2

ISBN (Electronic): 978-952-15-3479-9

URLs:

[http://www.sykoy.fi/wp-content/uploads/oppiva-kampus\\_valmis\\_pieni.pdf](http://www.sykoy.fi/wp-content/uploads/oppiva-kampus_valmis_pieni.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Professional

## **How to develop a new innovation education tool: case of impact canvas**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Innovation Services, Research Services, University of Tampere

Contributors: Aarikka-Stenroos, L., Boedeker, S., Köppä, L., Langwaldt, J.

Publication date: Dec 2016

### **Host publication information**

Title of host publication: In the Proceedings of ISPIM Innovation Summit. The International Society for Professional Innovation Management (ISPIM). : 4-7 December 2016, Kuala Lumpur, Malaysia.

ISBN (Electronic): 978-952-265-931-6

URLs:

<http://summit.ispim.org/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## **How to support managers' commitment to safety management and leadership in organizations: good practices from the managers' viewpoint**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Safety Management and Engineering

Contributors: Tappura, S., Nenonen, N., Kivistö-Rahnasto, J.

Publication date: Sep 2015

### **Host publication information**

Title of host publication: WOS 8th international conference - Book of Abstracts

ISBN (Print): 978-989-98203-5-7

URLs:

### **Human Factor in Time Management**

Abstract Time is the most important resource for leaders. Resources such as personnel, capital or facilities are crucial for leaders, but time is imperative. People's productivity, and hence organizations performance are heavily related to their time usage. Therefore, especially leaders should have conscious awareness towards their time personality. Time, however, is not an easy concept to handle for leader or even understand it. It has many different faces towards people. The challenge is that chronological time, where the business and management are done, is not nearly suitable when human relations and leadership are handled. Individuals experiences towards time differentiates to one another and different situations are constantly changing the experience of individual. Therefore, quite often, leaders recognize that it is hard to have schedules to match or plans to actualize within an agreed time. Some people fit more easily to same time reality with leader than others. Consequently, it is crucial for leaders also to understand how organization's members experience their time and how conscious their awareness is. Before it is possible to manage one's own time usage, personal time orientation, biases towards time, situation has to be understood consciously. This article handles research regarding time ontology in leadership and management environment and regarding peoples conscious awareness towards time and differences in their time reality. Research is done by developing and utilizing application called Chronos & Kairos which main purpose is to give possibility for thorough research for peoples' differences when experiencing time. Time ontology for leadership and management environment is presented as well as research and results of differences of people's time reality. Article argues that people's conscious awareness towards time differentiates and this issues should be recognized especially in leadership positions. Future research aspects and recommendations are also issued in this paper.

#### **General information**

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Pori Department  
Contributors: Reunanen, T.  
Number of pages: 8  
Pages: 709-716  
Publication date: 2015  
Peer-reviewed: Yes

#### **Publication information**

Journal: Procedia Manufacturing  
Volume: 3  
ISSN (Print): 2351-9789  
Original language: English  
Keywords: Time, Management, Human factor, Leadership, Situationality  
DOIs:  
10.1016/j.promfg.2015.07.311  
URLs:  
<http://www.sciencedirect.com/science/article/pii/S2351978915003121>

#### **Bibliographical note**

INT=pla,"Reunanen, Tero"  
Source: RIS  
Source ID: urn:6D4C24C5CCDB54B2E73B8973CD08FBFE  
Research output: Contribution to journal › Article › Scientific › peer-review

### **HVS-based local analysis of denoising efficiency for DCT-based filters**

Images acquired and processed in communication and multimedia systems are often noisy. Thus, pre-filtering is a typical stage to remove noise. At this stage, a special attention has to be paid to image visual quality. This paper analyzes denoising efficiency from the viewpoint of visual quality improvement using metrics that take into account human vision system (HVS). Specific features of the paper consist in, first, considering filters based on discrete cosine transform (DCT) and, second, analyzing the filter performance locally. Such an analysis is possible due to the structure and peculiarities of the metric PSNR-HVS-M. It is shown that a more advanced DCT-based filter BM3D outperforms a simpler (and faster) conventional DCT-based filter in locally active regions, i.e., neighborhoods of edges and small-sized objects. This conclusions allows accelerating BM3D filter and can be used in further improvement of the analyzed denoising techniques.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Signal Processing, Research group: Algebraic and Algorithmic Methods in Signal Processing AAMSP, Research group: Computational Imaging-CI, Signal Processing Research Community (SPRC)

Contributors: Rubel, O., Ponomarenko, N., Lukin, V., Astola, J., Egiazarian, K.  
Number of pages: 4  
Pages: 189-192  
Publication date: 14 Dec 2015

#### Host publication information

Title of host publication: 2015 2nd International Scientific-Practical Conference Problems of Infocommunications Science and Technology, PIC S and T 2015 - Conference Proceedings  
Publisher: IEEE  
ISBN (Print): 9789669751928  
ASJC Scopus subject areas: Computer Science (miscellaneous), Computer Science Applications  
Keywords: DCT-based filters, HVS-metrics, image denoising, local analysis  
DOIs:  
10.1109/INFOCOMMST.2015.7357309  
Source: Scopus  
Source ID: 84962840358  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Hydraulic Hybrid Actuator: Theoretical Aspects and Solution Alternatives

This paper presents and analyzes a hybrid solution, in which the hydraulic energy storage element is integrated to the hydraulic actuator. The approach results in a new system layout—a distributed hybrid system—in which only mean power is transmitted between the actuators and the high power peaks are handled locally. Three different implementations are discussed. A multi-actuator excavator load cycle is analyzed and dimensioning of the components is discussed. Limitations of the approach are also discussed.

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Intelligent Hydraulics and Automation, Research group: Digital hydraulics, Research group: Fluid power automation in mobile machines, Aalto University  
Contributors: Linjama, M., Huova, M., Pietola, M., Juhala, J., Huhtala, K.  
Number of pages: 11  
Publication date: May 2015

#### Host publication information

Title of host publication: Proceedings of the Fourteenth Scandinavian International Conference on Fluid Power  
Place of publication: Tampere  
Publisher: Tampere University of Technology  
Editors: Laamanen, A., Huhtala, K., Uusi-Heikkilä, J.  
ISBN (Electronic): 978-952-15-3658-8  
Keywords: Hydraulic Hybrids, Hybrid actuator  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3530-7>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Hydrodynamic Classification of Natural Flows Using an Artificial Lateral Line and Frequency Domain Features

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Signal Processing, Research group: Vision, Tallinn University of Technology, Tallinn, Estonia  
Contributors: Tuhtan, J., Strokina, N., Toming, G., Muhammad, N., Kruusmaa, M., Kämäräinen, J.  
Publication date: 2015

#### Host publication information

Title of host publication: 36th IAHR World Congress  
ISBN (Electronic): 978-90-824846-0-1  
URLs:  
[http://app.iahr2015.info/programma\\_details/2833](http://app.iahr2015.info/programma_details/2833)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **icellfusion: Tool for fusion and analysis of live-cell images from time-lapse multimodal microscopy**

Temporal, multimodal microscopy imaging of live cells is becoming widely used in studies of cellular processes. In general, temporal sequences of images with functional and morphological data from live cells are acquired using multiple image sensors. The images from the different sources usually differ in resolution and have non-coincident fields of view, making the merging process complex. We present a new tool - iCellFusion - that performs data fusion of images from Phase-Contrast Microscopy and Fluorescence Microscopy in order to correlate the information on cell morphology, lineage and functionality. Prior to image fusion, iCellFusion performs automatic or computer-aided cell segmentation and establishes cell lineages. We exemplify its usage on time-lapse, multimodal microscopy images of bacteria producing fluorescent spots. We expect iCellFusion to assist research in Cell and Molecular Biology and the healthcare sector, where live-cell imaging is an increasingly important technique to detect and study diseases at the cellular level.

#### **General information**

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Signal Processing, Research group: Laboratory of Biosystem Dynamics-LBD, Instituto de Desenvolvimento de Novas Tecnologias

Contributors: Santinha, J., Gupta, A., Martins, L., Annala, T., Häkkinen, A., Mora, A., Lloyd-Price, J., Ribeiro, A., Oliveira, S. M. D., Fonseca, J. R.

Number of pages: 29

Pages: 806-834

Publication date: 30 Aug 2016

#### **Host publication information**

Title of host publication: Biometrics: Concepts, Methodologies, Tools, and Applications

Publisher: IGI Global

ISBN (Print): 9781522509837

ISBN (Electronic): 9781522509844

ASJC Scopus subject areas: Computer Science(all)

DOIs:

10.4018/978-1-5225-0983-7.ch033

Source: Scopus

Source ID: 85015879219

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### **Identification of fundamental requirements for ideal metamodeling framework in additive manufacturing**

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation

Contributors: Mokhtarian, H., Coatanea, E., Paris, H., Vihinen, J.

Number of pages: 3

Pages: 29-31

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 2nd Annual SMACC Research Seminar 2017

Editors: Aaltonen, J., Virkkunen, R., Koskinen, K. T., Kuivanen, R.

ISBN (Print): 978-952-15-4040-0

Electronic versions:

Identification of fundamental requirement for ideal metamodeling framework in additive manufacturing\_abstract

URLs:

<http://urn.fi/URN:NBN:fi:tty-201712222491>

<http://urn.fi/URN:NBN:fi:tty-201902051217>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

### **Identifying and measuring customer value - case multi-locational worker**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Information Management and Logistics, Research group: Novi, Department of Civil Engineering

Contributors: Vasell, T., Vuolle, M., Petrulaitiene, V., Nenonen, S., Jylhä, T.

Number of pages: 9  
Pages: 143-151  
Publication date: 2016

#### **Host publication information**

Title of host publication: Research papers for EuroFM's 15th research symposium at EFMC2016 : 8-9 June 2016 in Milan, Italy

Publisher: EuroFM

Editors: Nielsen, S., Jensen, P. A.

ISBN (Electronic): 9788750211020

Keywords: facility management, Value co-creation, Customer experience, customer value measuring

URLs:

[http://orbit.dtu.dk/files/124939454/EFMC2016\\_proceeding.pdf](http://orbit.dtu.dk/files/124939454/EFMC2016_proceeding.pdf)

Source: Bibtex

Source ID: urn:3e8ad9e3f5cee371d9024be9db9d287f

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Identifying critical technology actors in waste flow management**

Waste flow business ecosystems include numerous actors ranging from regulatory bodies actively involved in numerous business and non-governmental actors. High amount of actors can be considered as an entry barrier for new technological actors. Yet, business potential that relates on waste flow management is enormous globally but without conceptualizing the ecosystem in detail level, the business potential might not be fully discovered. In the present study we followed existent insights in literature and applied business ecosystem theories into Brazilian waste flow business. Based on our framework, critical technology actors can be identified in the waste flow management and possibilities they enable may be revealed. We also discuss fruitful avenues to continue the research further.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Managing digital industrial transformation (mDIT)

Contributors: Peltola, T., Mäkinen, S.

