

### **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

### **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

### **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

### **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

### **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

### **Multiple facets of innovation and business ecosystem research: the foci, methods and future agenda**

#### **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: Aarikka-Stenroos, L., Peltola, T., Rikkiev, A., Saari, U.

Pages: 1-33

Publication date: 19 Jun 2016

#### **Host publication information**

Title of host publication: XXVII ISPIM Innovation Conference 2016 : Porto, 19-22 June, 2016

ISBN (Electronic): 978-952-265-929-3

URLs:

<http://search.proquest.com/docview/1803692429?pq-origsite=gscholar>

Source: Bibtex

Source ID: urn:de0e11bb8d4f01574e47a23803543bc1

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

### **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

### **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

## 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

## 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

## The effects of neuron morphology on graph theoretic measures of network connectivity: The analysis of a two-level statistical model

We developed a two-level statistical model that addresses the question of how properties of neurite morphology shape the large-scale network connectivity. We adopted a low-dimensional statistical description of neurites. From the neurite model

description we derived the expected number of synapses, node degree, and the effective radius, the maximal distance between two neurons expected to form at least one synapse. We related these quantities to the network connectivity described using standard measures from graph theory, such as motif counts, clustering coefficient, minimal path length, and small-world coefficient. These measures are used in a neuroscience context to study phenomena from synaptic connectivity in the small neuronal networks to large scale functional connectivity in the cortex. For these measures we provide analytical solutions that clearly relate different model properties. Neurites that sparsely cover space lead to a small effective radius. If the effective radius is small compared to the overall neuron size the obtained networks share similarities with the uniform random networks as each neuron connects to a small number of distant neurons. Large neurites with densely packed branches lead to a large effective radius. If this effective radius is large compared to the neuron size, the obtained networks have many local connections. In between these extremes, the networks maximize the variability of connection repertoires. The presented approach connects the properties of neuron morphology with large scale network properties without requiring heavy simulations with many model parameters. The two-steps procedure provides an easier interpretation of the role of each modeled parameter. The model is flexible and each of its components can be further expanded. We identified a range of model parameters that maximizes variability in network connectivity, the property that might affect network capacity to exhibit different dynamical regimes.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Computational Neuro Science-CNS, University of Oslo

Contributors: Acimovic, J., Mäki-Marttunen, T., Linne, M.

Publication date: 10 Jun 2015

Peer-reviewed: Yes

#### Publication information

Journal: Frontiers in Neuroanatomy

Volume: 9

Issue number: June

Article number: 76

ISSN (Print): 1662-5129

Ratings:

Scopus rating (2015): CiteScore 2.73 SJR 1.852 SNIP 0.782

Original language: English

ASJC Scopus subject areas: Anatomy, Neuroscience (miscellaneous), Cellular and Molecular Neuroscience

Keywords: Graph theory, Motifs, Network connectivity, Neurite density field, Neuron morphology, Theoretical model

DOIs:

10.3389/fnana.2015.00076

Source: Scopus

Source ID: 84935865748

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

#### Sound Event Detection in Multichannel Audio Using Spatial and Harmonic Features

In this paper, we propose the use of spatial and harmonic features in combination with long short term memory (LSTM) recurrent neural network (RNN) for automatic sound event detection (SED) task. Real life sound recordings typically have many overlapping sound events, making it hard to recognize with just mono channel audio. Human listeners have been successfully recognizing the mixture of overlapping sound events using pitch cues and exploiting the stereo (multichannel) audio signal available at their ears to spatially localize these events. Traditionally SED systems have only been using mono channel audio, motivated by the human listener we propose to extend them to use multichannel audio. The proposed SED system is compared against the state of the art mono channel method on the development subset of TUT sound events detection 2016 database. The proposed method improves the F-score by 3.75% while reducing the error rate by 6%.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Signal Processing, Research group: Audio research group - ARG, Research group: Audio research group

Contributors: Adavanne, S., Parascandolo, G., Pertilä, P., Heittola, T., Virtanen, T.

Pages: 6-10

Publication date: 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  
URLs:

<http://urn.fi/URN:ISBN:978-952-15-3807-0>

Additional files:

Adavanne\_DCASE2016

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

## VisualLabel: An Integrated Multimedia Content Management and Access Framework

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Pervasive Computing, Research group: Software Engineering and Intelligent Systems, Arcada University of Applied Sciences, Aalto University, department of Computer Science, Lynx Technology Finland Oy, Aalto University

Contributors: Ahmad, I., Rantanen, P., Sillberg, P., Laaksonen, J., Liu, S., Forss, T., Malik, A., Nieminen, M., Shetty, R., Ishikawa, S., Kallio, J., Saarinen, J. P., Gabbouj, M., Soini, J.

Number of pages: 22

Pages: 332-353

Publication date: 2017

### Host publication information

Title of host publication: The Proceedings of the 27th International Conference on Information Modelling and Knowledge Bases, EJC 2017 : June 5-9, 2017, Krabi, Thailand

ISBN (Electronic): 978-616-407-165-0

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

## 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

### **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

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

### **The circular economy of projects**

#### **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: Ahola, T., Martinsuo, M.

Publication date: Jun 2019

#### **Host publication information**

Title of host publication: European Academy of Management Conference EURAM 2019 : 26-28 June, Lisbon, Portugal

ISBN (Electronic): 978-2-9602195-1-7

#### **Publication series**

Name: European academy of management annual conference

ISSN (Print): 2466-7498

URLs:

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

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

### **Vehicle Mass Estimation for Hydraulic Drive System using Longitudinal Motion Model**

The real-time mass estimation of the vehicle is applied for the machine with the hydraulic drive system. The mass estimation is based on the longitudinal drive model comprising the model of hydraulic drive transmission. The resistance forces of the longitudinal motion such as the air drag, rolling resistance and friction of the drive system are modelled. The actual mass of the vehicle is deduced from the measured hydraulic torque and from the force causing the acceleration. As the aerodynamic drag, rolling resistance, road grade load and transmission losses have a significant share from the total drive torque, the effects of these forces are taken account. Further, the estimated mass data is classified by recognising operation conditions where the mass estimation is accurate. After a short acceleration-deceleration period, the measured signals provide enough data for estimating the mass of the

vehicle. The experimental tests are run with a middle-size wheel loader and with a typical work cycle resulting  $\pm 5\%$  accuracy from the real mass. Furthermore, the proposed model and recognition of the operation conditions are applicable to estimate also other vehicle parameters such as friction force or road grade.

#### 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

Contributors: Ahopelto, M., Krogerus, T., Huhtala, K.

Number of pages: 10

Pages: 433-442

Publication date: May 2015

#### Host publication information

Title of host publication: The Fourteenth Scandinavian International Conference on Fluid Power, SICFP15

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

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

#### Publication series

Name: The Fourteenth Scandinavian International Conference on Fluid Power, SICFP15

ISSN (Electronic): 2342-2726

Keywords: Longitudinal motion, mass estimation, hydraulic drive system, wheel loader

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3530-7> (Link to conference publication)

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

#### Keyframe-based video summarization with human in the loop

In this work, we focus on the popular keyframe-based approach for video summarization. Keyframes represent important and diverse content of an input video and a summary is generated by temporally expanding the keyframes to key shots which are merged to a continuous dynamic video summary. In our approach, keyframes are selected from scenes that represent semantically similar content. For scene detection, we propose a simple yet effective dynamic extension of a video Bag-of-Words (BoW) method which provides over segmentation (high recall) for keyframe selection. For keyframe selection, we investigate two effective approaches: local region descriptors (visual content) and optical flow descriptors (motion content). We provide several interesting findings. 1) While scenes (visually similar content) can be effectively detected by region descriptors, optical flow (motion changes) provides better keyframes. 2) However, the suitable parameters of the motion descriptor based keyframe selection vary from one video to another and average performances remain low. To avoid more complex processing, we introduce a human-in-the-loop step where user selects keyframes produced by the three best methods. 3) Our human assisted and learning-free method achieves superior accuracy to learning-based methods and for many videos is on par with average human accuracy.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: Vision

Contributors: Ainasoja, A. E., Hietanen, A., Lankinen, J., Kämäräinen, J.

Number of pages: 10

Pages: 287-296

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: Optical flow descriptors, Region descriptors, Video summarization, Visual bag-of-words

DOIs:

10.5220/0006619202870296

#### Bibliographical note

INT=sgn,"Lankinen, Jukka"

Source: Scopus

Source ID: 85047872595



### **Smartphone teleoperation for self-balancing telepresence robots**

Self-balancing mobile platforms have recently been adopted in many applications thanks to their light-weight and slim build. However, inherent instability in their behaviour makes both manual and autonomous operation more challenging as compared to traditional self-standing platforms. In this work, we experimentally evaluate three teleoperation user interface approaches to remotely control a self-balancing telepresence platform: 1) touchscreen button user interface, 2) tilt user interface and 3) hybrid touchscreen-tilt user interface. We provide evaluation in quantitative terms based on user trajectories and recorded control data, and qualitative findings from user surveys. Both quantitative and qualitative results support our finding that the hybrid user interface (a speed slider with tilt turn) is a suitable approach for smartphone-based teleoperation of self-balancing telepresence robots. We also introduce a client-server based multi-user telepresence architecture using open source tools.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Computing Sciences  
Contributors: Ainasoja, A. E., Pertuz, S., Kämäräinen, J.  
Number of pages: 8  
Pages: 561-568  
Publication date: 2019

#### **Host publication information**

Title of host publication: VISIGRAPP 2019 - Proceedings of the 14th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications  
Publisher: SCITEPRESS  
Editors: Kerren, A., Hurter, C., Braz, J.  
ISBN (Electronic): 9789897583544  
ASJC Scopus subject areas: Computer Science Applications, Computer Vision and Pattern Recognition, Computer Graphics and Computer-Aided Design  
Keywords: Teleoperation, Telepresence, User Interface  
Electronic versions:  
VISAPP\_2019\_199  
DOIs:  
10.5220/0007406405610568  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201908282038>  
Source: Scopus  
Source ID: 85068231086

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

### **Spatial borders and affordances of a temporary school building – Enhancing the school engagement and learning experience**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering  
Contributors: Airo, K., Vaara, L., Nenonen, S.  
Pages: 715-725  
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

### **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

## Riding for a fall in outsourced ISD: Knowledge transfer challenges between the onshore vendor and the offshored unit

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), Tampere University of Technology  
Contributors: Alanne, A., Pekkola, S.  
Number of pages: 17  
Pages: 124-140  
Publication date: 2015

### Host publication information

Title of host publication: Achieving Success and Innovation in Global Sourcing: Perspectives and Practices : 9th Global Sourcing Workshop 2015, La Thuile, Italy, February 18-21, 2015, Revised Selected Papers  
Place of publication: Germany  
Publisher: Springer Verlag  
Editors: Oshri, I., Kotlarsky, J., Willcocks, L.  
ISBN (Print): 978-3-319-26738-8  
ISBN (Electronic): 978-3-319-26739-5

### Publication series

Name: Lectures Notes in Business Information Processing  
Volume: 236  
ISSN (Print): 1865-1348  
DOIs:  
10.1007/978-3-319-26739-5\_7  
URLs:  
<http://www.globalsourcing.org.uk/2013/05/the-8th-global-sourcing-workshop-23-26-of-march-2014-call-for-papers-released/>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

## Riding for a fall in outsourced ISD: Transferring knowledge between onshore vendor and offshored unit

### General information

Publication status: Published  
MoE publication type: D3 Professional conference proceedings  
Organisations: Department of Information Management and Logistics, Research group: Novi  
Contributors: Alanne, A., Pekkola, S.  
Publication date: 18 Feb 2015

### Host publication information

Title of host publication: 9th Global Sourcing Workshop 2015 : La Thuile, Italy, February 18-21, 2015  
URLs:  
<http://www.globalsourcing.org.uk/2013/05/the-8th-global-sourcing-workshop-23-26-of-march-2014-call-for-papers-released/>

### **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

### **Nonperturbative nonlinear optics in liquid crystals**

We show that reorientational nematic liquid crystals are an ideal workbench for the investigation of non-perturbative nonlinear optical effects and report light self-steering, power-controlled negative refraction and spontaneous symmetry breaking.