Number of pages: 5

Pages: 2027-2031

Publication date: 1 Aug 2015

#### **Host publication information**

Title of host publication: PICMET'15 Conference, Management of the Technology Age : August 2-6, 2015, Hilton Portland and Executive Tower, Portland, Oregon, USA

Place of publication: United States

Publisher: Portland International Center for Management of Engineering and Technology

ISBN (Electronic): 978-1-890843-32-8

Keywords: waste management, Brazilian waste flow business ecosystem, critical technology actor identification, regulatory bodies, technological actors, waste flow management, Biological system modeling, Business, Ecosystems, Recycling, Sorting, Technological innovation, Waste management

DOIs:

10.1109/PICMET.2015.7273123

URLs:

<http://www.picmet.org/new/conferences/2015/>

Source: Bibtex

Source ID: urn:b11223303bbc0bbd3eb69fadff81ef94

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Identifying the potential of performance measurement in supporting strategic purchasing and supply chain management**

Purchasing and supply management (PSM) is increasingly important part of the success of companies. Many potential benefits have been identified for PSM performance measurement. However, it appears that the potential is not always realized and that the research around the topic is limited and dated. PSM takes increasingly strategic role in companies as an addition to the earlier transaction-oriented role. This study takes a strategic approach to purchasing highlighting long-term value-creation between purchaser and provider network. It aims at identifying the topical challenges and potential solutions regarding performance measurement with the chosen focus and context. The paper is based on a literature review and analysis, augmented by a survey study in four large Finnish industrial companies (2 service and 2 manufacturing companies). It appears that valuable basic research has been carried out in several relevant areas of this study. However, empirical studies testing and further elaborating the presented frameworks and conceptual ideas are hard to find. There also seems to be a certain level of mismatch between the

academic ideal and the prevailing situation and challenges in practice.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Jääskeläinen, A., Heikkilä, J., Thitz, O.

Number of pages: 21

Pages: 1-21

Publication date: 2015

#### Host publication information

Title of host publication: 8th conference on performance measurement and management control

Place of publication: Nice, France

Publisher: The European Institute for Advanced Studies in Management, EIASM

#### Publication series

Name: Conference on Performance Measurement and Management Control

ISSN (Electronic): 2295-1660

URLs:

[http://www.eiasm.org/frontoffice/event\\_announcement.asp?event\\_id=1035#4212](http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=1035#4212)

#### Bibliographical note

Artikkeli julkaistu verkossa, tarvitaan käyttäjätunnus ja salasana.

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Ideoita kaavoituksen sisällön uudistamiseen: Kaavojen merkintöjen ja määräysten kehittäminen (KAMMI-hanke)

The project concerning the designations used in the plans and regulations on the plans (KAMMI) was based on the need to develop the content of the plans at different levels to take the changes in the environment and future needs better into account. As an outcome recommendations are given to develop the spatial planning system in relation to the key steering needs that were identified and the European objectives relating to the harmonisation of the management of planning data (INSPIRE Directive).

The various subsections of the report provide the reasoning for the conclusions at the end. The report starts with a description of the history and current situation of the Finnish spatial planning system. A key part of the project were the so-called stimulus themes through which the main needs for change were to be identified and the core future tasks of spatial planning were to be specified. The reflections on the stimulus themes were mirrored against the development of the spatial planning system as a whole and its contents. In the project it was also considered necessary to construct a view and ideas to renew spatial planning from the perspective of designations and regulations. At the end, various types of designations were developed for the steering of land use by municipalities both on the more general and on quite detailed level.

The work is closely linked to the process of amending the Land Use and Building Act that has been started. It provides a particular perspective to the discussion on the reform of the regional and land use planning system.

#### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Architecture

Contributors: Jama, T., Lehtovuori, P., Rajaniemi, J., Siikonen, M., Mäntynen, J., Rantanen, A., Joutsiniemi, A., Koskela, K., Kärkinen, T., Saarikoski, P., Saarniaho, K.

Number of pages: 74

Publication date: 26 Jan 2018

#### Publication information

Place of publication: Helsinki

Publisher: Ympäristöministeriö

Volume: 4/2018

ISBN (Print): 978-952-11-4779-1

ISBN (Electronic): 978-952-11-4780-7

Original language: Finnish

Keywords: kaavoitus, alueidenkäyttö, alueidenkäytön suunnittelu, kaavamerkinnot, kaavamääräykset

URLs:

<http://urn.fi/URN:ISBN:978-952-11-4780-7>

Research output: Book/Report › Commissioned report › Professional



If you know social media, you see opportunities...

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Business Ecosystems, Networks and Innovations, Industrial and Information Management , Research group: Business Data Research Group

Contributors: Aramo-Immonen, H., Vartio, M., Jussila, J.

Pages: 575-584

Publication date: 7 Jun 2017

#### Host publication information

Title of host publication: 12th International Forum on Knowledge Asset Dynamics : Knowledge Management in the 21th Century: Resilience, Creativity and Co-creation

Volume: 12

ISBN (Electronic): 978-88-96687-10-9

Keywords: social media

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Ilmaääneneristysluku sekä standardisoitu ja normalisoitu äänitasoeroluku huoneistojen välisen ilmaääneneristävyyden kuvaajina

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Building Acoustics, Finnish Institute of Occupational Health

Contributors: Kylliäinen, M., Takala, J., Hongisto, V.

Number of pages: 4

Pages: 158-161

Publication date: 1 Sep 2015

#### Host publication information

Title of host publication: Akustiikkapäivät 2015

Place of publication: Kuopio

Publisher: Akustinen seura

#### Publication series

Name: Akustiikkapäivät

ISSN (Print): 1236-8202

ASJC Scopus subject areas: Acoustics and Ultrasonics

URLs:

[http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015\\_Paperin\\_palautus\\_10.pdf](http://www.akustinenseura.fi/wp-content/uploads/2015/09/AP2015_Paperin_palautus_10.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Ilmastonmuutoksen vaikutus betonijulkisivujen vaurioitumisen etenemiseen

#### General information

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures, Tampere University of Technology

Contributors: Pakkala, T., Lemberg, A., Köliö, A., Lahdensivu, J.

Number of pages: 8

Pages: 203-210

Publication date: Oct 2015

#### Host publication information

Title of host publication: Rakennusfysiikka 2015 : Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut, 20.-22.10.2015, Tampere

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

Editors: Vinha, J., Ruuska, T.

ISBN (Print): 978-952-15-3580-2

URLs:

<http://www.tut.fi/cs/groups/public/@I912/@web/@p/documents/liit/x124266.pdf>

### **Bibliographical note**

AUX=rak,"Lemberg, Antti-Matti"

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### **Image-based characterization of the pulp flows**

Material flow characterization is important in the process industries and its further automation. In this study, close-to-laminar pulp suspension flows are analyzed based on double-exposure images captured in laboratory conditions. The correlation-based methods including autocorrelation and the particle image pattern technique were studied. During the experiments, synthetic and real test data with manual ground truth were used. The particle image pattern matching method showed better performance achieving the accuracy of 90.0% for the real data set with linear motion of the suspension and 79.2% for the data set with flow distortions.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Signal Processing, Lappeenranta University of Technology, Machine Vision and Pattern Recognition Laboratory, Laboratory of Biosystem Dynamics, Univ of Oulu, Monash University Malaysia

Contributors: Sorokin, M., Strokina, N., Eerola, T., Lensu, L., Karttunen, K., Kalviainen, H.

Number of pages: 8

Pages: 630-637

Publication date: 1 Jul 2016

Peer-reviewed: Yes

### **Publication information**

Journal: Pattern Recognition and Image Analysis

Volume: 26

Issue number: 3

ISSN (Print): 1054-6618

Ratings:

Scopus rating (2016): CiteScore 0.7 SJR 0.255 SNIP 0.872

Original language: English

ASJC Scopus subject areas: Computer Graphics and Computer-Aided Design, Computer Vision and Pattern Recognition

Keywords: double-exposure, particle image velocimetry, pulp flow estimation

DOIs:

10.1134/S1054661816030196

Source: Scopus

Source ID: 84984924424

Research output: Contribution to journal > Article > Scientific > peer-review

### **Impact analysis of graph-based requirements models using PageRank algorithm**

Managing requirements changes of complex systems and the potential impact of such changes represents a big issue for companies. Currently, commercial modelers propose tools for analyzing the direct impact of requirements changes on system design or code but the analysis of requirement change on other requirements remains seldom studied. This paper proposes an approach for the impact analysis of changes in requirements combined with a ranking of importance of requirements in graph based requirements network. Warshall algorithm is used in this paper for performing the impact analysis. Along with this approach, PageRank algorithm is used for ranking requirements according to their importance. Requirements hierarchy and their textual description of importance are considered as input for calculating their impact as well as their importance within the network of requirements. This combination of Warshall and PageRank algorithms provide significant results for helping designers in decision-making process of modifying requirements for future design versions.

### **General information**

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engn Design & Prod, Sch Engn

Contributors: Mokammel, F., Coatanea, E., Bakhouya, M., Christophe, F., Nonsiri, S.

Number of pages: 6

Pages: 731-736

Publication date: Apr 2013

### Host publication information

Title of host publication: 2013 IEEE International Systems Conference (SysCon)

Publisher: IEEE

ISBN (Print): 978-1-4673-3108-1

### Publication series

Name: 2013 IEEE International Systems Conference (SysCon)

Keywords: Complex system, Graph theory PageRank algorithm, Impact changes analysis, PageRank algorithm, Requirements management, Warshall algorithm, complex systems, decision making, decision-making process, design engineering, formal specification, graph based requirements network, graph theory, graph-based requirements models, impact analysis, importance textual description, large-scale systems, requirement change management, requirements hierarchy, system design

DOIs:

10.1109/SysCon.2013.6549964

URLs:

<http://ieeexplore.ieee.org/lpdocs/epic03/wrapper.htm?arnumber=6549964>

<http://www.mendeley.com/research/impact-analysis-graphbased-requirements-models-using-pagerank-algorithm>

Source: Mendeley

Source ID: bd838215-a552-3824-ba9b-f763eec0af4f

Research output: Chapter in Book/Report/Conference proceeding > Chapter > Scientific > peer-review

### Impact of anatomical variability on the wireless power transfer to intra-abdominal implants

We study the impact of the anatomical variations of the human body model on the wireless power transfer link for passive intra-abdominal implants. We categorically analyze the power transfer link for four body sizes ranging from 21 to 36 inches of radial dimensions with an implant depth of 48.5 mm to 101 mm with promising received power level corresponding to maximum SAR compliant transmission power fed to an around-the-body transmitting antenna. In this assessment, the transducer power gain of the wireless link varied from -2.65 to -10.84 dB. We also evaluated the robustness of the system subject to  $\pm 20$  percent variation in the relative permittivity and loss tangent and the results show the impact to be only  $\pm 0.26$  dB variation in the transducer gain. Lastly, we analyze the performance of the system under various degrees of angular misalignment between the transmitter-receiver antennas.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: BioMediTech

Contributors: Ahmed, S., Sydänheimo, L., Ukkonen, L., Björninen, T.

Number of pages: 3

Pages: 578-580

Publication date: 10 Dec 2019

### Host publication information

Title of host publication: Proceedings of the 2019 IEEE Asia-Pacific Microwave Conference, APMC 2019

Publisher: IEEE

ISBN (Electronic): 9781728135175

DOIs:

10.1109/APMC46564.2019.9038614

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Impact of Axial Profile of the Gain Medium on the Mode Instability in Lasers: Regular Versus Tapered Fibers

The presented paper describes the new concept for suppression of mode instability in high power fiber lasers and amplifiers based on tapered (i.e. axially non-regular) double-clad few-mode gain architecture.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Ultrafast and intense lasers, Institute of Radio Engineering and Electronics, Russian Academy of Sciences (IRE RAS), Russian Acad Sci, Russian Academy of Sciences, Kotelnikov Inst Radio Engn & Elect

Contributors: Filippov, V., Ustimchik, V., Chamorovskiy, Y., Golant, K., Vorotynskii, A., Okhotnikov, O.

Publication date: 24 Jun 2015

### Host publication information

Title of host publication: The European Conference on Lasers and Electro-Optics 2015

Publisher: OSA

Article number: CJ-10.5

ISBN (Electronic): 978-1-4673-7475-0

Keywords: FIBER LASER

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=CLEO\\_Europe-2015-CJ\\_10\\_5](https://www.osapublishing.org/abstract.cfm?uri=CLEO_Europe-2015-CJ_10_5)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Impedanssipneumografia pienten lasten alahengitytiesoireiden selvittelyssä**

#### **General information**

Publication status: Published

MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material

Organisations: Department of Electronics and Communications Engineering, Research group: Physiological Measurement Systems and Methods Group

Contributors: Seppä, V., Pelkonen, A. S., Kotaniemi-Syrjänen, A., Viik, J., Mäkelä, M. J., Malmberg, P.

Publication date: 2015

#### **Host publication information**

Title of host publication: Allergiatutkimussäätiön vuosikirja 2015

#### **Publication series**

Name: Allergiakoulu

Publisher: Allergiatutkimussäätiö

ISSN (Print): 1457-2508

Research output: Chapter in Book/Report/Conference proceeding > Chapter > Professional

### **Implementation Experiences and Design Challenges for Resilient SDN Based Secure WAN Overlays**

Mobile computing devices, industrial control systems, and service provider clouds often need to be connected to each other over wide area networks. However, reliability, quality of services and confidentiality are challenging in such setups. Moreover, isolated appliances and physical equipment face harsh environment conditions. In this paper we explore designing secure layer 2 overlay networks using Software Defined Networking (SDN), and challenges in implementing them with open source tools.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Information security

Contributors: Vajaranta, M., Kannisto, J., Harju, J.

Number of pages: 7

Pages: 17-23

Publication date: 4 Aug 2016

#### **Host publication information**

Title of host publication: 2016 11th Asia Joint Conference on Information Security (AsiaJCIS)

Publisher: IEEE

ISBN (Electronic): 978-1-5090-2285-4

DOIs:

10.1109/AsiaJCIS.2016.25

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Implementing of Activating Learning Strategy for a Course on Electric Drives**

Effective teaching of electric drives is highly important for the electrical engineers, because almost half of the global produced electrical energy is consumed by electric motor drives. Electric drives are a key technology for reducing energy consumption of industrial processes, for wind power generation and for electric transportation. The pedagogical premise is to improve the educational methods of an Electrical Drives course by activating students to work on their own. The paper describes the educational strategy and course objectives. Student feedback was collected at the end of the course and the results of the evaluation are summarized.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering

Contributors: Rekola, J., Suntio, T.

Number of pages: 8  
Pages: 1-8  
Publication date: 14 Sep 2016

#### Host publication information

Title of host publication: SEFI 2016 Annual Conference Proceedings : Implementing of Activating Learning Strategy for a Course on Electric Drives

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 9782873520144

Keywords: Electrical engineering education , variable speed drives , simulation, laboratory

Electronic versions:

sefi\_final\_paper

URLs:

<http://urn.fi/URN:NBN:fi:tty-201709201900>

<http://sefibenvwh.cluster023.hosting.ovh.net/wp-content/uploads/2017/09/rekola-implementing-of-activating-learning-strategy-for-a-course-28.pdf>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Importance and challenges of sharing experiences among an international and interdisciplinary group of doctoral students

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Chemistry and Bioengineering, Research group: Industrial Bioengineering and Applied Organic Chemistry

Contributors: Kurki, V., Sidaraviciute, R., Sørensen, J., Kibocha, S. N., Retike, I., Ikobe, G., Tichonovas, M., Elijosiute, E., Rajala, R.

Number of pages: 7

Pages: 45-51

Publication date: 2015

Peer-reviewed: Yes

#### Publication information

Journal: Ympäristöhistoria: Finnish Journal of Environmental History

Issue number: 1/2015

ISSN (Print): 1799-6953

Original language: English

URLs:

[http://www.uta.fi/yky/tutkimus/historia/projektit/iehg/Ymparistohistoria/No1\\_2015.html](http://www.uta.fi/yky/tutkimus/historia/projektit/iehg/Ymparistohistoria/No1_2015.html)

#### Bibliographical note

EXT="Kibocha, Samuel Ngari"

EXT="Rajala, Riikka"

Research output: Contribution to journal > Article > Scientific > peer-review

### Improved modelling of electric loads for enabling demand response by applying physical and data-driven models: Project Response

Accurate load and response forecasts are a critical enabler for high demand response penetrations and optimization of responses and market actions. Project RESPONSE studies and develops methods to improve the forecasts. Its objectives are to improve 1) load and response forecast and optimization models based on both data-driven and physical modelling, and their hybrid models, 2) utilization of various data sources such as smart metering data, weather data, measurements from substations etc., and 3) performance criteria of load forecasting. The project applies, develops, compares, and integrates various modelling approaches including partly physical models, machine learning, modern load profiling, autoregressive models, and Kalman-filtering. It also applies non-linear constrained optimization to load responses. This paper gives an overview of the project and the results achieved so far.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electrical Energy Engineering, Research group: Power systems, Research area: Information Systems in Automation, Automation and Hydraulic Engineering, VTT Technical Research Centre of Finland, University of Eastern Finland

Contributors: Koponen, P., Hanninen, S., Mutanen, A., Koskela, J., Rautiainen, A., Järventausta, P., Niska, H., Kolehmainen, M., Koivisto, H.

Number of pages: 6  
Pages: 1-6  
Publication date: 27 Jun 2018

#### Host publication information

Title of host publication: 2018 IEEE International Energy Conference, ENERGYCON 2018  
Publisher: IEEE  
ISBN (Electronic): 9781538636695  
ASJC Scopus subject areas: Artificial Intelligence, Energy Engineering and Power Technology, Control and Optimization  
Keywords: Active demand, Forecasting, Hybrid models, Machine learning, Optimization, Physically based models  
Electronic versions:  
Koponen-ENERGYCON2018-final  
DOIs:  
10.1109/ENERGYCON.2018.8398794  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201808172164>  
Source: Scopus  
Source ID: 85050244199  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Improved properties for packaging materials by nanoscale surface modification and ALD barrier coating

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Materials Science, Research group: Paper Converting and Packaging, Metsä Board, Bemis , LUT Energy, Masaryk University  
Contributors: Lahti, J., Lavonen, J., Lahtinen, K., Johansson, P., Seppänen, T., Cameron, D. C.  
Number of pages: 23  
Pages: 684-706  
Publication date: 2016

##### Host publication information

Title of host publication: TAPPI International Conference on Nanotechnology for Renewable Materials 2016  
Volume: 2  
Publisher: TAPPI Press  
ISBN (Electronic): 9781510828001  
ASJC Scopus subject areas: Biotechnology, Biomaterials, Materials Chemistry, Surfaces, Coatings and Films  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84992694476&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus  
Source ID: 84992694476  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Improving project control by combining earned value analysis and automatic data collection

Efficient control is critical for project success. One of the most widely discussed project control methods is earned value analysis (EVM). The accuracy of EVM calculations can be improved by combining it with automatic data collection (ADC). This paper analyzes the possibilities of combining EVM and ADC, and the main benefits and challenges related to that. A literature review was conducted to answer these questions. The study demonstrates how the problems related to the evaluation of activity progress have received surprisingly little research focus, and how ADC could be utilized to improve this area of EVM. The benefits of ADC are also not limited to just EVM; despite the choice of a project control methodology, ADC can be utilized to evaluate project progress in a continuous and more accurate way. Finally, it is demonstrated how even the "ADC-enhanced EVM" doesn't provide an adequate image of project status alone; EVM has to be combined with other project control methodologies. Based on the literature review, several areas for further research are also proposed.

##### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services  
Contributors: Vuorinen, L., Sariola, R.  
Number of pages: 17  
Pages: 1

Publication date: 2015

#### Host publication information

Title of host publication: International Research Network in Organizing by Projects Conference 2015 : IRNOP

Place of publication: London, U.K.

URLs:

<https://www.bartlett.ucl.ac.uk/cpm/irnop-2015/about-irnop>

#### Bibliographical note

Sariola vastannut: ei isbn

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

#### Improving Recovery Boiler Availability through Understanding Fume Behavior

Unexpected recovery boiler shutdowns are rare, but they can cost millions of dollars in lost income. Sometimes the inorganic compounds in black liquor can cause sudden fouling or plugging problems that could not be predicted beforehand. The ash particles can be divided into two main types and size classes: carryover and fume. This paper focuses on the smaller fume particles that form through the condensation of alkali metal vapors, and that deposit via different mechanisms than carryover. The location of fume deposition depends on several factors, such as flue gas and superheater temperatures, black liquor composition, and the flow field in the boiler.

This paper presents results obtained with a computational method that simulates fume formation in recovery boilers. The results in this paper focus on the effect of black liquor composition and elemental release on fume behavior, and the paper suggests how these observations should be taken into account when designing new boilers or retrofits. Moreover, the paper introduces the possible applications of the modeling method. These include, for example, troubleshooting of fouling problems in existing boilers, designing superheater configurations for new boilers, and positioning soot blowers.

#### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Chemistry and Bioengineering, Research group: Power Plant and Combustion Technology, Valmet Technologies Oy

Contributors: Leppänen, A., Välimäki, E.

Number of pages: 11

Publication date: 2015

#### Host publication information

Title of host publication: TAPPI PEERS Conference Proceedings, October 25-28, 2015

Place of publication: Atlanta, Georgia

Publisher: TAPPI

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional

#### Improving reliability of replicated message delivery in cellular machine-type communications

In this paper, we introduce a novel approach for cellular machine-type communications (MTC) based on random access transmissions. It targets a substantial increase in the probability of message delivery at the first transmission attempt. This may be achieved by sending multiple message replicas across a set of transmission opportunities (in time, code, or frequency), which are shared between all the potential MTC devices. For the considered class of access algorithms, we propose the optimal scheme with centralized control that delivers the maximum success probability. This developed approach together with the conventional baseline method (with a single replica) is analyzed in the meta-stable state, and a performance estimate is obtained. Our numerical results - supported by both analysis and simulations - confirm a significant improvement in terms of the probability of immediate message delivery comparing to the conventional transmission, as well as indicate a potential gap with respect to the derived upper bound.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno

Contributors: Galinina, O., Turlikov, A., Andreev, S., Koucheryavy, Y.

Number of pages: 5

Pages: 106-110

Publication date: 5 Dec 2016

#### Host publication information

Title of host publication: 2016 8th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)

Publisher: IEEE

ISBN (Electronic): 978-1-4673-8818-4

Keywords: Analytical models, Numerical models, Reliability, Sociology, Statistics, Throughput, Upper bound

DOIs:

10.1109/ICUMT.2016.7765341

Source: Bibtex

Source ID: urn:67d25416e4b4bf5522a2df614d30bd19

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Improving the Situation Awareness of DSOs in Major Disturbances by Visualizing the State of Mobile Networks**

The interdependency of distribution and mobile networks causes issues in the recovery process of major disturbances as the mobile network is necessary for some distribution automation devices and for repair group communication. Mobile networks go down quickly after a power outage complicating the recovery process. In this paper a situation awareness (SA) system demonstration with a visualized state of both distribution and mobile networks is presented. The aim of the system is to improve the recovery times and reduce the outage costs by improving the mobile networks SA of DSOs and other actors during outages.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Electrical Engineering, Research area: Power engineering

Contributors: Haapanen, J., Krohns-Välämäki, H., Verho, P.