#### **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 Roma Tre, Roma Tre University, NooEL Nonlinear Opt & OptoElect Lab, University of Southampton, United Kingdom, Univ Porto, Universidade do Porto, Fac Ciencias, Ctr Fis Porto

Contributors: Alberucci, A., Piccardi, A., Kravets, N., Buchnev, O., Pannian, J. C., Assanto, G.

Publication date: 2016

#### **Host publication information**

Title of host publication: Laser science 2016

Publisher: Optical Society of America (OSA)

Article number: JW4A.12

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

URLs:

<https://www.osapublishing.org/abstract.cfm?uri=LS-2016-JW4A.12>

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

#### 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 the 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 the error increases 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 0.56 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

#### 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

### 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

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

### Mean and variability in RNA polymerase numbers are correlated to the mean but not the variability in size and composition of Escherichia coli cells

Cell morphology differs with cell physiology in general and with gene expression in particular. We investigate the degree to which these relationships differ with medium richness. Using Escherichia coli cells with fluorescently tagged  $\beta'$  subunits, flow cytometry, and statistical analysis, we study at the single-cell level the correlation between parameters associated to cell morphology and composition (FSC, SSC, and Width channels) and GFP tagged RNA polymerase (RNAP) levels

(FITC channel). From measurements in three media differing in richness (M63, LB, and TB) and, thus, cell growth rates, we find that the mean and cell-to-cell variability in RNAP levels are correlated to the mean values of FSC, SSC, and/or Width. Further, in all growth conditions considered, RNAP levels are positively correlated to FSC, SSC, and Width at the single-cell level, with the correlation decreasing for increasing medium richness. Overall, the results suggest that the mean and cell-to-cell variability in levels of RNAP, a master regulator of gene expression, are correlated to the mean values of the parameters assessing the cellular morphology and composition, as measured by flow cytometry, but they do not correlate to the degree of variability of these parameter values.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Laboratory of Biosystem Dynamics-LBD, BioMediTech, Department of Chemistry and Bioengineering

Contributors: Almeida, B., Chauhan, V., Kandavalli, V., Ribeiro, A.

Number of pages: 8

Pages: 226-233

Publication date: 2019

#### **Host publication information**

Title of host publication: BIOINFORMATICS 2019 - 10th International Conference on Bioinformatics Models, Methods and Algorithms, Proceedings; Part of 12th International Joint Conference on Biomedical Engineering Systems and Technologies, BIOSTEC 2019

Publisher: SCITEPRESS

Editors: De Maria, E., Gamboa, H., Fred, A.

ISBN (Electronic): 9789897583537

ASJC Scopus subject areas: Biomedical Engineering, Electrical and Electronic Engineering

Keywords: Cell-to-cell Variability, Flow Cytometry, RNA Polymerase, Single-cell Biology, Statistical Analysis

DOIs:

10.5220/0007456102260233

Source: Scopus

Source ID: 85064697521

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

### Mid-Infrared Sources for Ultra-Broadband Cavity Enhanced Spectroscopy

We developed an all-fiber based supercontinuum source spanning from 900 to 3700 nm. We performed incoherent broadband cavity enhanced absorption spectroscopy using that source and were able to detect multicomponent simultaneously.

### 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

Contributors: Amiot, C. G., Ryczkowski, P., Aalto, A., Toivonen, J., Genty, G.

Number of pages: 2

Publication date: Oct 2016

### Host publication information

Title of host publication: Frontiers in Optics 2016

Publisher: OSA

Article number: FTh5A.3

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

URLs:

<https://www.osapublishing.org/abstract.cfm?URI=FiO-2016-FTh5A.3>

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

### On Design and Development of Super-FRS main tunnel Remote Handling System Concept

The Super Fragment Separator (Super-FRS) main tunnel at the Facility of Antiproton and Ion Research (FAIR) consists of 11 focal planes with vacuum chamber to perform physics experiments. Four of the vacuum chambers at four different focal planes contain activated beamline inserts that requires remote maintenance. The remote maintenance will be performed using automated equipment that can safely conduct remote manipulation on to the activated beamline inserts. In this paper we discuss the conceptual design and development process for the remote handling (RH) system to be used in the Super-FRS main tunnel environment. The RH system for Super-FRS main tunnel is presented here along with conceptual design phase methodology. The main features of the new concept design are to utilize the state of the art of the shelf technologies and products from the industry, which in accordance to Super-FRS needs and requirements to make it more reliable and available during the remote maintenance tasks. The selected design concept are verified with virtual reality simulations and are fulfilling the requirements defined during the concept design phase, including structural, assembly sequence, safety and reliability

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Intelligent Hydraulics and Automation, Research group: Mobile manipulation, GSI Helmholtz Ctr Heavy Ion, FRS Dept, GSI Helmholtz Ctr Heavy Ion, FRS Dept, Super FRS Target Area, GSI Helmholtz Ctr Heavy Ion, FRS Dept, Super FRS Facil

Contributors: Amjad, F., Weick, H., Mattila, J., Kozlova, E., Schloer, C.

Number of pages: 7

Pages: 188-194

Publication date: 2014

### Host publication information

Title of host publication: 2014 IEEE 17th International Conference on Intelligent Transportation Systems (ITSC), 8-11 Oct. 2014, Qingdao

Publisher: IEEE

ISBN (Print): 978-1-4799-6078-1

Keywords: Super-FRS, beamline inserts, Remote Handling, FAIR, FRAGMENT SEPARATOR FRS, GSI

DOIs:

10.1109/ITSC.2014.6957689

#### **Bibliographical note**

EXT="Amjad, Faraz"

Source: WOS

Source ID: 000357868700047

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

#### **Knowledge Management and Emerging Collaborative Networks in Tourism Business Ecosystems**

If we critically look at the evolution of the Tourism Industry (TI), we can note that, in the past decade, nothing has changed as much as ICTs and the Internet which caused an extensive transformation of the TI. Both demand and supply of ICT, together with innovation in transportation and international trade agreements, have evolved the tourism sector in operational workflows, management and marketing of new of tourism experiences. The massive use of new technologies has facilitated the rise of new flat organizational models where traditional brokers have disappeared, replaced by direct connections between local providers and tourists, or they have been reconfigured into new forms of dynamic and web-based tourism package providers. The depicted industry evolution shows potential, unthinkable just a few years ago, for local service providers usually marginalized from main tourism flows, due to their small sizes, and who are unable to compete in the globalized market. In many regions characterized by a niche tourism vocation, local tourism operators have started organizing themselves spontaneously in Collaborative Networks in order to create aggregate tourism offers that are able to compete with big tourism operators thus transforming regions with potential and vocation in real tourism destinations. The main socialeffect of instantiating these tourism partnerships, is the stimulus towards Tourism Business Ecosystems (TBEs) giving local tourism service providers a means for economic growth. The aim of this paper is to describe how the organizational paradigm of CNs, applied to the TBEs knowledge management and supported by ICTs, can be the key means for the growth of emerging TBEs. Such models are able to reengineer the tourism destination management model in order to gain much more flexibility in service provision and provide tourists the possibility to live an augmented tourism experience. In this paper we point out that tourism destinations, in an effort to give services able to actively support each phase of the 2.0 tourist lifecycle, can benefit from collaborative network models.

#### **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: Ammirato, S., Michele Felicetti, A., Della Gala, M., Aramo-Immonen, H., Jussila, J.

Number of pages: 7

Pages: 19-26

Publication date: 3 Sep 2015

#### **Host publication information**

Title of host publication: Proceedings of the 16th European Conference on Knowledge Management (ECKM 2015), University of Udine, Italy, 3-4 September 2015

Place of publication: Reading, UK

Publisher: Academic Conferences and Publishing International Limited

Editors: Massaro, M., Garlatti, A.

ISBN (Print): 978-1-910810-46-0

ISBN (Electronic): 978-1-910810-47-7

Keywords: tourism business ecosystem, collaborative network, ICT, tourist 2.0 lifecycle

#### **Bibliographical note**

ORG=pla,0.5

ORG=tlo,0.5

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

#### **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

#### **Kosteus- ja mikrobivaurioiden laajuus kuntien rakennuksissa**

##### **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, Research area: Structural Engineering  
Contributors: Annila, P., Hellemaa, M., Suonketo, J., Pentti, M.  
Number of pages: 6  
Pages: 95-100  
Publication date: 11 Mar 2015

#### Host publication information

Title of host publication: Sisäilmastoseminaari 2015 SIY Raportti 33, Messukeskus, Helsinki 11.3.2015  
Place of publication: Juva  
Editors: Säteri, J., Ahola, M.  
ISBN (Print): 978-952-5236-43-9

#### Publication series

Name: SIY Raportti  
Volume: 33

#### Bibliographical note

AUX=rak,"Hellemaa, Matti"  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### Valtion tukemien homekorjaushankkeiden arviointi -jatkotutkimus (HKPro 3)

#### 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, Research area: Structural Engineering  
Contributors: Annila, P., Marttila, T., Kero, P., Suonketo, J., Pentti, M.  
Number of pages: 6  
Pages: 107-112  
Publication date: 11 Mar 2015

#### Host publication information

Title of host publication: Sisäilmastoseminaari 2015 SIY Raportti 33, Messukeskus, Helsinki 11.3.2015  
Volume: Sisäilmayhdistys raportti 33  
Place of publication: Juva  
Editors: Säteri, J., Ahola, M.  
ISBN (Print): 978-952-5236-43-9

#### Publication series

Name:  
No.: 33  
Name: Sisäilmayhdistys  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### 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: Annila, 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

## Kosteusvaurioiden vakavuus kuntien rakennuksissa

### General information

Publication status: Published

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

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

Contributors: Annala, P., Lahdensivu, J., Suonketo, J., Pentti, M., Laukkarinen, A., Vinha, J.

Number of pages: 6

Pages: 135-140

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: 1

Place of publication: Tampere

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.

ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

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

## Managing Cultural Knowledge in Project Execution

The purpose of this study was to explore the factors through which the project implementation phase could be enhanced by cultural knowledge. The importance of studying this subject is that the exploitation of cultural knowledge (Hofstede & Hofstede 2005, Schwartz 1999, Ng et al. 2006, Hall 1976, Lewis 2006) and competence (Koskinen 2001) is still limited in the constantly increasing project-based business (Turner 1999, Arto et al. 2011, PMBOK 2004) in the international field. Two objectives exist in this study: understanding project complexity through the main challenges in project implementation and evaluating the impacts of the cultural factors behind them. We propose the multiple case study approach (Eisenhard & Graebner 2007, Yin 2014). The prominence of cultural knowledge in project implementation is difficult to determine, so the research design has exploratory features. Case project A was implemented in Sub-Saharan Africa and Case project B in the Near East. Interviewed managers worked either from distance and only visited the target country periodically or represented the perspective of an operational level manager working in the host country. The main cultural challenges that occurred in the projects are defined by these interviewees. This methodology gives evidence of the main challenges in the two case projects and clarifies the multiplicity of cultural issues in the project context. The importance of the subject was highlighted and the interviewed managers demonstrated that cultural knowledge can offer benefits. Numerous studies exist concerning the challenges in the project business (Deresky 2014, Turner 1999). The outcomes of the research stressed the uniqueness of projects and the situational need for cultural knowledge. The results highlighted the pervasive nature of culture in the international playing field. Companies are obliged to adjust their operations according to environments with multifaceted requirements. National cultures not only prevail within the borders of geographical areas, but are also reflected in company procedures. Therefore, their overall impact needs to be considered in international projects.