Publication date: 14 Jun 2016

#### **Host publication information**

Title of host publication: CIRED Workshop 2016

ISBN (Electronic): 978-1-78561-202-2

URLs:

[http://www.cired.net/publications/workshop2016/pdfs/CIRED2016\\_0097\\_final.pdf](http://www.cired.net/publications/workshop2016/pdfs/CIRED2016_0097_final.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **In-band-pumped mode-locked Ho:YAG ceramic laser at 2.1 $\mu\text{m}$**

SESAM mode-locking of a Ho:YAG ceramic laser operating near 2.1  $\mu\text{m}$  is reported achieving a pulse duration of 8 ps and output power as high as 258 mW at a repetition rate of ~83 MHz.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications

Contributors: Wang, Y., Lan, R., Mateos, X., Li, J., Pan, Y., Somalainen, S., Härkönen, A., Guina, M., Griebner, U., Petrov, V.

Number of pages: 2

Pages: 1-2

Publication date: Jun 2016

#### **Host publication information**

Title of host publication: 2016 Conference on Lasers and Electro-Optics (CLEO)

Publisher: IEEE

ISBN (Electronic): 978-1-943580-11-8

Keywords: ceramics, holmium, laser beams, laser mirrors, laser mode locking, optical pumping, optical saturable absorption, solid lasers, yttrium compounds, SESAM mode-locking, YAG:Ho, in-band-pumped mode-locked Ho:YAG ceramic laser, output power, power 258 mW, pulse duration, time 8 ps, wavelength 2.1  $\mu\text{m}$ , Ceramics, Gas lasers, Laser excitation, Laser mode locking, Power generation, Power lasers, Pump lasers

Source: Bibtex

Source ID: urn:487a5ec4dd0da809c9267dca5fd5b7f4

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Incoherent Broadband Cavity Enhanced Absorption Spectroscopy Using a Supercontinuum Source in the Mid-IR**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Fiber Optics, Research group: Applied Optics, Frontier Photonics



Contributors: Amiot, C. G., Aalto, A., Toivonen, J., Genty, G.  
Number of pages: 2  
Publication date: 2015

#### Host publication information

Title of host publication: Laser Science 2015 : Proceedings Frontiers in Optics 2015

Article number: JTU4A-80

ISBN (Electronic): 978-1-943580-03-3

DOIs:

10.1364/FIO.2015.JTu4A.80

Source: Bibtex

Source ID: urn:0317892665660f6764692e18288f7f3d

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Incoherent Broadband Cavity Enhanced Absorption Spectroscopy with a Supercontinuum Source

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Physics, Research group: Nonlinear Fiber Optics, Research area: Optics, Research group: Applied Optics

Contributors: Amiot, C., Aalto, A., Genty, G., Toivonen, J.

Pages: CH\_P\_16

Publication date: 2015

#### Host publication information

Title of host publication: 2015 European Conference on Lasers and Electro-Optics - European Quantum Electronics

Conference : Proceedings

Publisher: Optical Society of America

ISBN (Electronic): 978-1-4673-7475-0

URLs:

[http://www.osapublishing.org/abstract.cfm?URI=CLEO\\_Europe-2015-CH\\_P\\_16](http://www.osapublishing.org/abstract.cfm?URI=CLEO_Europe-2015-CH_P_16)

Source: Bibtex

Source ID: urn:c56367a4bf927ab34e30bddeb94639e4

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Increasing Employee Involvement in Socially Sustainable Manufacturing: Two Methods for Capturing Employees' Tacit Knowledge to Improve Manufacturing Processes

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Research area: Design, Development and LCM, Research area: Engineering Intelligence, Research area: Manufacturing and Automation

Contributors: Kopra, M., Halonen, N., Järvenpää, E., Lanz, M.

Number of pages: 8

Pages: 539-546

Publication date: 2015

#### Host publication information

Title of host publication: Advances in Production Management Systems: Innovative Production Management Towards

Sustainable Growth : IFIP WG 5.7 International Conference, APMS 2015, Tokyo, Japan, September 7-9, 2015,

Proceedings, Part II

Publisher: Springer International Publishing

ISBN (Print): 978-3-319-22758-0

ISBN (Electronic): 978-3-319-22759-7

#### Publication series

Name: IFIP Advances in Information and Communication Technology

DOIs:

10.1007/978-3-319-22759-7\_62

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Increasing the environment-awareness of rake beamforming for directive acoustic sources**

Speech signals captured by distant microphones in enclosures are typically deteriorated by reverberation and background noise. Commonly, the quality of the signals is enhanced applying delay and sum beamforming (or variants) to a microphone array. However, under particular conditions, the multi-path acoustic propagation leading to reverberation is not completely detrimental and can be used in a constructive way. In this direction, mirrored (virtual) microphones have been successfully applied in various research areas. In addition, the majority of naturally occurring sound sources, such as the human speaker, presents a certain degree of radiation directivity, which, coupled with data-independent beamforming, has been shown to slightly increase the captured speech quality.

Building upon the concepts of environment awareness and the acoustic rake receiver, this paper investigates the use of mirrored microphones, associated to isolated and strong reflections, in combination with source directivity, to further improve the captured speech quality. Real-data gathered with a linear nested array, as well as simulated data, are used to test the proposed scheme, showing superior performance with respect to similar state of the art solutions.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Audio research group, Fondazione Brune Kessler

Contributors: Pertilä, P., Brutti, A.

Publication date: 1 Sep 2016

#### **Host publication information**

Title of host publication: 15th International Workshop on Acoustic Signal Enhancement (IWAENC)

ISBN (Print): 978-1-5090-2007-2

URLs:

<http://www.iwaenc2016.org/>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Incremental service innovations in a manufacturing firm's delivery chain**

Manufacturing companies that provide services for consumers deliver service offerings through a retailer network. In such cases, the engagement of the various actors in the delivery chain provides multidimensional information required for successful development of services and innovations. Although the need to use delivery chain actors' differing potential in innovation has been widely recognized, the different actors' contribution to generating ideas to improve existing services is missing. This paper contributes to the literature by discussing the potential for creating these types of incremental service innovations in different parts of the delivery chain. The data were collected by interviews and questionnaires among customers, retailers and sales persons who are part of a product-related service delivery chain in three countries. The study shows that ideas for improvement were expressed infrequently by all the actors, but particularly by consumers, even though the service users' role in developing services has been emphasized in the literature. The different actors provided recurring but also some different improvement ideas. The consumers' typical ideas were general and rather self-evident, whereas the salespeople focused more on improving the service promotion and service process and retailers, in turn, took a broader approach. As the different stakeholders in the delivery chain offer different improvement idea contents for the manufacturing firm and cover service innovation dimensions only partly, manufacturing firms need a holistic strategy for incremental service innovations.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Research on Operations Projects and Services

Contributors: Nenonen, S., Vaittinen, E., Martinsuo, M.

Publication date: Jun 2016

#### **Host publication information**

Title of host publication: 23rd Innovation and Product Development Management Conference (IPDMC) : Glasgow, U. K. June 12-14, 2016

#### **Publication series**

Name: Innovation and Product Development Management Conference

ISSN (Print): 1998-7374

Electronic versions:

IPDM2016 Nenonen, Vaittinen & Martinsuo

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708211692>

URLs:

[http://www.eiasm.org/frontoffice/event\\_announcement.asp?event\\_id=1164#4418](http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=1164#4418)

### **Indoor Localisation using Aroma Fingerprints: A First Sniff**

Electronic noses (eNoses) can detect and classify a large variety of smells. They are, in general, much more sensitive than the human nose. Could they identify different indoor locations based on the locations' characteristic combinations of airborne chemicals? We study in this paper how well location can be determined in an indoor environment using only measurements from an ion mobility spectrometry eNose and a K nearest neighbour (KNN) classifier. Based on the results of test with real-world data eNose-based localisation seems to have potential but there are several questions and issues that still have to be addressed. This paper provides therefore a discussion of questions and issues that have to be studied in the future, and proposes potential solutions.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Mathematics, Research area: Microsystems, Research group: Sensor Technology and Biomeasurements (STB), Automation and Hydraulic Engineering

Contributors: Müller, P., Lekkala, J., Ali-Löytty, S., Piche, R.

Publication date: Oct 2017

#### **Host publication information**

Title of host publication: 2017 14th Workshop on Positioning, Navigation and Communications (WPNC)

Place of publication: Bremen, Germany

Publisher: IEEE

ISBN (Electronic): 978-1-5386-3089-1

Electronic versions:

Muller\_et\_al--Aroma\_FPs--accepted\_final\_manuscript\_2

DOIs:

10.1109/WPNC.2017.8250046

URLs:

<http://urn.fi/URN:NBN:fi:tty-201711162161>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Industrial customers' organizational readiness for service innovations: Adopting data-based advanced services**

Manufacturing firms that deliver complex products and systems are increasingly offering advanced data-based services to their customers. Customers are not always readily interested or willing to procure advanced services, and manufacturing firms need knowledge on how to promote the customer's service readiness. The aim in this paper is to develop and propose a framework on customer firms' organizational readiness for service innovations. We explore the experiences of customers of a manufacturing firm delivering complex systems and related services. The interview-based study reveals that customers use versatile processes for new service adoption, and engage multiple people and use varied criteria when deciding the adoption of data-based new services. Organizational readiness for service innovations appears in terms of change requirements concerning service context, supplier relations, and organizational habits and culture. The findings suggest actions for the manufacturing firms as ways to promote the customers' readiness for service innovations.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Center for Research on Operations Projects and Services

Contributors: Martinsuo, M., Vaittinen, E.

Number of pages: 17

Publication date: Jun 2018

#### **Host publication information**

Title of host publication: Proceedings of the 25th Innovation and Product Development Management Conference

Publisher: European Institute for Advanced Studies in Management, EIASM

#### **Publication series**

Name: International Product Development Management Conference

ISSN (Electronic): 1998-7374

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Industrial impact on topics and types of Master's theses: Empirical study of software engineering theses made in 1990-2016**

One of the ways universities and industry co-operate is making the master's theses on the topics of industrial partners. In this paper 578 theses on software engineering from 1990 until 2016 are evaluated to see how the needs of the industry on information technology in Finland have affected the topics, type, language and orientation of the theses. Also the size of the company and the gender of students were recorded as well. All the theses have been supervised by either of the authors and they represent about 30 percent of theses on software engineering at Tampere University of Technology.

Our strongest hypothesis was that during 2000-2005 golden era of Nokia would affect greatly on the numbers so that the major part of the theses were made for a large company, mobility is one of the most general topics and there are several constructive theses that are part of bigger projects. Other initial hypotheses were that the number of theses in English has been increased since 1990, the number of females has been the same or increasing slightly, and the orientation of the theses (constructive or research-oriented) has not changed much, the constructive ones being much more common.

The results partly proved the hypotheses, but interestingly enough, we got some surprises especially on the language of the theses and the gender on students.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Software engineering

Contributors: Järvinen, H., Mikkonen, T.

Number of pages: 11

Publication date: 12 Sep 2016

#### **Host publication information**

Title of host publication: Proceedings of SEFI 2016 Annual Conference

Publisher: European Society for Engineering Education SEFI

Editors: Järvinen, H., Clark, R.

ISBN (Electronic): 9782873520144

ASJC Scopus subject areas: Computer Science(all)

Keywords: software engineering education, thesis, industrial impact

Electronic versions:

SEFI2016

URLs:

<http://sefibenvwh.cluster023.hosting.ovh.net/wp-content/uploads/2017/09/jarvinen-industrial-impact-on-topics-and-types-of-masters-theses-95.pdf>

<http://urn.fi/URN:NBN:fi:tty-201709151888>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Industrialization of hybrid and additive manufacturing-Implementation to Finnish industry (HYBRAM)**

#### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Automation Technology and Mechanical Engineering, Research area: Manufacturing and Automation, VTT

Contributors: Riipinen, T., Kujanpää, V., Komi, E., Kilpeläinen, P., Savolainen, M., Puukko, P., Vihinen, J., Coatanea, E., Mokhtarian, H.

Number of pages: 66

Publication date: 26 Nov 2018

#### **Publication information**

Publisher: VTT Technical Research Centre of Finland

Original language: English

#### **Publication series**

Name: Research Reports

Publisher: VTT Technical Research Centre of Finland

URLs:

[https://cris.vtt.fi/ws/portalfiles/portal/22519412/Report\\_VTT\\_R\\_06411\\_18.pdf](https://cris.vtt.fi/ws/portalfiles/portal/22519412/Report_VTT_R_06411_18.pdf) (HYBRAM project report (Public))

Research output: Book/Report › Commissioned report › Professional

### **Infant respiration and heart rate monitoring with EMFi sensor**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Automation Science and Engineering, Research area: Microsystems, Research area: Measurement Technology and Process Control, Integrated Technologies for Tissue Engineering Research (ITTE)

Contributors: Rajala, S., Lekkala, J.  
Number of pages: 5  
Publication date: 2015

#### Host publication information

Title of host publication: IMEKO XXI World Congress, Proceedings, August 30 - September 4, 2015, Prague, Czech Republic  
Editor: Holub, J.  
ISBN (Electronic): 978-80-01-05793-3  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Infinitesimals and Pavelka logic

Rational Pavelka Logic does not admit infinitesimals. We argue that infinitesimals are important in logic and we present an alternative approach which admits them. It is built up in a similar style, but based on the Chang's perfect MV-algebra. We prove a partial result towards the completeness of this logic. We also discuss a combined approach using more complex perfect MV-algebras.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mathematics, Research group: MAT Computer Science and Applied Logics, Czech Tech Univ, Czech Technical University Prague  
Contributors: Turunen, E., Navara, M.  
Number of pages: 7  
Pages: 1027-1033  
Publication date: 2015

#### Host publication information

Title of host publication: PROCEEDINGS OF THE 2015 CONFERENCE OF THE INTERNATIONAL FUZZY SYSTEMS ASSOCIATION AND THE EUROPEAN SOCIETY FOR FUZZY LOGIC AND TECHNOLOGY  
Place of publication: PARIS  
Publisher: Atlantis Press  
Editors: Alonso, J., Bustince, H., Reformat, M.  
ISBN (Electronic): 978-94-62520-77-6

#### Publication series

Name: Advances in Intelligent Systems Research  
Publisher: ATLANTIS PRESS  
Volume: 89  
ISSN (Print): 1951-6851  
Keywords: Mathematical fuzzy logic, Rational Pavelka Logic, Lukasiewicz operations, MV-algebra, perfect MV-algebra, Chang's MV-algebra, FUZZY LOGIC, PROPOSITIONAL CALCULI, TRUTH-CONSTANTS, COMPLETENESS  
DOIs:  
10.2991/ifsa-eusflat-15.2015.145  
Source: WOS  
Source ID: 000358581100145  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Influence of environmental conditions on EMF levels in a span of overhead transmission lines

The paper is devoted to the investigation of electromagnetic field distribution in the vicinity of overhead transmission lines under different environmental conditions, taking into account the wire sag curve in a span. A wire state equation is utilized, which allows one to calculate stresses in the wire and sags based on the known stresses and temperatures in the initial state. The results of the electric and magnetic field distribution on sample 330 kV and 110 kV transmission lines are presented. We show that the highest electromagnetic field levels are associated with the most severe environmental conditions, resulting in the highest sag.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Electronics and Communications Engineering, Research group: Environmental Health, LLC Soyuzenergoproekt  
Contributors: Okun, O., Kravchenko, Y., Korpinen, L.  
Number of pages: 9  
Pages: 163-171  
Publication date: 2016

Peer-reviewed: Yes

### Publication information

Journal: Progress in Electromagnetics Research C

Volume: 63

ISSN (Print): 1937-8718

Ratings:

Scopus rating (2016): CiteScore 1.6 SJR 0.221 SNIP 0.597

Original language: English

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials

DOIs:

10.2528/PIERC16021106

Source: Scopus

Source ID: 84971219955

Research output: Contribution to journal > Article > Scientific > peer-review

### Influence of the rotor eccentricity on the torque of a cage induction machine

The non-uniform air gap in an electrical machine caused by rotor eccentricity creates an asymmetrical flux-density distribution in the air gap. This can affect the nominal torque produced by the machine. Eccentricity also produces forces that act on the rotor which may also have an effect on the torque. Thus, it is important to know how the torque of the machine behaves. In this paper, the torque of a cage induction machine is studied when the machine has dynamic eccentricity. The study is performed using the finite element method and a magnetic vector potential formulation. The torque is calculated by the method of energy balance. The harmonic components of the torque are also analyzed. The results show that the machine under eccentricity does not exhibit the same torque as a normal healthy machine. The harmonic components around the first principal slot harmonic is most affected.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electrical Energy Engineering, Research group: Electromechanics, Research area: Power engineering, Aalto University

Contributors: Silwal, B., Rasilo, P., Belahcen, A., Arkkio, A.

Pages: 383-396

Publication date: Jun 2017

Peer-reviewed: Yes

### Publication information

Journal: Archives of Electrical Engineering

Volume: 66

Issue number: 2

ISSN (Print): 2300-2506

Ratings:

Scopus rating (2017): CiteScore 1.2 SJR 0.233 SNIP 0.65

Original language: English

Electronic versions:

Silwal2017

DOIs:

10.1515/ae-2017-0029

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708151681>

Research output: Contribution to journal > Article > Scientific > peer-review

### InGaAs-QW VECSEL emitting >1.300-nm via intracavity Raman conversion

We report intracavity Raman conversion of a long-wavelength InGaAs-QW VECSEL to ~1320 nm, the longest wavelength yet achieved by a VECSEL-pumped Raman laser. The setup consisted of a VECSEL capable of emitting >17W at 1180nm and tunable from 1141-1203nm and a 30-mm-long KGd(WO<sub>4</sub>)<sub>2</sub> (KGW) Raman crystal in a coupled-cavity Raman resonator. The Raman cavity was separated from the VECSEL resonator by a tilted dichroic mirror, which steers the Raman beam to an output coupler external to the VECSEL. The spectral emission of the VECSEL, and consequently of the Raman laser, was set by a 4-mm-thick quartz birefringent filter in the VECSEL cavity. The KGW Raman laser was capable of emitting 2.5W at 1315 nm, with M<sup>2</sup>~2.7 and >4% diode-to-Stokes conversion efficiency. The Raman laser emission was tunable from 1295-1340 nm, limited by the free spectral range of the birefringent filter. Spectral broadening of the fundamental emission was observed during Raman conversion. At the maximum Raman laser output power, the total linewidth of the VECSEL spectrum was ~0.7nm FWHM. As a consequence, the Raman laser emission was also relatively broad (~0.9nm FWHM). Narrow (<0.2nm FWHM) Raman emission was obtained by inserting an additional 100

$\mu\text{m}$  etalon within the VECSEL cavity. With this configuration the fundamental intracavity power clamped at its value at the Raman threshold, suggesting an enhanced effective Raman gain, but the maximum output power of the Raman laser was 1.8 W.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, University of Strathclyde

Contributors: Parrotta, D., Casula, R., Penttinen, J., Leinonen, T., Kemp, A., Guina, M., Hastie, J.

Publication date: 12 Mar 2016

#### Host publication information

Title of host publication: Vertical External Cavity Surface Emitting Lasers (VECSELs) VI

ISBN (Print): 9781628419696

#### Publication series

Name: Proceedings of SPIE

ISSN (Print): 0277-786X

DOIs:

10.1117/12.2217593

#### Bibliographical note

JUFOID=71479

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Initiation processes and initiation contributors illustrated by Norwegian-South Korean business relationships

#### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, Norwegian University of Science and Technology, NTNU

Contributors: Aarikka-Stenroos, L., Aaboen, L., Rolfsen, A.

Number of pages: 28

Publication date: 27 Aug 2015

#### Host publication information

Title of host publication: The 31st IMP Conference 2015, Kolding, Denmark.

Place of publication: Kolding, Denmark

Editors: Vagn Freytag, P., Højbjerg Clarke, A.

Keywords: initiation, international business, marketing

URLs:

<http://www.impconference2015.com/>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Professional

### Inkjet printed metallic micropillars for bare die flip-chip bonding

Inkjet printed metal micropillars have been developed to help meet the demands for novel and highly adaptable microelectronics fabrication processes. The digitally printed silver pillar arrays in this study have been utilized in place of wafer-level solder bump processes or chip-level wire-bonded stud bumps. These three-dimensional silver pillars were printed with a drop-on-demand piezoelectric inkjet printer utilizing silver nanoparticle ink. The inkjet printed micropillars were found to have 22  $\mu\text{m}$  diameters and a height equivalent to approximately 3  $\mu\text{m}$  per droplet. In our study, we chose pillars for further use as stud bumps with 8, 10, 12 and 14 droplets, with heights of approximately 20.9  $\mu\text{m}$ , 25.9  $\mu\text{m}$ , 33.3  $\mu\text{m}$  and 35.9  $\mu\text{m}$  respectively. After printing on the bare dies the bumps were subsequently used to increase the contact reliability of flip-chip bonded samples. It was found that the bumped chips dramatically improved the reliability of the I/O connection as compared to unbumped samples. In fact nearly 88% of the bumped pads had a resistance less than 2.5  $\Omega/\text{bump}$  (no noticeable variation between bump heights) as compared to 17% for the unbumped bare dies. This study clearly demonstrates the fabrication of inkjet printed silver micropillars for use in uniform stud bump arrays. Furthermore, the feasibility of incorporating inkjet printed silver stud bumps for use in flip-chip fabrication methods was demonstrated.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electronics and Communications Engineering, Research group: Laboratory for Future Electronics

Contributors: Khorramdel, B., Kraft, T. M., Mäntysalo, M.

Pages: 045005

Publication date: 26 Oct 2017

Peer-reviewed: Yes

### Publication information

Journal: Flexible and Printed Electronics

Volume: 2

Issue number: 4

ISSN (Print): 2058-8585

Ratings:

Scopus rating (2017): CiteScore 1.6 SJR 0.779 SNIP 1.192

Original language: English

Electronic versions:

Khorrarnadel Kraft Mantysalo - 2017 - Inkjet printed metallic micropillars for bare-die flip-chip bonding

DOIs:

10.1088/2058-8585/aa9171

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201901291191>

Source: Bibtex

Source ID: urn:8f4049c2ab7f16fafb13e340ca8b6ef9

Research output: Contribution to journal › Article › Scientific › peer-review

## Institutional development is the key for sustainable water services in the built environment

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Katko, T. S., Hukka, J. J.

Number of pages: 12

Pages: 419-430

Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016 : Volume IV - Understanding impacts and functioning of different solutions

Place of publication: Tampere

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Nenonen, S., Junnonen, J.