### 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: Aramo-Immonen, H., Hietaoja, H., Jussila, J. J., Ammirato, S.

Number of pages: 12

Pages: 1085-1096

Publication date: 2015

### Host publication information

Title of host publication: 10th International Forum on Knowledge Asset Dynamics, IFKAD 2015, Bari, Italy : Culture, Innovation and Entrepreneurship: connecting the knowledge dots  
Volume: 10  
Place of publication: Bary  
Publisher: IKAM Centro Studi & Ricerche  
ISBN (Electronic): 978-88-96687-07-9  
Keywords: Project management, Cultural Knowledge, Project execution, Developing country, Multicultural projects

#### **Bibliographical note**

ORG=pla,0.5

ORG=tlo,0.5

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

#### **Meeting radical change: SMEs and innovation capabilities and strategic foresight**

##### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pori Department, Research group: Business Ecosystems, Networks and Innovations, University of Örebro Business School, University of Exeter Business School, Tampere Univ Technol, Tampere University of Technology

Contributors: Aramo-Immonen, H., Bessant, J., Heinonen, T., Öberg, C., Trifilova, A.

Publication date: 16 Jun 2015

##### **Host publication information**

Title of host publication: The Proceedings of the XXVI ISPIM Conference – Shaping the Frontiers of Innovation Management, Budapest, Hungary on 14-17 June 2015

Publisher: International Society for Professional Innovation Management ISPIM

ISBN (Print): 978-952-265-779-4

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

#### **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

#### **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

#### 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 0.52 SJR 0.214 SNIP 0.348  
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

#### 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

#### 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-wight structures, Research group: Metal and Light-wight 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

**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

#### 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

#### What's inside a rubble pile asteroid? DiSCUS - A tomographic twin radar Cubesat to find out

A large fraction of asteroids with diameter  $d > 240$  m are suspected to be loose piles of rocks and boulders bound together mainly by gravity and only weak cohesion. Still to date the size and distribution of voids and monolithic fragments inside these "rubble-piles" are not known. To perform a full tomographic interior reconstruction a bistatic CubeSat configuration has been investigated by Tampere University of Technology (TUT), Radar Systemtechnik GmbH (RST) and the Max Planck Institute for Solar System Research (MPS). The concept is based on two 6U CubeSats, both carrying an identical 1U sized stepped frequency radar. As stepped frequency radars can be built compact, require less power and generate less data volume compared to other radar applications they are well-suited for small satellite platforms. In 2017 the Concurrent Design Facility of ESA/ESTEC conducted two studies relevant for DiSCUS. In the Small Planetary Probes (SPP) study DiSCUS served as a reference payload for a piggyback mission to a Near-Earth Asteroid (NEA) or even a

Main Belt Asteroid (MBA). The M-ARGO study investigated a stand-alone mission to a NEA, with a DISCUS sized instrument. Based on the spacecraft design of SPP and M-ARGO we could prove the instrument requirements as feasible and evaluate our science case from the orbits and mission duration that have been identified by these studies. Using inversion methods developed for medical tomography the data would allow to reconstruct the large scale interior structure of a small body. Simulations have shown that the measurement principle and the inversion method are robust enough to allow full reconstruction of the interior even if the orbits do not cover the entire surface of the asteroid. The measurement results of the mission will help to gain a better understanding of asteroids and the formation mechanisms of the solar system. In addition, the findings will increase the predictability of asteroid impact consequences on Earth and improve future concepts of asteroid deflection.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Computing Sciences, Research group: Inverse Problems, Max Planck Institute for Solar System Research, GomSpace A/S, 3D Profi GmbH, RST Radar Systemtechnik AG, University of Bern, MEW-Aerospace UG, GMV Innovating Solutions S.L, Royal Observatory of Belgium

Contributors: Bambach, P., Deller, J., Martel, J., Vilenius, E., Goldberg, H., Sorsa, L., Pursiainen, S., Takala, M., Wurster, A., Braun, H. M., Lentz, H., Jutzi, M., Wittig, M., Chitu, C. C., Ritter, B., Karatekin, O.

Publication date: 2018

#### Host publication information

Title of host publication: 69th International Astronautical Congress, IAC 2018

#### Publication series

Name: Proceedings of the International Astronautical Congress, IAC

ISSN (Print): 0074-1795

ASJC Scopus subject areas: Aerospace Engineering, Astronomy and Astrophysics, Space and Planetary Science

#### Bibliographical note

jufoid=85566

Source: Scopus

Source ID: 85065313725

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

#### LTCC-Based Multi-Electrode Arrays for 3D in Vitro Cell Cultures

Current technologies to monitor neuronal cultures in vitro are based on 2-dimensional (2D) multi-electrode arrays and cell cultures. The complexity of actual high-level neurobiological systems requires 3-dimensional (3D) cultures and 3D electrode arrays to improve our understanding of such systems. The realization calls for smart multilayer and packaging technology. Our approach uses low-temperature cofired ceramics (LTCC) for the design of a 3-dimensional multi-electrode array (3D MEA). An LTCC multilayer board with gold electrodes forms the basis of the system. The layout of the 3D MEA is designed to fit into widely used measurement adapters for 2D signal recordings, enabling data processing identical to that of established chips. Design and manufacturing of the new 3D device as a basic tool for the investigation of 3D cell cultures are described. Features of thick-film gold electrodes are characterized by means of microscopic and spectroscopic tools complemented with complex impedance measurements. Possible biological applications for in vitro electrophysiological measurements were evaluated based on cell cultures of primary neurons, seeded directly to the chip surface. It was shown that activity can be measured over six months.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Electronics and Communications Engineering, Research group: Computational Biophysics and Imaging Group, BioMediTech, Integrated Technologies for Tissue Engineering Research (ITTE), TU Ilmenau, Technische Universitat Ilmenau, Inst Mikro & Nanotechnologien MacroNano, ETH, Swiss Federal Institute of Technology Zurich, Inst Biomed Engn, Lab Biosensors & Bioelect

Contributors: Bartsch, H., Himmerlich, M., Fischer, M., Demko, L., Hyttinen, J., Schober, A.

Number of pages: 10

Pages: 315-324

Publication date: Dec 2015

Peer-reviewed: Yes

#### Publication information

Journal: Journal of Ceramic Science and Technology

Volume: 6

Issue number: 4

ISSN (Print): 2190-9385

Ratings:



Scopus rating (2015): CiteScore 0.53 SJR 0.237 SNIP 0.434

Original language: English

Keywords: Low-temperature cofired ceramics (LTCC), three-dimensional hybrid multi-electrode array (3D MEA), in vitro cell culture, thick-film gold electrode, primary neuron culture, GROWTH

DOIs:

10.4416/JCST2015-00056

Source: WOS

Source ID: 000367422100010

Research output: Contribution to journal › Article › 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

## 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:tyy-201806041919>. Embargo ended: 18/05/19

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

### **Modeling the process of dynamic resource sharing between LTE and NB-IoT services**

The Internet of Things (IoT) undergoes fundamental changes, expanding its infrastructure with more advanced and mobile devices. As the IoT develops, the existing cellular communication technologies often do not provide sufficient coverage while modern IoT terminals are often expensive and characterized by a short battery life. To address these issues, in Release 13 (LTE Advanced Pro) published in 2016, 3GPP consortium has proposed the Narrow-Band IoT (NB-IoT) technology as an efficient way to provide a wide range of new capabilities and services in a wireless cellular network. Having specified three operational regimes, 3GPP did not provide guidelines on the way resource sharing has to be done between LTE and NB-IoT traffic. In this paper, the in-band NB-IoT service model is presented, where a certain amount of LTE radio resources are exclusively allocated to LTE and NB-IoT users while the rest are shared between them. We analyze the proposed system for performance metrics of interest including NB-IoT and LTE session drop probabilities and resource utilization.

#### **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, Peoples' Friendship University of Russia, Russian Academy of Sciences, Department of Applied Probability and Informatics, Institute of Informatics Problems

Contributors: Begishev, V., Samuylov, A., Moltchanov, D., Samouylov, K.

Number of pages: 12

Pages: 1-12

Publication date: 2017

#### **Host publication information**

Title of host publication: Distributed Computer and Communication Networks - 20th International Conference, DCCN 2017, Proceedings

Publisher: Springer Verlag

ISBN (Print): 9783319668352

#### **Publication series**

Name: Communications in Computer and Information Science

Volume: 700

ISSN (Print): 1865-0929

ASJC Scopus subject areas: Computer Science(all)

Keywords: Analytical model, Internet of things, NB-IoT (narrow band IoT), Resource sharing, Session drop probability

DOIs:

10.1007/978-3-319-66836-9\_1

Source: Scopus

Source ID: 85029718143

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

### **Need of Services and Understanding of Service Providers in Water and Sanitation: A Case of Ethiopia**

Water and sanitation services are basic requirements for the development of a nation. The provision of these services should necessarily be arranged by the national government through policies, and long-term and short-term plans. Moreover, follow-up of the implementation of principle in policies and plans will determine the service level on the ground. This paper is intended to explore gaps in the policy-making and implementation in the areas of water supply in Ethiopia. Review of Ethiopian water sector policy, universal access plans, growth and transformation plans and other literature are employed to achieve the objective of this paper. Moreover, the experiences of the first author that he acquired during data collection for his doctoral study are taken into account to draw conclusions. Hence, the study shows that standards set at the federal level fail to consider the actual situation on the ground and the experts at implementation level are to interpret some aspects of the policy ambiguously. Therefore, this paper recommends the policy-makers and higher officials to consult the people in charge of putting policies in effect to have contextualized and work for uniform desired- output. Service providers need to understand the notion of the receiving community in order to provide the services that satisfy the users.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Behailu, B. M., Mattila, H.

Number of pages: 10

Pages: 431-440

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

Publisher: Tampere University of Technology

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)

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3744-8>

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

### 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 Engr Design & Prod, Sch Engr

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

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

### **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](https://doi.org/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

### **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-II/F 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

#### Potentials of web standards for automation control in manufacturing systems

Web standards developed mainly by W3C and OASIS shape general IT domain and its applications. Due to the scale of web applications, the web standards have matured to deal with the typical situations of finding the right node on the network, reconfiguring the routing for messaging, using common standards for representing graphical information and many others. Industrial manufacturing can benefit from the web standards due to the interoperability and simplified application integration. This article reviews the current use of web standards in the industrial automation domain. In addition, the manuscript describes and discusses the potentials of using web standards at all the levels of automation system: from high level web-based user interfaces to the industrial controllers, which are located in the lowest layer of the well known automation pyramid. Aligned with such description, the article presents a framework for Open, Knowledge Driven Manufacturing Execution Systems (OKD-MES), which allows using systematically web standards and technologies in factories

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

Contributors: Borja Ramis, F., Iarovy, S., Lobov, A., Martinez Lastra, J. L.

Number of pages: 8

Pages: 359-366

Publication date: 2015

#### Host publication information

Title of host publication: 2015 IEEE European Modelling Symposium

ISBN (Print): 978-1-5090-0206-1

DOIs:

10.1109/EMS.2015.59

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

#### Safety, Space and Structure Quality Requirements in Construction Scheduling

Abstract Quality assessment of a construction project schedule can be a challenging task for project stakeholders. A little research work has addressed quality of schedules though a good project schedule can be considered as one of the key factors of project success. The development of a reliable and easy to perform construction schedule quality assessment procedure seems to be a challenging task. Since Schedule Health Assessment of a construction project has to be strictly

related to process requirements, it is used the 3 "S" rule as a starting point and framework for obtaining improved understanding of quality of construction schedules. The 3 "S" are Safety, Space and Structure, meaning that the planned process should provide a safe working environment to construction workers, sufficient space to perform construction activities and the required sequence of construction operations and project phases. The aim of the study is to implement a schedule quality assessment method that takes into account the 3 "S" rule of construction process. The 3 "S" requirements can be successfully integrated in a Schedule Health Assessment method, but to facilitate their implementation and control a flow-line chart is needed, thus the schedule tool becomes a new requirement for construction schedule quality control.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

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: Bragadin, M. A., Kähkönen, K.