ISBN (Print): 978-952-15-3744-8

URLs:

[https://tutcris.tut.fi/portal/files/6186967/WBC16\\_Vol\\_4.pdf](https://tutcris.tut.fi/portal/files/6186967/WBC16_Vol_4.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Institutionalizing a service innovation in complex networks: The case of developing and diffusing electronic prescription in Finland.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Industrial Management, University of Turku, Turku School of Economics, Deloitte

Contributors: Jaakkola, E., Aarikka-Stenroos, L., Salmivalli, L.

Number of pages: 12

Publication date: 27 Aug 2015

### Host publication information

Title of host publication: The 31st Annual IMP Conference and Doctoral Colloquium 2015, Kolding, Denmark.

Editors: Vagn Freytag, P., Höjbjerg Clarke, A.

Keywords: Public sector, Innovation, Service providers

URLs:

<http://www.impconference2015.com/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Professional



### **Instrumentation and monitoring of large-span culvert built under a railway, in Finland**

Large span soil-steel culverts are rarely used in Finland as vehicular under-passes. The large span and low soil cover height together with high traffic loads place high demands on the construction of culvert backfills. Traffic-induced stress changes and the fatigue resistance of the plates play a major role in the endurance of a culvert. According to design calculations, the most critical section of the culvert is the crown. For this reason, the focus of this project is on the assessment of the structural behaviour and performance of the crown area under influence of traffic load. The structural performance of the culvert was verified by monitoring stress changes and deformations under live railway traffic, which proved the suitability of the multi-plated culvert built under a railway.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Civil Engineering, Research group: Vaativat rakenteet  
Contributors: Asp, O., Laaksonen, A.  
Number of pages: 8  
Pages: 53-60  
Publication date: 24 Apr 2017

#### **Host publication information**

Title of host publication: Archives of Institute of Civil Engineering : 3rd European Conference on Buried Flexible Steel Structures, Rydzyna, Poland, 24-25 April 2017  
Volume: 2017  
Place of publication: Poznan  
Publisher: Wydawnictwo Politechniki Poznanskiej  
Editors: Madaj, A., Jankowiak, I.  
Edition: 23  
DOIs:  
10.21008/j.1897-4007.2017.23.05  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Integrated multi-wavelength mid-IR light source for gas sensing**

Cost effective multi-wavelength light sources are key enablers for spectroscopic applications at Mid-IR wavelength range. Utilizing a novel Mid-IR Si-based photonic integrated circuit filter and wide-band Mid-IR SLEDs, we show the concept of a light source that covers 2.7-3.5  $\mu\text{m}$  wavelength range with a resolution  $<1\text{nm}$ . The spectral bands are switchable and tunable and they can be modulated. The source allows for the fabrication of an affordable multi-band gas sensor with good selectivity and sensitivity. The unit price can be lowered in high volumes by utilizing tailored molded IR lens technology and automated packaging and assembling technologies. The status of the development of the key components of the light source are reported. The Mid-IR PIC is based on the use of thick-SOI technology, SLED is based on AlGaInAsSb materials and the lenses are tailored single crystal, nonoxide glass and heavy metal oxide glasses fabricated by the use of hot-embossing. The packaging concept utilizing automated assembly tools are depicted. In safety and security applications, the Mid-IR wavelength range covered by the source allows for the detection of several harmful gas components with a single sensor. At the moment, affordable sources are not available. The market impact is expected to be disruptive, since the devices currently in the market are either complicated, expensive and heavy instruments, or the applied measurement principles are inadequate in terms of stability and selectivity.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Photonics, Research group: ORC, VTT Technical Research Centre of Finland, Institute of Electronic Materials Technology, Vaisala Oyj, Airoptic Sp. z o.o., GasSecure, VIGO System S.A.  
Contributors: Karioja, P., Alajoki, T., Cherchi, M., Ollila, J., Harjanne, M., Heinilehto, N., Suomalainen, S., Zia, N., Tuorila, H., Viheriälä, J., Guina, M., Buczynski, R., Kasztelanic, R., Salo, T., Virtanen, S., Kluczynski, P., Borgen, L., Ratajczyk, M., Kalinowski, P.  
Publication date: 2018

#### **Host publication information**

Title of host publication: Next-Generation Spectroscopic Technologies XI  
Publisher: SPIE, IEEE  
Article number: 106570A  
ISBN (Electronic): 9781510618251

#### **Publication series**

Name: SPIE Conference Proceedings  
Volume: 10657  
ISSN (Print): 0277-786X  
ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials, Condensed Matter Physics, Computer Science Applications, Applied Mathematics, Electrical and Electronic Engineering

Keywords: gas sensing, Mid-IR integrated optics, Mid-IR lens, photonics packaging, PIC, Si photonics, SLED

DOIs:

10.1117/12.2305712

### Bibliographical note

jufoid=71479

Source: Scopus

Source ID: 85050701514

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Integrated urban water management, the green economy and institutional eco-innovations

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Hukka, J. J., Nyanchaga, E. N., Katko, T. S.

Number of pages: 11

Pages: 260-271

Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016 : Volume III - Building up business operations and their logic. Shaping materials and technologies

Place of publication: Tampere

Publisher: Tampere University of Technology. Department of Civil Engineering

Editors: Saari, A., Huovinen, P.

ISBN (Print): 978-952-15-3743-1

URLs:

[https://tutcris.tut.fi/portal/files/6186903/WBC16\\_Vol\\_3.pdf](https://tutcris.tut.fi/portal/files/6186903/WBC16_Vol_3.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Integrating III-V, Si, and polymer waveguides for optical interconnects: RAPIDO

We present a vision for the hybrid integration of advanced transceivers at 1.3  $\mu\text{m}$  wavelength, and the progress done towards this vision in the EU-funded RAPIDO project. The final goal of the project is to make five demonstrators that show the feasibility of the proposed concepts to make optical interconnects and packet-switched optical networks that are scalable to Pb/s systems in data centers and high performance computing. Simplest transceivers are to be made by combining directly modulated InP VCSELs with 12  $\mu\text{m}$  SOI multiplexers to launch, for example, 200 Gbps data into a single polymer waveguide with 4 channels to connect processors on a single line card. For more advanced transceivers we develop novel dilute nitride amplifiers and modulators that are expected to be more power-efficient and temperature-insensitive than InP devices. These edge-emitting III-V chips are flip-chip bonded on 3  $\mu\text{m}$  SOI chips that also have polarization and temperature independent multiplexers and low-loss coupling to the 12  $\mu\text{m}$  SOI interposers, enabling to launch up to 640 Gbps data into a standard single mode (SM) fiber. In this paper we present a number of experimental results, including low-loss multiplexers on SOI, zero-birefringence Si waveguides, micron-scale mirrors and bends with 0.1 dB loss, direct modulation of VCSELs up to 40 Gbps,  $\pm 0.25\mu\text{m}$  length control for dilute nitride SOA, strong band edge shifts in dilute nitride EAMs and SM polymer waveguides with 0.4 dB/cm loss.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, VTT Technical Research Centre of Finland, IBM Research, Vertilas GmbH, Scuola Superiore sant'Anna, Tyndall National Institute at National University of Ireland, Cork, Modulight Inc.

Contributors: Aalto, T., Harjanne, M., Offrein, B. J., Caër, C., Neumeyr, C., Malacarne, A., Guina, M., Sheehan, R. N., Peters, F. H., Melanen, P.

Publication date: 2016

### Host publication information

Title of host publication: Optical Interconnects XVI

Publisher: SPIE

Article number: 97530D

ISBN (Print): 9781628419887

### Publication series

Name: Proceedings of SPIE

Volume: 9753

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

ASJC Scopus subject areas: Applied Mathematics, Computer Science Applications, Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Condensed Matter Physics

Keywords: electro absorption modulator, hybrid integration, optical interconnect, optical interposer, optoelectronics, polymer photonics, semiconductor optical amplifier, Silicon photonics, VCSEL, wavelength multiplexers

DOIs:

10.1117/12.2214786

#### **Bibliographical note**

EXT="Melanen, Petri"

Source: Scopus

Source ID: 84975114015

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Integrating mobile orienteering to team forming activity in a software engineering course**

One of the most important skills software engineers need when entering work life is working in teams, including communicating, collaborating, as well as coordinating work in a team. This paper presents a team building activity aiming to support the first phases of team formation with a mobile orienteering activity. Created tasks at orienteering checkpoints were related to communication, collaboration and work division. Students were enthusiastic about the activity and expressed in their group reports on the activity that it supported the team building activity well, helped break the ice and supported agreeing the ways of working. Students also liked getting out of the classroom. The approach seems promising and we will investigate in the future similar type of activities in the first phases of team formation as well as will explore further integrating physical activity to the exercise sessions.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: User experience

Contributors: Väättäjä, H., Ahtinen, A.

Publication date: Sep 2016

#### **Host publication information**

Title of host publication: SEFI 2016 Annual Conference Proceedings : Engineering Education on Top of the World: Industry University Cooperation

Publisher: European Society for Engineering Education SEFI

ISBN (Electronic): 9782873520144

Keywords: soft skills, engineering skills, collaboration, Team working, group forming, mobile orienteering, team forming

URLs:

[http://www.sefi.be/conference-2016/papers/Engineering\\_Skills/vaataja-integrating-mobile-orienteering-to-team-forming-activity-176.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Skills/vaataja-integrating-mobile-orienteering-to-team-forming-activity-176.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Integration of evaluation and simulation methods for virtual prototypes**

This article combines evaluation and selection of early design concepts into a methodology at different stages of the development process. A web-based evaluation environment to support this methodology has been developed including Kurtoglu's component taxonomy. In addition, the Taguchi's design of experiments approach has been used to virtually assess all feasible combinations generated from Zwicky matrix. This evaluation methodology is applied to the case study of an autonomous robot for Eurobot competition. The virtual environment was useful to provide a fast visual representation of the different robot concepts and their behaviours. This evaluation methodology was compared with AHP and Pareto optimality evaluation methods. The main contribution of this paper is to develop a methodology and a computer tool integrating virtual simulation associated with a design of experiments providing a visual representation of the concepts. These concepts can be simulated according to situations they would face in reality. This enables the evaluation of concepts according to non-subjective criteria and it could assist the decision making process at early design stage. Furthermore, this evaluation method enables preliminary selection in a concurrent manner during the phase of concept generation. The goal is to integrate the entire approach as a web-based platform supporting the early design process. This work is developed for pedagogical purpose in the context of an EU project.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Intelligent dexterity for secure networked infrastructure and applications (IDSNIA), Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engn Design & Prod, Sch Engn, Aalto University

Contributors: Christophe, F., Mokammel, F., Coatanea, E., Bakhouya, M.  
Number of pages: 6  
Pages: 623-628  
Publication date: 2013

#### Host publication information

Title of host publication: Proceedings of the 15th International Conference on Engineering and Product Design Education: Design Education - Growing Our Future, EPDE 2013  
ISBN (Print): 9781904670421  
ASJC Scopus subject areas: Industrial and Manufacturing Engineering  
Keywords: Design, Design methodologies, Simulation and evaluation, Virtual prototyping  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84891309348&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus  
Source ID: 84891309348  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Intensity Interferometry of Supercontinuum Light

##### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Photonics, Tampere University of Technology  
Contributors: Toenger, S., Ahvenjärvi, J., Ryzkowski, P., Genty, G.  
Publication date: Jun 2018

##### Host publication information

Title of host publication: Trends in Electromagnetic Coherence  
Place of publication: Joensuu  
Publisher: University of Eastern Finland  
Editors: Setälä, T., Turunen, J., T. Friberg, A., Saastamoinen, K.  
ISBN (Print): 978-952-61-2817-7

##### Publication series

Name: Publications of the University of Eastern Finland. Reports and studies in forestry and natural sciences  
No.: 32  
ISSN (Print): 1798-5684  
Keywords: interferometric autocorrelation, Two-photon absorption, supercontinuum

##### Bibliographical note

jufoid=71333  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

#### Interdisciplinary water research network building within Nordic and Baltic countries.

##### General information

Publication status: Published  
MoE publication type: A2 Review article in a scientific journal  
Organisations: Department of Chemistry and Bioengineering, Research group: Industrial Bioengineering and Applied Organic Chemistry, Department of Civil Engineering  
Contributors: Sörensen, J., Kurki, V., Sidaraviciute, R., Ngari Kibocha, S., Retike, I., Ikobe, G., Tichonovas, M., Elijosiute, E., Rajala, R.  
Number of pages: 5  
Pages: 79-83  
Publication date: 2015  
Peer-reviewed: Yes

##### Publication information

Journal: Vatten  
Issue number: 71  
ISSN (Print): 0042-2886  
Original language: English  
URLs:  
[http://www.tidskriftenvatten.se/mag/tidskriftenvatten.se/dircode/docs/48\\_article\\_4763.pdf](http://www.tidskriftenvatten.se/mag/tidskriftenvatten.se/dircode/docs/48_article_4763.pdf)

### **Internal Heat Generation in Tension Tests of AISI 316 Using Full-Field Temperature and Strain Measurements**

Full-field temperature and strain measurements were recorded during tension tests of AISI 316 on a hydraulic load frame at a strain rate of  $1 \text{ s}^{-1}$ . The temperature increase was measured on one side of the specimen using a high speed IR camera while the deformation was measured on the opposite side with a visible camera, each at a frame rate of 500 FPS. Uniform deformation of the specimen was observed up to strains of 0.25 until necking occurred and localization strains reached up to 0.75 at failure. The maximum temperature as measured by the IR camera was  $260 \text{ }^{\circ}\text{C}$  before failure. The fraction of plastic work converted to heat ( $\beta$ ) was calculated over the entire gage length of the specimen using the local measurements of stress, strain, and temperature and varied between 0.6 and 0.9 throughout the test.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, The Ohio State University, Columbus, OH, USA, Department of Mechanical Engineering

Contributors: Smith, J., Kuokkala, V., Seidt, J., Gilat, A.

Number of pages: 7

Pages: 97-103

Publication date: 2018

#### **Host publication information**

Title of host publication: Advancement of Optical Methods in Experimental Mechanics, Volume 3. Conference Proceedings of the Society for Experimental Mechanics Series

Volume: 3

Publisher: Springer New York LLC

ISBN (Print): 978-3-319-63027-4

ISBN (Electronic): 978-3-319-63028-1

#### **Publication series**

Name: Conference Proceedings of the Society for Experimental Mechanics

ISSN (Print): 2191-5644

DOIs:

10.1007/978-3-319-63028-1\_16

#### **Bibliographical note**

JUFOID=72540

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **International Workshop on MicroFactories (IWMF 2012): 17th-20th June 2012 Tampere Hall Tampere, Finland**

This Workshop provides a forum for researchers and practitioners in industry working on the diverse issues of micro and desktop factories, as well as technologies and processes applicable for micro and desktop factories. Micro and desktop factories decrease the need of factory floor space, and reduce energy consumption and improve material and resource utilization thus strongly supporting the new sustainable manufacturing paradigm. They can be seen also as a proper solution to point-of-need manufacturing of customized and personalized products near the point of need.

#### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Mechanical Engineering and Industrial Systems

Contributors: Tuokko, R. (ed.), Lanz, M. (ed.), Luostarinen, P. (ed.)

Number of pages: 186

Publication date: 2012

#### **Publication information**

Publisher: Tampere University of Technology. Department of Production Engineering

ISBN (Electronic): 978-952-15-2936-8

Original language: English

Electronic versions:

iwmf\_2012

URLs:

<http://URN.fi/URN:ISBN:978-952-15-2936-8>

#### **Bibliographical note**

Versio ok 16.12.2015

### **Internet-of-things disrupting business ecosystems: A case in home automation**

The paper presents a case study of Internet of Things (IoT) technology application and its disruptive nature on the business ecosystem. The disruptive nature of changes is analyzed with identification of changes incurred to the business ecosystem as IoT is introduced to the marketplace. The results of a case analysis exemplify how business ecosystems are changing due to opportunities provided by IoT.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Industrial Management, Research group: Center for Innovation and Technology Research, Managing digital industrial transformation (mDIT)

Contributors: Mäkinen, S.

Number of pages: 4

Pages: 1467-1470

Publication date: 11 Mar 2015

#### **Host publication information**

Title of host publication: IEEM 2014 : 2014 IEEE International Conference on Industrial Engineering and Engineering Management

Publisher: IEEE COMPUTER SOCIETY PRESS

ISBN (Print): 9781479964109

ASJC Scopus subject areas: Business, Management and Accounting (miscellaneous), Industrial and Manufacturing Engineering, Safety, Risk, Reliability and Quality

Keywords: business ecosystems, home automation, internet of things

DOIs:

10.1109/IEEM.2014.7058882

URLs:

<http://www.scopus.com/inward/record.url?scp=84940397804&partnerID=8YFLogxK> (Link to publication in Scopus)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Internet of Things, Smart Spaces, and Next Generation Networks and Systems: 15th International Conference, NEW2AN 2015, and 8th Conference, ruSMART 2015, St. Petersburg, Russia, August 26-28, 2015, Proceedings**

#### **General information**

Publication status: Published

MoE publication type: C2 Edited books

Organisations: Department of Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, Wireless Communications and Positioning (WICO)

Contributors: Balandin, S. (ed.), Andreev, S. (ed.), Koucheryavy, Y. (ed.)

Publication date: 2015

#### **Publication information**

Publisher: Springer International Publishing

ISBN (Print): 978-3-319-23125-9

ISBN (Electronic): 978-3-319-23126-6

Original language: English

#### **Publication series**

Name: Lecture Notes in Computer Science

Volume: 9247

ISSN (Print): 0302-9743

DOIs:

10.1007/978-3-319-23126-6

#### **Bibliographical note**

JUF0ID=62555

Research output: Book/Report › Anthology › Scientific › peer-review

### **Inter-organizational knowledge sharing barriers within an sme network: a case study**

SMEs often seek to supplement their scarce resources and limited knowledge base by networking. This calls for efficient knowledge sharing within the network, which is, however, often complicated by the existence of knowledge barriers. This paper seeks answers to the question "what are the knowledge barriers that hinder inter-organizational knowledge sharing

in SME networks?" The issue is empirically examined through a case study that was carried out by the participative observation research method. The case is a network consisting of SMEs whose joint objective was to increase the companies' capabilities in digitalization by sharing knowledge within the network. The paper concludes that companies' ability in sharing knowledge within a network vary greatly due to, e.g. varying needs concerning the level of knowledge pursued from the network, imbalanced knowledge base, and cognitive proximity/shared interests of the network companies. Firstly, some companies' goals may be acquiring highly specialized knowledge from the network, while others are potentially interested in harnessing rather general level knowledge. Secondly, those companies that have a broader/deeper knowledge base than others may protect their knowledge more carefully. Thirdly, the lack of understanding the value of knowledge may also lead to unwillingness of sharing knowledge with others, or, vice versa, not being able to utilize the valuable knowledge shared by others. Based on the empirical findings we can conclude that companies that share the same information needs and do not settle for merely sharing knowledge with each other go beyond the typical knowledge sharing and proceed to develop the issues of mutual interest via deeper dialogue.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Knowledge and Learning Research Center, Häme University of Applied Sciences

Contributors: Meriläinen, K., Vuori, V., Helander, N.

Number of pages: 8

Pages: 690-697

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of the 18th European Conference on Knowledge Management : Barcelona, Spain, 7-8 September 2017

Place of publication: Reading, UK

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URLs:

<http://www.academic-conferences.org/conferences/eckm/future-past-conferences/>

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### **Interplay between offering, provider and customer in product-service system design**

Customer value creation is pivotal for a company in order to be able to create value for their shareholders. Product-service systems (PSS) offer new ways for creating added value in comparison to selling traditional products with added services. The goal in this article is to study a product-service system design project and identify different interactions in the three dimensions of product-service systems - the offering, the provider, and the user/customer. Being able to identify interactions between the design elements in the three PSS dimensions would advance our understanding about PSS development in general and facilitate designing higher-value product-service systems. The research utilizes first-hand data of an availability-oriented reverse vending machine design project undergone in the research group during 2011-2012. The research resulted in identifying concrete interactions with potentially complex dynamics between the elements from the three dimensions. The interactions between the dimensions play an important role in PSS development, they may provide interesting openings for value creation, and they definitely deserve more attention and further research in the domain.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Aalto Univ, Aalto University, Helsinki Inst Phys

Contributors: Ritola, T., Coatanea, E.

Number of pages: 10

Publication date: 2013

#### **Host publication information**

Title of host publication: Proceedings of the 19th International Conference on Engineering Design (ICED13), Design for Harmonies, Vol.4: Product, Service and Systems Design , Seoul, Korea, 19-22.08.2013

Publisher: DESIGN SOC

Editors: Lindemann, U., Venkataraman, S., Kim, Y., Lee, S., DeWeck, O., Hong, Y.

#### **Publication series**

Name: International Conference on Engineering Design

Publisher: DESIGN SOC

ISSN (Print): 2220-4334

Keywords: product-service systems, design engineering, value, STRATEGY

Source: WOS

Source ID: 000360582600033

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Intracavity double diode structures with GaInP barrier layers for thermophotonic cooling**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: Semiconductor Technology and Applications, Research group: Ultrafast and intense lasers

Contributors: Tiira, J., Radevici, I., Haggren, T., Hakkarainen, T., Kivisaari, P., Lyytikäinen, J., Aho, A., Tukiainen, A., Guina, M., Oksanen, J.

Publication date: 17 Feb 2017

#### **Host publication information**

Title of host publication: Proc. SPIE 10121 : Optical and Electronic Cooling of Solids II

Volume: 10121

Publisher: SPIE

Article number: 1012109

ISBN (Electronic): 9781510606838

#### **Publication series**

Name: Proceedings of SPIE

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ISSN (Electronic): 1996-756X

DOIs:

10.1117/12.2250843

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **Investigating Auditory Human-Machine Interaction: Analysis and Classification of Sounds Commonly Used by Consumer Devices**

Many common consumer devices use a short sound indication for declaring various modes of their functionality, such as the start and the end of their operation. This is likely to result in an intuitive auditory human-machine interaction, imputing a semantic content to the sounds used. In this paper we investigate sound patterns mapped to "Start" and "End" of operation manifestations and explore the possibility such semantics' perception to be based either on users' prior auditory training or on sound patterns that naturally convey appropriate information. To this aim, listening and machine learning tests were conducted. The obtained results indicate a strong relation between acoustic cues and semantics along with no need of prior knowledge for message conveyance.

#### **General information**

Publication status: Published

MoE publication type: B3 Non-refereed article in conference proceedings

Organisations: Research Community on Data-to-Decision (D2D), Aristotle University of Thessaloniki, Technological Educational Institute of Ionian Islands, Ionian University

Contributors: Drossos, K., Kotsakis, R., Pappas, P., Kalliris, G., Floros, A.