Number of pages: 8

Pages: 407-414

Publication date: 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

Keywords: Construction management, Project Control, Project Scheduling, Quality, Safety.

DOIs:

10.1016/S2212-5671(15)00193-8

URLs:

<http://www.sciencedirect.com/science/article/pii/S2212567115001938>

Source: RIS

Source ID: urn:F0EEB88647642A7A838E1B2E16C028A8

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

### **Resource – Space Charts for Construction Workspace Scheduling**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

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: Bragadin, M. A., Kähkönen, K.

Pages: 677-688

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

Publisher: Tampere University of Technology. Department of Civil Engineering

ISBN (Electronic): 978-952-15-3743-1

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3743-1>

#### **Bibliographical note**

EXT="Bragadin, Marco A."

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > 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., Björminen, 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

#### 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

#### Single-frequency 571nm VECSEL for photo-ionization of magnesium

We report the development of an intracavity-frequency-doubled vertical external-cavity surface-emitting laser (VECSEL) emitting at 571 nm for photoionization of magnesium. The laser employs a V-cavity geometry with a gain chip at the end of one cavity arm and a lithium triborate (LBO) crystal for second harmonic generation. The gain chip has a bottom-emitting design with ten GaInAs quantum wells of 7 nm thickness, which are strain compensated by GaAsP. The system is capable of producing up to  $2.4 \pm 0.1$  W (total power in two separate output beams) in the visible. The free-running relative intensity noise was measured to be below  $-55$  dBc/Hz over all frequencies from 1 Hz to 1 MHz. With acoustic isolation and temperature regulation of the laser breadboard, the mode-hop free operation time is typically over 5 hrs. To improve the long-term frequency stability, the laser can be locked to a Doppler-free transition of molecular iodine. To estimate the short-term linewidth, the laser was tuned to the resonance of a reference cavity. From analysis of the on-resonance Hänsch-Couillaud error signal we infer a linewidth of  $50 \pm 10$  kHz. Light at 285 nm is generated with an external build-up cavity containing a  $\beta$ -barium borate (BBO) crystal. The UV light is used for loading  $25\text{Mg}^+$  ions in a surface-electrode RF Paul trap. These results demonstrate the applicability and versatility of high-power, single-frequency VECSELs with intracavity harmonic generation for applications in atomic and molecular physics.

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, National Institute of Standards and Technology, Time and Frequency Division, Boulder, Colorado

Contributors: Burd, S., Leinonen, T., Penttinen, J., Allcock, D., Slichter, D., Srinivas, R., Wilson, A., Guina, M., Leibfried, D., Wineland, D.  
Number of pages: 8  
Publication date: 2 Jun 2016

#### Host publication information

Title of host publication: Proceedings of SPIE : Vertical External Cavity Surface Emitting Lasers (VECSELs) VI  
Volume: 9734  
Place of publication: San Francisco  
Publisher: SPIE  
Article number: 973411  
ISBN (Electronic): 9781628419696

#### Publication series

Name: SPIE Conference Proceedings  
ISSN (Print): 0277-786X  
ISSN (Electronic): 1996-756X  
ASJC Scopus subject areas: Atomic and Molecular Physics, and Optics  
Keywords: VECSEL, OPSL, SDL, frequency doubling, SHG, ion trapping, single-frequency, photoionization, doppler-free spectroscopy, magnesium  
DOIs:  
10.1117/12.2213398

#### Bibliographical note

JUFOID=71479

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

#### Upper bound and approximation of random access throughput over chase combining HARQ

Massive MTC (mMTC) scenarios featuring a tremendous number of devices challenge the conventional multiple access protocols, which are mostly based on classic ALOHA algorithms known for their instability at higher loads. While numerous modifications of ALOHA adopt the unrealistic assumption on the fixed number of contending users, we in this paper study a model where a random number of users activate within the slot. In particular, we explore a modification of ALOHA augmented with the Chase combining HARQ (HARQ-CC) and derive an approximation for and a simple upper bound on the system throughput. While the former perfectly matches the corresponding simulation results for the SNR of up to 10dB, the latter constitutes an increasingly tight limit as the SNR grows. Based on both analytical considerations, the resulting system throughput may be significantly improved with the optimal choice of the transmission probability and code spectral efficiency.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Electronics and Communications Engineering  
Contributors: Burkov, A., Matveev, N., Turlikov, A., Bulanov, A., Gahnina, O., Andreev, S.  
Number of pages: 5  
Pages: 143-147  
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: Decoding, Interference, Nickel, Random variables, Signal to noise ratio, Throughput, Upper bound, ALOHA, Chase combining, Hybrid-ARQ, Random multiple access, system throughput, upper bound  
DOIs:  
10.1109/ICUMT.2017.8255206

#### Bibliographical note

INT=elt,"Gahnina, O."

jufoid=72315

Source: Bibtex

Source ID: urn:d2e90d5f230392641b73d327cca99a8a

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

## Traceability of essential climate variables through forest stand reconstruction with terrestrial laser scanning

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Mathematics, Research group: MAT Inverse Problems

Contributors: Calders, K., Disney, M., Nightingale, J., Origo, N., Barker, A., Raunonen, P. A., Lewis, P., Burt, A., Brennan, J., Fox, N.

Number of pages: 3

Pages: 122-124

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

## Reducing uncertainties in above-ground biomass estimates using terrestrial laser scanning

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Mathematics, Research group: MAT Inverse Problems, Univ Melbourne, University of Melbourne, Melbourne Sch Land & Environm

Contributors: Calders, K., Burt, A., Newnham, G., Disney, M., Murphy, S., Raunonen, P., Herold, M., Culvenor, D., Armston, J., Avitabile, V., Kaasalainen, M.

Number of pages: 3

Pages: 197-199

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

## Resonant harmonic generation in AlGaAs nanoantennas using cylindrical vector beams

We use second- and third-harmonic generation with cylindrical vector beams to investigate AlGaAs nanodisks. The nonlinear emission is found to depend strongly on the interplay between tensorial nonlinearities, focal-field symmetries and resonant multipolar excitations.

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Photonics, Research group: Nonlinear Optics, Australian National University

Contributors: Camacho-Morales, R., Bautista, G., Zang, X., Xu, L., Turquet, L., Miroshnichenko, A., Lampranidis, A., Rahmani, M., Neshev, D. N., Kauranen, 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: FF1E.6

ISBN (Electronic): 978-1-943580-42-2

Electronic versions:

CLEO2018-algaas-cvb. Embargo ended: 18/05/19

DOIs:

10.1364/CLEO\_QELS.2018.FF1E.6

URLs:

<http://urn.fi/URN:NBN:fi:tty-201806041920>. Embargo ended: 18/05/19

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

### 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., Stablab, A., Mailly, D., Ulysse, C., Lafosse, X., Perruchas, S., Gacoïn, 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

### Manipulating Superparamagnetic Microparticles with an Electromagnetic Needle

Selective, precise, and high-throughput manipulation of individual superparamagnetic microparticles has profound applications in performing location-tailored in vitro biomedical studies. The current techniques for manipulation of microparticles allow only a single particle in the manipulation workspace, or simultaneous transportation of multiple microparticles in batches. In this work, a method based on a robotized electromagnetic needle for manipulation of individual superparamagnetic microparticles within a microparticle population is introduced. By automatically controlling the highly localized magnetic field of the needle, a single microparticle is selectively picked when its neighboring particle is few micrometers away. Supported by the nanometer resolution of the robotic positioner, particles are placed at sub-micrometer precision. This manipulation technique allows the creating of arbitrary patterns, sorting of microparticles based on size and morphology, and transporting of individual microparticles in 3D space. Therefore, this approach has the potential to enable more deterministic and quantitative microanalysis and microsynthesis using superparamagnetic microparticles.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Micro and Nanosystems Research Group, Research group: Bioinspired Materials and Robotics (BMR)

Contributors: Cenev, Z., Zhang, H., Sariola, V., Rahikkala, A., Liu, D., Santos, H. A., Zhou, Q.

Publication date: 2017

Peer-reviewed: Yes

#### Publication information

Journal: Advanced Materials Technologies

Volume: 3

Issue number: 1

Article number: 1700177

ISSN (Print): 2365-709X

Ratings:

Scopus rating (2017): CiteScore 3.85 SJR 1.241 SNIP 0.99

Original language: English

Electronic versions:

admt201700177

DOIs:

10.1002/admt.201700177

URLs:

<http://urn.fi/URN:NBN:fi:ty-201712212482>

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

### **Product Upgradability: Towards a Medical Analogy**

This paper explored the analogy between the medical area and product design. Many similarities, shared between the genetic mutation permitting human to ensure its survival and the product undergoing the introduction of new technologies to meet the market fluctuation, are found to propose this analogy. From creating genetic reference space to transplant technology into product, fundamental process of survival and evolution will be described and allows the parallel with a product, to understand how the evolution of product respond to future needs. It also ensures the durability of resources in an ecological perspective. We discuss the complexity of establishing the right diagnosis for directing the design to choose the right technology and to enable its future integration into a living product. This uncertainty in the technological maturity but also the integrability of this technology in the current product at first, then in the future will allow its product development. Conclusions for the use of this analogy and the justification to describe "living product" will be drawn.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: IRTES-M3M, Université de Technologie de Belfort-Montbéliard (UTBM)

Contributors: Chapuis, Y., Demoly, F., Coatanéa, E., Gomes, S.

Number of pages: 8

Pages: 148-155

Publication date: 2014

### **Host publication information**

Title of host publication: ADVANCES IN PRODUCTION MANAGEMENT SYSTEMS: INNOVATIVE AND KNOWLEDGE-BASED PRODUCTION MANAGEMENT IN A GLOBAL-LOCAL WORLD, APMS 2014, PT III

Volume: 440

Publisher: Springer-Verlag, Berlin

Editors: Grabot, B., Vallespir, B., Gomes, S., Bouras, A., Kiritsis, D.

Edition: PART 3

ISBN (Print): 9783662447321

### **Publication series**

Name: IFIP Advances in Information and Communication Technology

Publisher: SPRINGER-VERLAG BERLIN

Volume: 440

ISSN (Print): 1868-4238

ASJC Scopus subject areas: Information Systems and Management

Keywords: Changeable product, DFX, Living product, Proactive engineering, Technology introduction, Upgradability

DOIs:

10.1007/978-3-662-44733-8\_19

URLs:

<http://www.scopus.com/inward/record.url?scp=84906932728&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: WOS

Source ID: 000360158500019

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

**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

## 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

## 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 1.99 SJR 0.551 SNIP 1.116

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

### **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 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

JUFOID=72031

Source: Bibtex

Source ID: urn:7ff8bf18c5235d84d462120f1392fdd5

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

#### Performance Enhancement Of Optimized Link State Routing Protocol For Health Care Applications In Wireless Body Area Networks

Wireless Body Area Networks (WBAN) refers to the network of wearable sensor devices on a human body. The data gathered from the devices are sent to the server to take some action during an emergency. The collected data has to be successfully routed to reach the destination for an health care applications in WBAN. Hence selecting the routing protocol plays an important role in WBAN. Several researchers have proposed many routing protocols for WBAN. In this work, a novel proactive routing protocol called Energy Aware Power Save Mode Link State is proposed that modifies the existing Optimized Link State Routing protocol. The mathematical model is defined to select the best multi point relay node in a network that considers the power save mode state. The experiment is conducted using network simulator NS-3 and the result shows the substantial network performance metrics improvement in the proposed model compared to the existing.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering

Contributors: Chetan Kumar, V., Shiva Prakash, S. P., Balandin, S.

Number of pages: 9

Pages: 195-203

Publication date: Nov 2018

#### Host publication information

Title of host publication: 2018 23rd Conference of Open Innovations Association (FRUCT)

Publisher: IEEE

ISBN (Print): 978-1-5386-6943-3

ISBN (Electronic): 978-9-5268-6536-2

Keywords: Body area networks, Routing protocols, Wireless communication, Peer-to-peer computing, Quality of service, Routing

DOIs:

10.23919/FRUCT.2018.8588070

Source: Bibtex

Source ID: urn:c178e5ef1e338cad17f7c536b89f7cb3

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

#### 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](#)

#### **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](#)

#### **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

### Raitiotien seisakkeet: Yhdyskuntasuunnittelun jatkokurssi A ja B

Vuoden 2014 Yhdyskuntasuunnittelun jatkokurssin aiheena oli Tampereelle toteutettava kaupunkiraitiotie, joka tulee helpottamaan huomattavasti kulkemista Tampereella tulevaisuudessa.

Kurssi oli sisällöltään ja osallistujiltaan epätavanomainen. Osallistujia kurssilla oli useammasta eri tiedekunnasta: Tampereen teknillisen yliopiston arkkitehtiotieteiden opiskelijoita ja liikennesuunnittelun opiskelijoita, Tampereen yliopistolta psykologian sekä sosiologian opiskelijoita.

Kolmiosaisen kurssin painopiste oli urban design-osuudella, muiden ollessa vapaavalintaisia. Suunnittelukohteina poikkitieteellisesti muodostetuilla ryhmillä oli kolme Tampereen raitiotien yleissuunnitelmassa esitettyä seisaketta: Hakametsä, Turtola ja Hallila. Useat osallistajat olivat valinneet myös planning-osuuden, johon koottiin jäsenistö kunkin seisakkeen design-osuuden ryhmistä.

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: School of Architecture, Research group: Urban Planning

Contributors: Chudoba, M. (ed.), Rajaniemi, J. (ed.), Virkkala, J. (ed.)

Number of pages: 74

Publication date: 2015

### Publication information

Publisher: Tampere University of Technology, School of Architecture

ISBN (Print): 978-952-15-3456-0

ISBN (Electronic): 978-952-15-3457-7

Original language: Finnish

Electronic versions:

raitiotien\_seisakkeet

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3457-7>

### Bibliographical note

Versio ok 14.12.2015

Research output: Book/Report > Commissioned report > Professional

### Koteja ja kokonaistaideteoksia

#### General information

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: School of Architecture, Research group: Urban Planning

Contributors: Chudoba, M.



Number of pages: 3  
Pages: 76-78  
Publication date: 2015  
Peer-reviewed: Unknown

#### Publication information

Journal: Arkkitehti  
Issue number: 3  
ISSN (Print): 0783-3660  
Original language: Finnish  
Research output: Contribution to journal › Article › Professional

#### Systematic Search and Ranking of Physical Contradictions Using Graph Theory Principles: Toward a Systematic Analysis of Design Strategies and their Impacts: TRIZ and Knowledge-Based Innovation in Science and Industry

**Abstract** This paper presents three interconnected developments made during the course of a recent collective research work, the development of a systematic graph-based search tool for physical contradictions, a ranking approach for defining the order of criticality of the design contradictions and the associated analysis of the different design strategies that can be used to solve those contradictions or to enhance performance indicators. The systematic graph-based search for physical contradictions is using the set of elementary variables necessary to describe the system as basic input. The initial set is extracted based on taxonomy of variables combining classification work from NIST and classification of variables derived from the Bond Graph theory. The contradiction search method is in a second step classifying the set of variables into three categories: the constraint variables imposed to the designers by the context and the environment, the design variables on which the designer has the possibility to act and the performance variables that are used to evaluate the performance of the designed system. In a third step, interactions between variables are searched using two possibilities: a causal ordering algorithm developed during the course of the research or via a collective work of experts. The result of this step is a directed graph starting from the constraints variables and ending with the performance variables. In the fourth step objectives have to be assigned to the performance variables (minimal value, maximal value or target value). Those objectives are propagated back into the graph by analyzing the impact of the variables interacting with the performance variables. A physical contradiction is detected each time it is discovered that a design variable is associated with two contradictory objectives. Following this approach, a contradiction is represented as a node in the directed graph. It is possible to systematically map the different design strategies that can be used and to rank the possible impact of those design strategies. The article presents a concrete application of the approach on the case study of an air bearing and demonstrates the novelty of the approach to generate new viewpoints and insight in the analysis of the early stages of the development process. The potential impact of such type of design support is potentially very important. A future step will consist of developing a computer aided tool implementing the method.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Mechanical Engineering and Industrial Systems, Aalto University, Aalto Univ, Aalto University, Aalto Univ Finland, Dept Engn Design & Prod, Sch Engn  
Contributors: Coatanéa, E., Ryyänen, L., Calonius, O., Mokammel, F., Riitahuhta, A.  
Number of pages: 18  
Pages: 1165-1182  
Publication date: 2015  
Peer-reviewed: Yes

#### Publication information

Journal: Procedia Engineering  
Volume: 131  
ISSN (Print): 1877-7058  
Ratings:  
Scopus rating (2015): CiteScore 0.56 SJR 0.239 SNIP 0.566  
Original language: English  
Keywords: graph theory, TRIZ, physical contradiction, innovative principles, air bearing  
DOIs:  
10.1016/j.proeng.2015.12.441

#### Bibliographical note

EXT="Coatanéa, Eric"  
EXT="Riitahuhta, Asko"  
Source: RIS  
Source ID: urn:4AB62BAC3A0A0D77B9BD9FDFF1D977D4  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Pedestrian Dead Reckoning with Particle Filter for Handheld Smartphone**

Commonly used Global Navigation Satellite Systems (GNSS) are inappropriate as Location Based Services (LBS) in indoor environment. Therefore research teams are developing different systems, which can be used as a suitable alternative. One of options is to use Inertial Navigation System (INS) which consists of inertial sensors and mathematic procedures. This concept has been known for a long time, but with arrival of Microelectro Mechanical System (MEMS) INS found wide use. Smartphones with inertial sensors, such as accelerometers and gyroscopes, allow us to use them as input devices for Pedestrian Dead Reckoning (PDR). In this paper we present PDR by using smartphone sensors. They can be classified as low-cost Inertial Measurement Unit (IMU), and have been compared with more precise and expensive Xsens IMU. Accuracy of inertial sensors has increased in the past few years, but they still cannot alone provide proper accuracy because of many negative effects, such as heading drift due to gyroscope bias. Particle Filter (PF) has been successfully used with map constraints to increase the accuracy of proposed location system. Presented results show that low-cost smartphone IMU combined with PF can be applicable as proper navigation system.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing, Research area: Computer engineering, Signal Processing Research Community (SPRC), University of Zilina

Contributors: Collin, J., Perttula, A., Parviainen, J., Racko, J., Brida, P.

Number of pages: 7

Publication date: 17 Nov 2016

#### **Host publication information**

Title of host publication: 2016 International Conference on Indoor Positioning and Indoor Navigation (IPIN)

Publisher: IEEE

ISBN (Electronic): 978-1-5090-2425-4

Electronic versions:

IPIN\_Racko\_PostPrint

DOIs:

10.1109/IPIN.2016.7743608

URLs:

<http://urn.fi/URN:NBN:fi:tty-201612224910>

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

### **Single micro-particle scattering detection based on Edge Filter Enhanced Self-Mixing Interferometry**

#### **General information**

Publication status: Published

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

Organisations: Research area: Optics, Department of Physics, Research group: Applied Optics

Contributors: Contreras, V., Lonnqvist, J., Toivonen, J.

Pages: CH\_P\_11

Publication date: 2015

#### **Host publication information**

Title of host publication: 2015 European Conference on Lasers and Electro-Optics - European Quantum Electronics Conference

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\\_11](http://www.osapublishing.org/abstract.cfm?URI=CLEO_Europe-2015-CH_P_11)

Source: Bibtex

Source ID: urn:fc7373a93e31bcd04a5098b47eed6aa

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

### **Systematic Literature Review on Enterprise Architecture in the Public Sector**

#### **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: Dang, D., Pekkola, S.

Publication date: 2015

#### Host publication information

Title of host publication: The 38th Information Systems Research Conference in Scandinavia (IRIS38)

Editors: Öörni, A., Iivari, N., Kuutti, K., Oinas-Kukkonen, H., Rajanen, M.

ISBN (Electronic): 978-952-62-0917-3

URLs:

<http://iris2015.org/proceedings/>

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

#### 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

#### 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

### **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

### **Risk Assessment of Major Storm Situation in Distribution System**

Risk and reliability have a significant connection in meaning; both of them are the facts for one inference. High level of risk is resource of lower reliability. Risk management in power system has a variety of different subjects including models, methods and applications. Risk is a mixture of probability of disturbance event and the negative effect of that occurrence. Usually it counted for random accident which has harmful effect on people's life and environment. In this paper risks study of storm situation modelled. Random failures in power system are the origin of risk and cannot control by staff. Monte-Carlo Simulation (MCS) has used to model the fault frequencies and outage time of customers. The two tools which use in financial studies to make investment decision and applicable in power systems are Value-at-Risk (VaR) and Conditional Value-at-Risk (CVaR) Result of study compared to the actual reliability which confirm the improvement in the reliability of system. It is not possible to predict the precise amount of load value, Concerns of power outage in local area and possibility of a general blackout.

#### **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: Dehghani, N., Supponen, A., Repo, S.

Publication date: 1 Sep 2015

#### **Host publication information**

Title of host publication: 2015 50th International Universities Power Engineering Conference (UPEC)

Publisher: IEEE

ISBN (Print): 978-1-4673-9682-0

DOIs:

10.1109/UPEC.2015.7339808

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

### 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, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, Department of Pervasive Computing, Research area: Software engineering

Contributors: Devos, M., Ometov, A., Mäkitalo, N., Aaltonen, T., Andreev, S., Koucheryav, 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

DOIs:

10.1109/ICUMT.2016.7765344

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

## **Preliminary results from a study aiming to improve ground investigation data**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Foundation Structures, Research area: Infrastructure Construction

Contributors: Di Buo, B., D'Ignazio, M., Selänpää, J., Länsivaara, T.

Number of pages: 11

Pages: 187-197

Publication date: May 2016

### **Host publication information**

Title of host publication: Proceedings of the 17th Nordic Geotechnical Meeting : Challenges in Nordic Geotechnic 25th-28th of May

Place of publication: Reykjavik

Publisher: Icelandic Geotechnical Society

ISBN (Electronic): 978-9935-24-002-6

URLs:

[http://www.ngm2016.com/uploads/2/1/7/9/21790806/022-072-ngm\\_2016\\_-\\_preliminary\\_results\\_from\\_a\\_study\\_aiming\\_to\\_improve\\_ground\\_investigation\\_data\\_dibuo\\_d%E2%80%99ignazio\\_sel%C3%A4np%C3%A4%C3%A4\\_l%C3%A4nsivaara.pdf](http://www.ngm2016.com/uploads/2/1/7/9/21790806/022-072-ngm_2016_-_preliminary_results_from_a_study_aiming_to_improve_ground_investigation_data_dibuo_d%E2%80%99ignazio_sel%C3%A4np%C3%A4%C3%A4_l%C3%A4nsivaara.pdf)

URLs:

<http://britishgeotech.org/the-17th-nordic-geotechnical-meeting/>

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

### **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. Ac-

cording 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 differ-

ent models are used in this study: the isotropic Mohr-Coulomb and Hardening Soil model and the anisotropic NGI-ADP model. The anal-

ysis 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., Länsivaara, 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\\_Perni\\_failure\\_test](https://www.researchgate.net/publication/265789150_A_study_on_the_behaviour_of_the_weathered_crust_in_the_Perni_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

## Strength increase below an old test embankment in Finland

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Foundation Structures

Contributors: D'Ignazio, M., Lämsivaara, T.