Number of pages: 9

Publication date: May 2013

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Title of host publication: Audio Engineering Society Convention 134

Publisher: AES Audio Engineering Society

Article number: 8812

URLs:

<http://www.aes.org/e-lib/browse.cfm?elib=16713>

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### **In vitro characterization of arylhydrazones of active methylene derivatives**

Arylhydrazones of active methylene compounds (AHAMCs) are potent chemotherapy agents for the cancer treatment. AHAMCs enhance the apoptotic cell death and antiproliferation properties in cancer cells. In this study, a series of AHAMCs, 13 compounds, was assayed for cytotoxicity, apoptosis, externalization of phosphatidylserine, heterogeneity and cellular calcium level changes. The in vitro cytotoxicity study against HEK293T cells suggests that AHAMCs have significant cytotoxic effect over the concentrations. Top 5 compounds, 5-(2-(2-hydroxyphenyl) hydrazono)pyrimidine-



2,4,6(1H,3H,5H)-trione (5), 4-hydroxy-5-(2-(2,4,6-trioxo-tetrahydro-pyrimidin-5(6H) ylidene)hydrazinyl)benzene-1,3-disulfonic acid (6), 5-chloro-3-(2-(4,4-dimethyl-2,6-dioxocyclohexylidene)hydrazinyl)-2-hydroxybenzenesulfonic acid (8), 5-(2-(4,4-dimethyl-2,6-dioxocyclohexylidene)hydrazinyl)-4-hydroxybenzene-1,3-disulfonic acid (9) and 2-(2-sulphonylhydrazo)malononitrile (10) were chosen for the pharmacodynamics study. Among these, compound 5 exhibited the better cytotoxic effect with the  $IC_{50}$  of  $50.86 \pm 2.5$  mM. DNA cleavage study revealed that 5 induces cell death through apoptosis and shows more effects after 24 and/or 48 h. Independent validation of apoptosis by following the externalization of phosphatidylserine using Annexin-V is also in agreement with the potential activity of 5. Single cell image analysis of Annexin-V bound cells confirms the presence of mixture of early, mid and late apoptotic cells in the population of the cells treated with 5 and a decreased trend in cell-to-cell variation over the phase was also identified. Additionally, intracellular calcium level measurements identified the  $Ca^{2+}$  up-regulation in compound treated cells. A brief inspection of the effect of the compound 5 against multiple human brain astrocytoma cells showed a better cell growth inhibitory effect at micro molar level. These systematic studies provide insights in the development of novel AHAMACs compounds as potential cell growth inhibitors for cancer treatment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Computational Systems Biology, Peoples' Friendship University of Russia, Baku State University, Centro de Quimica Estrutural at Instituto Superior Tecnico

Contributors: Palanivel, S., Zhurina, A., Doan, P., Chandraseelan, J. G., Khandelwal, V. K. M., Zubkov, F. I., Mahmudov, K. T., Pombeiro, A. J., Yli-Harja, O., Kandhavelu, M.

Pages: 430-436

Publication date: 2018

Peer-reviewed: Yes

### Publication information

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ASJC Scopus subject areas: Pharmacology, Pharmaceutical Science

Keywords: Apoptosis, Arylhydrazones of active methylene compounds, Chemotherapy, Cytotoxic effect, Glioma, Immortal cells, Single cell analysis

Electronic versions:

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DOIs:

10.1016/j.jsps.2017.12.018

URLs:

<http://urn.fi/URN:NBN:fi:tty-201803161382>

Source: Scopus

Source ID: 85039901326

Research output: Contribution to journal › Article › Scientific › peer-review

### In vivo single-molecule dynamics of transcription of the viral T7 Phi 10 promoter in Escherichia coli

We study the dynamics of transcription initiation of the T7 Phi 10 promoter as a function of temperature, using quantitative polymerase chain reaction (qPCR) and in vivo single-cell, single-ribonucleic acid (RNA) time-lapse microscopy. First, from the mean and squared coefficient of variation of the empirical distribution of intervals between consecutive RNA appearances in individual cells, we find that both the mean rate and noise in RNA production increase with temperature (from 20 °C to 43 °C). Next, the process is shown to be sub-Poissonian in all conditions, suggesting the existence of more than one rate-limiting step and absence of a significant ON-OFF mechanism. Next, from the kinetics of RNA production for varying amounts of T7 RNA polymerases, we find that as temperature increases, the fraction of time that the T7 RNA polymerase spends in open complex formation increases relative to the time to commit to closed complex formation, due to changes in the kinetics of open complex, closed complex, and reversibility of the closed complex formation. We conclude that the initiation kinetics of the T7 Phi 10 promoter changes with temperature due to changes in the kinetics of its rate-limiting steps.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Laboratory of Biosystem Dynamics-LBD, CA3, UNINOVA - Centre of Technology and Systems, Faculdade de Ciências e Tecnologia da Universidade Nova, Universidade de Lisboa

Contributors: Goncalves, N. S., Martins, L., Tran, H., Oliveira, S. M., Neeli-Venkata, R., Fonseca, J., Ribeiro, A. S.  
Pages: 9-15  
Publication date: 26 Jun 2016

#### Host publication information

Title of host publication: The 8th International Conference on Bioinformatics, Biocomputational Systems and Biotechnologies (BIOTECHNO2016)

Publisher: IARIA

ISBN (Electronic): 978-1-61208-488-6

URLs:

[https://www.thinkmind.org/index.php?view=article&articleid=biotechno\\_2016\\_1\\_20\\_60014](https://www.thinkmind.org/index.php?view=article&articleid=biotechno_2016_1_20_60014)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### IoT-CryptoDiet: Implementing a lightweight cryptographic library based on ecdh and ecdsa for the development of secure and rivacy-preserving protocols in contiki-ng

Even though the idea of transforming basic objects to smart objects with the aid sensors is not new, it is only now that we have started seeing the incredible impact of this digital transformation in our societies. There is no doubt that the Internet of Things (IoT) has the power to change our world and drive us to a complete social evolution. This is something that has been well understood by the research and industrial communities that have been investing significant resources in the field of IoT. In business and industry, there are thousands of IoT use cases and real-life IoT deployments across a variety of sectors (e.g. industry 4.0 and smart factories, smart cities, etc.). However, due to the vastly resource-constrained nature of the devices used in IoT, implementing secure and privacy-preserving services, using, for example, standard asymmetric cryptographic algorithms, has been a real challenge. The majority of IoT devices on the market currently employ the use of various forms of symmetric cryptography such as key pre-distribution. The overall efficiency of such implementations correlates directly to the size of the IoT environment and the deployment method. In this paper, we implement a lightweight cryptographic library that can be used to secure communication protocols between multiple communicating nodes without the need for external trusted entities or a server. Our work focuses on extending the functionalities of the User Datagram Protocol (UDP) broadcast application on the Contiki-NG Operating System (OS) platform.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences

Contributors: Frimpong, E., Michalas, A.

Number of pages: 11

Pages: 101-111

Publication date: 2020

#### Host publication information

Title of host publication: IoTBDS 2020 - Proceedings of the 5th International Conference on Internet of Things, Big Data and Security

Publisher: SCITEPRESS

Editors: Wills, G., Kacsuk, P., Chang, V.

ISBN (Electronic): 9789897584268

ASJC Scopus subject areas: Software, Computer Networks and Communications

Keywords: Contiki-NG, Elliptic Curve Cryptography, Key Distribution, Privacy, Wireless Sensor Networks.

Electronic versions:

IoT-CryptoDiet 2020

DOIs:

10.5220/0009405401010111

URLs:

<http://urn.fi/URN:NBN:fi:tuni-202009016824>

Source: Scopus

Source ID: 85089469229

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Is languaging experienced to improve understanding of structural mechanics?

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Structural Mechanics

Contributors: Rundgren, A., Joutsenlahti, J., Mäkinen, J.

Publication date: 2016

### Host publication information

Title of host publication: 44th SEFI 2016 Annual Conference : 12-15 September 2016 in Tampere, Finland

ISBN (Electronic): 9782873520144

URLs:

[http://www.sefi.be/conference-2016/papers/Engineering\\_Education\\_Research/rundgren-is-linguaging-experienced-to-improve-understanding-141\\_a.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Education_Research/rundgren-is-linguaging-experienced-to-improve-understanding-141_a.pdf)

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Jitter suppression in passive harmonic mode-locking fiber ring laser

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics

Contributors: Korobko, D. A., Zolotovskii, I. O., Gumenyuk, R. V., Fotiadi, A. A.

Pages: 238 - 247

Publication date: 2020

#### Host publication information

Title of host publication: Nonlinear Optics and its Applications 2020

Publisher: SPIE

Editors: Broderick, N. G. R., Dudley, J. M., Peacock, A. C.

#### Publication series

Name: Proceedings of SPIE

Volume: 11358

ISSN (Print): 0277-786X

Keywords: fiber ring laser, solitons, harmonic mode-locking, jitter suppression

DOIs:

10.1117/12.2556072

#### Bibliographical note

jufoid=71479

Source: Bibtex

Source ID: 10.1117/12.2556072

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### Jossakin vuoti öljy, muualla tihkuivat tiedot - etiikka katoavien rajojen ja suurten skandaalien aikakaudella

#### General information

Publication status: Published

MoE publication type: A3 Part of a book or another research book

Organisations: Pori Department

Contributors: Lilja, K.

Number of pages: 16

Pages: 85-101

Publication date: 2015

#### Host publication information

Title of host publication: Silmät auki It-etiikkaan

Publisher: EDUSKUNNAN TULEVAISUUSVALIOKUNTA

ISBN (Print): 978-951-53-3581-4

ISBN (Electronic): 978-951-53-3582-1

#### Publication series

Name: Eduskunnan tulevaisuusvaliokunnan julkaisu

Publisher: Tulevaisuusvaliokunta

No.: 12

ISSN (Print): 2342-6594

ISSN (Electronic): 2342-6608

URLs:

[https://www.eduskunta.fi/FI/tietoaeduskunnasta/julkaisut/Documents/tuvj\\_12+2014.pdf](https://www.eduskunta.fi/FI/tietoaeduskunnasta/julkaisut/Documents/tuvj_12+2014.pdf)

#### Bibliographical note

AUX=pla,"Lilja, Kari"

Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

### **Joustavat asuinympäristöt: 10 visiota aikaa kestäväään kaupunkiasumiseen**

Housing production is usually based on the belief of predictability, but this approach is inconsistent with the fact that the future cannot be predicted. Residential design and construction must therefore adopt more flexible and adaptable principles, where the impossibility of making predictions is taken into account. Adaptable housing can help to meet the forthcoming and increasingly diverse housing needs, providing housing alternatives in a sustainable way. Ten visions presented in this publication introduce a wide range of means, methods and scales to achieve adaptability and flexibility in housing construction. The publication consists of ten design assignments created during an advanced housing design course at Tampere University of Technology in spring 2013. The publication presents not only a wide range of means to achieve flexibility in housing construction, but also their direct connection with the practice. The publication is part of a study concerning user-centric spaces in the Indoor Environment Program of RYM Oy.

### **General information**

Publication status: Published

MoE publication type: D6 Edited professional books

Organisations: School of Architecture, Research group: ASUTUT

Contributors: Kotilainen, S. (ed.), Hedman, M. (ed.), Heikkinen, J. (ed.)

Number of pages: 268

Publication date: 31 Mar 2015

### **Publication information**

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos

ISBN (Print): 978-952-15-3476-8

ISBN (Electronic): 978-952-15-3477-5

Original language: Finnish

### **Publication series**

Name: Housing Design

Publisher: Tampere University of Technology. School of Architecture. Housing Design. Publication;16

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URLs:

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### **Bibliographical note**

Versio ja lupa ok 12.1.2016 KK

Research output: Book/Report › Anthology › Professional