Pages: 357-366

Publication date: May 2016

### Host publication information

Title of host publication: The 17th Nordic Geotechnical Meeting : Conference proceedings

Place of publication: Reykjavik

Publisher: Icelandic Geotechnical Society

ISBN (Electronic): 978-9935-24-002-6

URLs:

<http://britishgeotech.org/the-17th-nordic-geotechnical-meeting/>

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

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

## 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

#### **Host publication information**

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

#### **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

#### **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

#### Sound Events and Emotions: Investigating the Relation of Rhythmic Characteristics and Arousal

A variety of recent researches in Audio Emotion Recognition (AER) outlines high performance and retrieval accuracy results. However, in most works music is considered as the original sound content that conveys the identified emotions. One of the music characteristics that is found to represent a fundamental means for conveying emotions are the rhythm-related acoustic cues. Although music is an important aspect of everyday life, there are numerous non-linguistic and non-musical sounds surrounding humans, generally defined as sound events (SEs). Despite this enormous impact of SEs to humans, a scarcity of investigations regarding AER from SEs is observed. There are only a few recent investigations concerned with SEs and AER, presenting a semantic connection between the former and the listener's triggered emotion. In this work we analytically investigate the connection of rhythm-related characteristics of a wide range of common SEs with the arousal of the listener using sound events with semantic content. To this aim, several feature evaluation and classification tasks are conducted using different ranking and classification algorithms. High accuracy results are obtained, demonstrating a significant relation of SEs rhythmic characteristics to the elicited arousal.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Ionian University, Aristotle University of Thessaloniki

Contributors: Drossos, K., Kotsakis, R., Kalliris, G., Floros, A.

Number of pages: 6

Pages: 1-6

Publication date: Jul 2013

#### Host publication information

Title of host publication: Information, Intelligence, Systems and Applications (IISA), 2013 Fourth International Conference on

Publisher: IEEE

ISBN (Electronic): 978-1-4799-0771-7

Keywords: audio emotion recognition, Sound events, arousal, rhythm related features, audio emotion classification

DOIs:

10.1109/IISA.2013.6623709

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 declinations 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., Giannakouloupoulos, 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 evenets, 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

#### 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

#### 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 RHw was lower in Finland, whereas in Lithuania, about one fourth of the apartments had higher  $T_w$  and RHw, 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 0.92 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:tty-201605023901>

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

#### Simulation of photon-photon resonance enhanced direct modulation bandwidth of DFB lasers

Simulations and experimental results of high-frequency photon-photon resonance are used to examine the possibilities to extend the direct modulation bandwidth in dual-mode distributed feedback lasers beyond the conventional limit set by the carrier-photon resonance.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, Research group: Semiconductor Technology and Applications, Brighterwave Inc, Politecnico di Torino

Contributors: Dumitrescu, M., Uusitalo, T., Virtanen, H., Laakso, A., Bardella, P., Montrosset, I.

Number of pages: 2

Pages: 147-148

Publication date: 17 Aug 2016

#### Host publication information

Title of host publication: 16th International Conference on Numerical Simulation of Optoelectronic Devices, NUSOD 2016

Publisher: IEEE

ISBN (Electronic): 978-1-4673-8603-6

ASJC Scopus subject areas: Electrical and Electronic Engineering, Electronic, Optical and Magnetic Materials, Modelling and Simulation, Numerical Analysis

DOIs:

10.1109/NUSOD.2016.7547075

#### Bibliographical note

EXT="Laakso, A."

Source: Scopus

Source ID: 84987641496

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

## **Sustainable Design Studio 2014**

The City of Tampere is experiencing a great regeneration boom. Several central areas are under redevelopment. The Hakametsä area is one of them. The ice hockey hall of Hakametsä and the surrounding commercial areas will be redeveloped in the near future. The identity and integrated sustainable urban solutions unifying the entire Hakametsä area is becoming a key issue.

The Sustainable Design Studio 2014 looked at the opportunities related to sustainable redevelopment of the new city district. In particular, the focus was in the intersection of Hervannan valtavyälyä and Sammon valtatie. Currently this intersection divides the area in separate and isolated sections with very scattered street scape and difficult accessibility for light-traffic. The restructuring of the entire city structure could offer several opportunities for more sustainable city district in connection to the new tram line.

The task for the students had to two parts with different objectives and urban scales. The first part included a group work analysis on the Hakametsä area and designing a new urban strategy for a sustainable city district. The lack of overall scheme for the area motivated the students to look at the intersection area as the point for connecting the four sectors divided by Hervannan valtavyälyä and Sammon valtatie.

The second individual part of the assignment consisted of designing additional floors to an existing residential building next to the Hakametsä ice hockey rink. The work aimed at creating appealing typological solutions for attractive in-fill architecture thus increasing the opportunities for densification of the 70s residential areas at large. The starting point for the design was the structural system developed in KORKO research project of the Tampere University of Technology. The research project delivered a concept for a prefabricated steel structure allowing fast and affordable assembly of prefabricated wooden housing modules. The objective of the course was to connect university education and research in a mutually benefiting way that is motivating for the students.

The results of the studio provided a comprehensive overview of different approaches to reshape the urban plan for more sustainable city structure. The need for the new character of Hervannan valtavyälyä became evident. Should the road be a main artery focusing on delivering the traffic flows, or, is it part of integrated city structure potentially lowering the speeds of vehicles and calling for improved lighttraffic conditions? The students' works opened up a number of alternative perspectives – including engineering studies on sustainability issues. The Hakametsä area is a great potential for sustainable urban densification within the proximity of the city center, yet with a unique character making it a distinct and identifiable place.

### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Civil Engineering, School of Architecture

Contributors: Edelman, H. (ed.), Härkönen, K. (ed.)

Number of pages: 79

Publication date: 2015

### **Publication information**

Publisher: Tampere University of Technology. School of Architecture

ISBN (Print): 978-952-15-3473-7

ISBN (Electronic): 978-952-15-3474-4

Original language: English

Electronic versions:

sustainable\_design\_studio\_2014

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3474-4>

### **Bibliographical note**

ORG=rak,0.25

ORG=ark,0.75

Research output: Book/Report > Commissioned report > Professional

## **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

### **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 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

### **Re-use of engineering design rationale in Finnish SME project based industry**

This study presents views on barriers of re-use of engineering design rationale. The research data was gathered by interviewing 29 persons who work in 19 different Finnish SME engineering project based companies. The topic was studied on three main levels: due to actions of business management, due to actions of project team and due to individuals own action. From this perspective, six categories of barriers of tacit knowledge re-use were found: Time management, Tools and ocumentation practices, Working methods, Validity of information, Well-being at work and Distinction in competence.

#### **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, Tampere University

Contributors: Ellman, A., Paronen, J., Juuti, T. S., Tiainen, T.

Number of pages: 8

Pages: 1825-1832

Publication date: 24 May 2018

#### **Host publication information**

Title of host publication: Proceedigns of the Design 2018 15th International Design Conference

Publisher: The Design Society

ISBN (Electronic): 978-953-7738-59-4

Keywords: design knowledge, design practice, design management

DOIs:

10.21278/idc.2018.0363. Embargo ended: 1/07/18

#### **Bibliographical note**

jufoid=84955

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

### **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

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:tyy-201909062077>

Source: Scopus

Source ID: 85069801135

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

### **Patterns for controlling chaos in a startup**

A growing trend in industrial software engineering is that new software products and information services are developed under conditions of notable uncertainty. This is especially visible in startup enterprises which aim at new kinds of products and services in rapidly changing social web, where potential customers can quickly adopt new behavior. Special characteristics of the startups are lack of resources and funds, and startups may need to change direction fast. All these affect the software engineering practices used in the startups. Unfortunately almost 90 percent of all startups fail and goes bankrupt. There are probably indefinite numbers of reasons why startups fail. Failure might be caused by wrongly chosen software engineering practices or inconsiderate decision making. While there is no recipe for success, we argue that good practices that can help on the way to success can be identified from successful startups. In this paper, we present two patterns that startups can consider when entering the growth phase of the lifecycle.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Pervasive Computing

Contributors: Eloranta, V.

Number of pages: 8

Pages: 1-8

Publication date: 10 Apr 2014

### **Host publication information**

Title of host publication: VikingPLoP 2014 Proceedings of the 8th Nordic Conference on Pattern Languages of Programs

Volume: 2014-April

Publisher: Association for Computing Machinery

ISBN (Print): 9781450326605

### **Publication series**

Name: ACM International Conference Proceeding Series

ASJC Scopus subject areas: Human-Computer Interaction, Computer Networks and Communications, Computer Vision and Pattern Recognition, Software

Keywords: Lean start-up, Organizational patterns, Patterns, Software engineering, Start-up

DOIs:

10.1145/2676680.2676682

Source: Scopus

Source ID: 84940028558

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

### **Proceedings of VikingPLoP 2013 Conference**

This is the proceedings of VikingPLoP 2013 – a record of all papers workshopped during the conference. VikingPLoP is a Nordic conference of pattern languages of programs which took place this year in Horse Inn of Luomajärvi, Ikaalinen, Finland in March 2013. VikingPLoP was organized jointly by Tampere University of Technology and Hillside Europe. VikingPLoP 2013 was also sponsored by Wiley which provided books for the focus group reading session. The conference was organized in Finland for the second time in a row. Previous location in 2012 was in Saariselkä Lapland. In 2013 vikings were moving towards south and chose the Horse Inn in Ikaalinen as the venue as it offered a luxurious opportunity for participants to experience rustic romance, good food, horseback riding, traditional Finnish sauna, the nature, and wilderness tracks. In March the landscape was still covered in snow making the landscape ruggedly beautiful.

The papers in this proceedings book are updated versions of the papers workshopped in the conference. In the beginning, participants submitted their papers for shepherding process. In the shepherding process, the shepherd, an experienced pattern writer, gave ideas and feedback for the author, colloquially known as a sheep. The sheep incorporated this feedback in to her paper. After three iterations of shepherding the paper was discussed at the conference in a writer's workshop. The workshop group gave comments, criticism and praise. After the conference the authors updated their papers according to the workshop feedback.

This process of giving feedback was made possible by having a community of trust. Mutual trust was built by playing non-competitive games and by having social activities. VikingPLoP 2013 focused on patterns and their usage in various fields of expertise. These fields included a wide range of topics from educational patterns to safety patterns and embedded system's software architecture patterns. Bringing people together from various fields of expertise stimulates creativity and new ideas might emerge. These innovations are reflected in the papers in these proceedings. VikingPLoP 2013 was especially a conference for newcomers and over half of the participants were first time PLoP participants.

These proceedings contain 9 papers. In addition, a book reading workshop was arranged with Bob Hanmer who presented his new title Pattern-Oriented Software Architecture for Dummies and discussed it with the participants using video conferencing tools.

#### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

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

Contributors: Eloranta, V. (ed.), Koskinen, J., Leppänen, M. K.

Number of pages: 125

Publication date: 2013

#### **Publication information**

Publisher: Tampere University of Technology. Department of Pervasive Computing

ISBN (Print): 978-952-15-3166-8

ISBN (Electronic): 978-952-15-3167-5

Original language: English

#### **Publication series**

Name: Tampere University of Technology. Department of Pervasive Computing. Report

Publisher: Tampere University of Technology, Department of Pervasive Computing

Volume: 2

ISSN (Print): 2323-9174

Electronic versions:

proceedings\_of\_vikingplop\_2013\_conference

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3167-5>

#### **Bibliographical note**

Versio ok 14.12.2015

Research output: Book/Report › Commissioned report › Professional

#### **Proceedings of VikingPLoP 2012 Conference**

The papers in this proceedings are updated versions of the papers workshoped in the conference. Participants submitted their papers for shepherding process. In shepherding process, experienced pattern writer gave ideas and feedback for the author, colloquially known as a sheep. The sheep incorporated this feedback in to her paper. After three iterations of shepherding the paper was discussed at the conference in writer's workshop. Workshop group gave comments, criticism and praise. After the conference sheep updated their papers according to the workshop feedback. This process of giving feedback was made possible by having community of trust. Mutual trust was built by playing non-competitive games and by having social activities.

VikingPLoP 2012 focused on patterns and their usage in various fields of expertise. These fields included a wide range of topics from language teaching to embedded system's software architecture. Bringing people together from various fields of expertise, stimulates creativity and new ideas might emerge. These innovations are reflected in the papers in these proceedings. VikingPLoP 2012 was especially a conference for newcomers and over half of the participants were first time PLoP participants.

These proceedings contain 10 papers and description of one focus group. In addition, a shepherding workshop was arranged and updated version of the demo pattern used in this workshop is also presented in the proceedings. The conference had two writer's workshop groups. Papers are organized as follows: in the first part of the proceedings patterns for embedded systems are presented and the second part contains general software related patterns. Finally in the third part, interdisciplinary patterns are included.

#### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

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

Contributors: Eloranta, V. (ed.), Koskinen, J. (ed.), Leppänen, M. (ed.)

Number of pages: 142

Publication date: 2012

#### **Publication information**

Publisher: Tampere University of Technology. Department of Software Systems

ISBN (Print): 978-952-15-2943-6

ISBN (Electronic): 978-952-15-2944-3



Original language: English

### Publication series

Name: Tampere University of Technology. Department of Software Systems. Report

Publisher: Tampere University of Technology

Volume: 22

ISSN (Print): 1797-836X

Electronic versions:

[proceedings\\_of\\_vikingplop\\_2012\\_conference](#)

URLs:

<http://URN.fi/URN:ISBN:978-952-15-2944-3>

### Bibliographical note

Version: 14.12.2015

Research output: [Book/Report](#) › [Commissioned report](#) › [Professional](#)

### Generalized hyperbolic harmonic functions in the plane

We consider solutions of the equation  $y\Delta_h(x,y) - k \frac{\partial h}{\partial y} = 0$  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](https://doi.org/10.1063/1.4912658)

Source: Scopus

Source ID: 84939648578

Research output: [Chapter in Book/Report/Conference proceeding](#) › [Conference contribution](#) › [Scientific](#) › [peer-review](#)

### Tampereen matemaattisten aineiden aineenopettajakoulutus

We present how the education of subject teachers is organized in mathematics, science and computer science in Tampere. It is based on the idea that both engineering students and students from mathematics and science may choose to become a subject teacher. Students are accepted either to the master's degree program in Science and Engineering of Tampere University of Technology or the master's program of Mathematics and Statistics of University of Tampere. Students from different universities are giving opportunities to learn from each other. They study physics and chemistry in Tampere University of Technology and do pedagogical studies in University of Tampere. Both universities have also developed special motivating courses based on the didactical research to their students. In mathematics, there is a joined course for the second or third year students motivating towards teaching carrier. In both universities there are possibilities to do the master or bachelor thesis in didactics of mathematics or science. Both universities have an important role in education of subject teachers in Finland. Tampere University of Technology is providing opportunities during studies to cooperate between schools and industry. It gives ideas how science and mathematics are applied in the modern society. University of Tampere also trains primary school teachers with specialization in mathematics.

### General information

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Mathematics, Research group: MAT Clifford analysis, Department of Chemistry and

Bioengineering, Research group: Supramolecular photochemistry

Contributors: Eriksson, S., Haukkanen, P., Hukka, T. I., Lemmetyinen, H.  
Number of pages: 8  
Pages: 800-807  
Publication date: 11 Mar 2015  
Peer-reviewed: Unknown

#### Publication information

Journal: Lumat  
Volume: 3  
Issue number: 6  
ISSN (Print): 2323-7112  
Original language: Finnish  
URLs:  
<http://www.luma.fi/lumat/4105>

#### Bibliographical note

ORG=mat,0.7  
ORG=keb,0.3  
Research output: Contribution to journal › Article › Professional

### Visual Data Mining in Software Repositories: A Survey

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Pervasive Computing  
Contributors: Eteläaho, A., Soini, J., Jaakkola, H., Mattila, A.  
Pages: 367-385  
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

### 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

#### **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

#### **Thermomechanical properties of overmold epoxies in MEMS packaging**

#### **General information**

Publication status: Published

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

Organisations: Department of Electrical Engineering, Research area: Reliability

Contributors: Fard Sanei, M. A., Kiilunen, J., Pippola, J., Lahokallio, S., Frisk, L.

Number of pages: 5

Pages: 175-179

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the IMAPS Nordic Annual Conference , June 8-9, 2015, Helsingør, Denmark

Publisher: IMAPS Nordic

ISBN (Print): 9781510808133

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

#### **The Effects of Initial Moisture on Damp Problems of a Timber Framed Wall Construction - a Numerical Approach**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: University of Oulu

Contributors: Fedorik, F., Malaska, M.

Pages: 18-23

Publication date: 2015

#### **Host publication information**

Title of host publication: Proceedings of the XII Finnish Mechanics Days : Finnish mechanics days

Place of publication: Espoo, Finland

Publisher: Finnish Association for Structural Mechanics

Editors: Kouhia, R., Mäkinen, J., Pajunen, S., Saksala, T.  
ISBN (Print): 978-952-93-5608-9 ISBN-E 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 › 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, Ampliconyx Ltd, ITMO Univ, ITMO University, Dept Photon & Opt Informat Technol, Kotelnikov Inst Radio Engrn & 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

### 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

### 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 0.1 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

### **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

### **On Moderate Inversion/Saturation Regions As Approximations to "Reconciliation" Model**

The paper proposes analytical definitions of moderate inversion and moderate saturation. These definitions are introduced considering two different series expansions for the function  $\ln 2(x)$ . The expansions are "matched": the upper limit for convergence of the first series and the lower limit for convergence of the second series define the border and transition from weak to moderate inversion/saturation. The moderate inversion/saturation corresponds to approximation of the function  $\ln 2(x)$  by a modified sum of two first terms of the second series. Then, the condition of inversion/saturation is defined by dominance of one term with respect to another. The condition of moderate inversion/saturation is a necessary step in transition from weak to strong inversion/saturation. The introduced definitions correspond to MOS transistor operation physics and eliminate discontinuity in this transition.

#### **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

Contributors: Filanovsky, I., Järvenhaara, J., Tchamov, N.

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

Publisher: IEEE

ISBN (Electronic): 978-1-4673-8721-7

DOIs:

10.1109/CCECE.2016.7726696

#### **Bibliographical note**

JUF0ID=73287

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

### **Maximally Flat Property and Bandwidth Enhancing by Transfer Function Zeroes IEEE-NewCAS France**

The paper describes an extension, at the approximation level, of shunt-peaking technique to increase the filter/amplifier bandwidth. The frequency dependent square modulus of transfer function is multiplied by a polynomial of squared frequency. Using a standard procedure of restoration one finds the new transfer function which is the result of multiplication of initial transfer function by the zeros defined by this polynomial of squared frequency. This new transfer

function is characterized by a faster step-transient response of smaller delay and lower overshoot in comparison with initial function which did not include the zeros. An example of sixth order Butterworth filter is considered to demonstrate the modifications of step-transient response depending on the number of zeros. The procedure can also result in pole-zero cancellation simplifying the transfer function for given step-transient response.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Electronics and Communications Engineering  
Contributors: Filanovsky, I., Tchamov, N.  
Publication date: 25 Jun 2017

#### Host publication information

Title of host publication: 2017 15th IEEE International New Circuits and Systems Conference (NEWCAS)  
Publisher: IEEE  
ISBN (Electronic): 978-1-5090-4991-2  
DOIs:  
10.1109/NEWCAS.2017.8010113  
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 Engr & 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

#### Optical amplifiers and lasers based on tapered fiber geometry for power and energy scaling with low signal distortion

We report theoretical and experimental study of tapered double-clad fibers (T-DCF) to be implemented as a gain media in a fiber lasers and amplifiers. We have considered most important properties and features of T-DCF. Various amplifiers and lasers using ytterbium T-DCF are demonstrated.

#### 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)  
Contributors: Filippov, V., Chamorovskii, Y. K., Golant, K. M., Vorotynskii, A., Okhotnikov, O. G.  
Number of pages: 11  
Publication date: Feb 2016

#### Host publication information

Title of host publication: Proceedings of SPIE : Fiber Lasers XIII: Technology, Systems, and Applications  
Volume: 9728  
Publisher: SPIE  
Editor: Ballato, J.  
Article number: 97280V-1

#### Publication series

Name: SPIE conference proceedings  
Publisher: SPIE  
ISSN (Print): 0277-786X  
ISSN (Electronic): 1996-756X  
DOIs:  
10.1117/12.2218051

### **Bibliographical note**

JUFOID=71479

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

### **Picosecond MOPA with ytterbium doped tapered double clad fiber**

The powerful picosecond master oscillator - power amplifier (MOPA) with double clad ytterbium doped tapered fiber as a buster amplifier has been demonstrated in the presented paper. The developed MOPA has 60ps pulses with 0.3mJ pulse energy and 5MW peak power.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Research group: Ultrafast and intense lasers, Photonics, Research group: Nanophotonics, Ampliconix Ltd, Institute of Radio Engineering and Electronics of the Russian Academy of Sciences

Contributors: Filippov, V., Vorotynskii, A., Noronen, T., Gumenyuk, R., Chamorovskii, Y., Golant, K.

Number of pages: 6

Publication date: 2017

### **Host publication information**

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

Volume: 10083

Publisher: SPIE

Article number: 100831H

ISBN (Electronic): 9781510606074

### **Publication series**

Name: Proceedings of SPIE

Publisher: SPIE

No.: 10083

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: Fiber laser, Picosecond laser, Ultrafast laser

DOIs:

10.1117/12.2252006

Source: Scopus

Source ID: 85019465842

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

### **Optical fiber amplifier with spectral compression elements for high-power laser pulse generation**

We report main features of spectral compression of parabolic pulses in nonlinear optical fibers. It is shown that the variational analysis correctly describes evolution of pulse parameters during spectral compression. The model of cascade amplifier system employing spectral compression is developed to achieve superior spectral densities. The proposed configuration is promising as optical pulse preamplifier for operation in the high-energy pulse laser systems.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Optoelectronics Research Centre, University de Mons, Ulyanovsk State University, Optoelectronic Research Center

Contributors: Fotiadi, A. A., Korobko, D. A., Okhotnikov, O. G., Zolotovskii, I. O.

Publication date: 2016

#### **Host publication information**

Title of host publication: Nonlinear Optics and its Applications IV

Volume: 9894

Publisher: SPIE

Article number: 989411

ISBN (Electronic): 9781510601390

#### **Publication series**

Name: Proceedings of SPIE

Volume: 9894

ISSN (Print): 0277-786X

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

Keywords: Fiber optics amplifiers, high-power laser pulses, nonlinear spectral compression, phase self-modulation

DOIs:

10.1117/12.2223637

Source: Scopus

Source ID: 84985911601

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

### **Suomen keraaminen seura - Keramiska sällskapet i Finland**

An Article about the history and present state of the Finnish ceramic society

### General information

Publication status: Published  
MoE publication type: D1 Article in a trade journal  
Organisations: Department of Materials Science, Research group: Ceramic materials  
Contributors: Frankberg, E. J.  
Number of pages: 1  
Pages: 58-58  
Publication date: Oct 2015  
Peer-reviewed: Unknown

### Publication information

Journal: Materia  
Volume: 5  
ISSN (Print): 1459-9694  
Original language: Finnish  
Keywords: Ceramic, society, Finland  
URLs:  
<http://www.vuorimiesyhdistys.fi/julkaisut/materia>  
Research output: Contribution to journal > Article > Professional

### Simultaneous binary hash and features learning for image retrieval

Content-based image retrieval systems have plenty of applications in modern world. The most important one is the image search by query image or by semantic description. Approaches to this problem are employed in personal photo-collection management systems, web-scale image search engines, medical systems, etc. Automatic analysis of large unlabeled image datasets is virtually impossible without satisfactory image-retrieval technique. It's the main reason why this kind of automatic image processing has attracted so much attention during recent years. Despite rather huge progress in the field, semantically meaningful image retrieval still remains a challenging task. The main issue here is the demand to provide reliable results in short amount of time. This paper addresses the problem by novel technique for simultaneous learning of global image features and binary hash codes. Our approach provide mapping of pixel-based image representation to hash-value space simultaneously trying to save as much of semantic image content as possible. We use deep learning methodology to generate image description with properties of similarity preservation and statistical independence. The main advantage of our approach in contrast to existing is ability to fine-tune retrieval procedure for very specific application which allow us to provide better results in comparison to general techniques. Presented in the paper framework for data-dependent image hashing is based on use two different kinds of neural networks: convolutional neural networks for image description and autoencoder for feature to hash space mapping. Experimental results confirmed that our approach has shown promising results in compare to other state-of-the-art methods.

### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Signal Processing, Research group: Computational Imaging-CI, Don State Technical University, Univ of Texas at San Antonio  
Contributors: Frantc, V. A., Makov, S. V., Voronin, V. V., Marchuk, V. I., Semenishchev, E. A., Egiazarian, K. O., Agaian, S.  
Publication date: 2016

### Host publication information

Title of host publication: Mobile Multimedia/Image Processing, Security, and Applications 2016  
Publisher: SPIE  
Article number: 986902  
ISBN (Electronic): 9781510601109

### Publication series

Name: SPIE Conference Proceedings  
Volume: 9869  
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: autoencoder, content-based image retrieval, deep convolutional neural network, semantic hashing  
DOIs:  
10.1117/12.2223605  
Source: Scopus  
Source ID: 84991480411  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### **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

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

### **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: Bibtext

Source ID: urn:67d25416e4b4bf5522a2df614d30bd19

### **Surrogate modeling for initial rotational stiffness of welded tubular joints**

Recently, buildings and structures erected in Russia and abroad have to comply with stringent economic requirements. Buildings should not only be reliable and safe, have a beautiful architectural design, but also meet the criteria of rationality and energy efficiency. In practice, this usually means the need for additional comparative analysis in order to determine the optimal solution to the engineering task. Usually such an analysis is time-consuming and requires huge computational efforts. In this regard, surrogate modeling can be an effective tool for solving such problems. This article provides a brief description of surrogate models and the basic techniques of their construction, describes the construction process of a surrogate model to calculate initial rotational stiffness of welded RHS joints made of high strength steel (HSS).

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering, Research group: Metal and Light-wight structures, Peter the Great St. Petersburg Polytechnic University, Peter Great St Petersburg Polytech Univ

Contributors: Garifullin, M. R., Barabash, A. V., Naumova, E. A., Zhuvak, O. V., Jokinen, T., Heinisuo, M.

Number of pages: 24

Pages: 53-76

Publication date: 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: Magazine of Civil Engineering

Volume: 63

Issue number: 3

ISSN (Print): 2071-4726

Ratings:

Scopus rating (2016): CiteScore 0.3 SJR 0.236 SNIP 0.755

Original language: English

ASJC Scopus subject areas: Civil and Structural Engineering

Keywords: Finite element analysis, Kriging, Plane bending, Square hollow section, Surrogate modeling

Electronic versions:

Surrogate modeling for initial rotational stiffness of welded tubular joints

DOIs:

10.5862/MCE.63.4

URLs:

<http://urn.fi/URN:NBN:fi:tty-201611284820>

URLs:

<http://www.scopus.com/inward/record.url?scp=84994045052&partnerID=8YFLogxK> (Link to publication in Scopus)

#### **Bibliographical note**

EXT="Garifullin, M. R."

Source: Scopus

Source ID: 84994045052

Research output: Contribution to journal › Article › 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 2.75 SJR 1.062 SNIP 2.28

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

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910033677>

Source: Scopus

Source ID: 85051540096

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

#### 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

Volume: 245

Article number: 08003

ISSN (Print): 2274-7214

Ratings:

Scopus rating (2018): CiteScore 0.42 SJR 0.169 SNIP 0.548

Original language: English

ASJC Scopus subject areas: Chemistry(all), Materials Science(all), Engineering(all)

Electronic versions:

matecconf\_eece2018\_08003

DOIs:

10.1051/matecconf/201824508003

URLs:

<http://urn.fi/URN:NBN:fi:tty-201901091034>

Source: Scopus

Source ID: 85058463414

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

### **Model-based cosimulation for industrial wireless networks**

Wireless communications technology has the potential to provide major benefits in lowering the cost and increasing the efficiency of factory automation (FA) systems. However, design of FA systems that employ wireless networks involves stringent constraints on real-time performance and reliability, and requires the assessment of and experimentation with complex interactions among process control, factory topology construction (layout and connectivity of subsystems, such as machines, rails, etc.), and wireless communication. In this paper, we introduce a novel simulation framework to support such assessment and experimentation in the design of next-generation FA systems. Our simulation framework employs model-based design principles to enhance design reliability, and enable systematic and efficient integration of control, topology, and network modeling aspects. We demonstrate the utility of our framework through a case study that involves topology design and scalability analysis for a large class of FA systems. Our results demonstrate the ability of the proposed framework to provide insights on complex design trade-offs, while the underlying model-based features enhance efficient and reliable system-level integration.

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, University of Maryland, National Institute of Standards and Technology, Department of Electrical and Computer Engineering

Contributors: Geng, J., Li, H., Liu, Y., Liu, Y., Kashef, M., Candell, R., Bhattacharyya, S. S.

Number of pages: 10

Pages: 1-10

Publication date: 3 Jul 2018

### **Host publication information**

Title of host publication: WFCS 2018 - 2018 14th IEEE International Workshop on Factory Communication Systems

Publisher: IEEE

ISBN (Electronic): 9781538610664

ASJC Scopus subject areas: Electrical and Electronic Engineering, Industrial and Manufacturing Engineering

DOIs:

10.1109/WFCS.2018.8402343

### **Bibliographical note**

jufoid=83653

Source: Scopus

Source ID: 85050017916

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

### Multilag Frequency Estimation for High-Order BOC Signals in the Acquisition Stage

In the context of global navigation satellite systems, this paper addresses the problem of refining the Doppler frequency estimation provided in the acquisition stage for highorder binary offset carrier (BOC) signals in post-correlation. The refinement of Doppler frequency must be done because the estimation obtained from the acquisition stage is not usually accurate enough to track the signal in the tracking stage. In this work, we only use the cross-ambiguity function (CAF) created in the acquisition stage to perform the refinement. A least squares estimator has been already applied to mitigate this problem. We propose a new technique, referred to as multilag least squares estimator, which improves the performance of the least squares estimator by exploiting the autocorrelation shape of high-order BOC signals. Moreover, the Cramer-Rao bound and the expected Cramer-Rao bound are derived as benchmark to compare the performance of the least squares and multilag least squares estimators.

### 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, Universidad Autónoma de Barcelona, Universitat Autònoma de Barcelona, Spain

Contributors: Gomez Casco, D., Lohan, E., Lopez-Salcedo, J. A., Seco-Granados, G.

Publication date: 2017

### Host publication information

Title of host publication: 2016 8th ESA Workshop on Satellite Navigation Technologies and European Workshop on GNSS Signals and Signal Processing (NAVITEC)

Publisher: IEEE

ISBN (Electronic): 978-1-5090-3885-5

Electronic versions:

Navitec2016

DOIs:

10.1109/NAVITEC.2016.7849325

URLs:

<http://urn.fi/URN:NBN:fi:tty-201802141231>

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 1.99 SJR 0.551 SNIP 1.116

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

### 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

### Terrestrial LiDAR and 3D tree Quantitative Structure Model for quantification of aboveground biomass loss from selective logging in a tropical rainforest of Peru

#### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

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

Contributors: Gonzalez de Tanago, J., Bartholomeus, H., Joseph, S., Herold, M., Avitabile, V., Goodman, R., Raunonen, P., Burt, A.

Number of pages: 3

Pages: 119-121

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

### 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 kysynty, HO.

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

### Service Failure and Interruption Probability Analysis for Licensed Shared Access Regulatory Framework

#### 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: Gudkova, I., Samouylov, K., Ostriko, D., Mokrov, E., Ponomarenko-Timofeev, A., Andreev, S., Koucheryavy, Y.

Number of pages: 9

Pages: 123-131

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.2015.7382416

#### Bibliographical note

INT=elt,"Ponomarenko-Timofeev, Aleksei"

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

#### Modeling the utilization of a multi-tenant band in 3GPP LTE system with Licensed Shared Access

Fueled by the rapid growth of mobile services, the actual demand for efficient sharing of available but underutilized frequency spectrum puts pressure on the responsible players (ITU, ETSI) to rethink the feasible ways of allocating wireless spectrum. Today, the LSA regulatory framework is considered to be an important enabler for optimized spectrum sharing between the incumbent and the LSA licensee (e.g., mobile network operator). At any point of time, the frequency bands can be utilized by only a single party, and the spectrum owner has priority in its usage at all times. In this paper, we introduce a mathematical and a system model for the multi-tenant band within the 3GPP LTE cellular network. As the main output of this work, the obtained numerical results for one multi-tenant band are produced. Said band is assumed to be intolerant to traffic delay and our results include the blocking probability as well as the mean downlink TX power of the eNodeB.

#### 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: Gudkova, I., Markova, E., Masek, P., Andreev, S., Hosek, J., Yarkina, N., Samouylov, K., Koucheryavy, Y.

Number of pages: 5

Pages: 119-123

Publication date: 1 Oct 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: Bit rate, Markov processes, Mathematical model, Numerical analysis, Probability distribution, Quality of service

DOIs:

10.1109/ICUMT.2016.7765343

Source: Bibtex

Source ID: urn:5604995b3f78fcd357c6ed1ead1d8558

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

#### Principles of designing for situation awareness

High level of situation awareness is a key factor in many domains to ensure correct decision making and actions. Situation awareness has been studied extensively in the aviation and military domains but the research also applies to other domains e.g. power grid operations and managing disturbances of electricity supply. Based on the research design principles have been created in order to help system designers to create better user interfaces for systems used in operational activities. These principles have been applied when designing the situation awareness system concept for managing disturbances of electricity supply.

#### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

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

Contributors: Haapanen, J.

Pages: 29-46

Publication date: 2015

#### Publication information

Place of publication: Tampere

Publisher: Maanpuolustuskorkeakoulu Sotatekniikan laitos  
ISBN (Print): 978-951-25-2720-5  
ISBN (Electronic): 978-951-25-2721-2

#### Publication series

Name: Situational awareness for critical infrastructure protection  
Volume: 3  
No.: 1  
Research output: Working paper › Professional

#### 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-Välimäki, 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

#### 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 1.49 SJR 0.32 SNIP 0.964  
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

#### **Random Value Impulse Noise Removal Based on Most Similar Neighbors**

A novel filter based on four most similar neighbors (MSN) is proposed in this paper which considers all the pixels of the sliding window except the central pixel after taking the first order absolute differences from the central pixel. The proposed filter is composed of two steps: noise detection followed by filtering. In noise detection, first order absolute differences are calculated and sorted in ascending order. Clusters of equal sizes are formed based on most similar pixels and then fuzzy rules are applied to detect the noise present in the current pixel. Threshold parameters are set adaptively. In filtering phase, median based fuzzy filter is used to restore the corrupted pixels. Experimental results show that the proposed filter outperforms several state-of-the-art filters for random value impulse noise removal in an image.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

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

Number of pages: 5

Pages: 329-333

Publication date: 26 Feb 2016

#### **Host publication information**

Title of host publication: 2015 13th International Conference on Frontiers of Information Technology (FIT)

Publisher: IEEE

ISBN (Print): 9781467396660

ASJC Scopus subject areas: Health Informatics, Computer Science Applications, Signal Processing

Keywords: fuzzy logic, Image processing, impulse noise, noise removal

DOIs:

10.1109/FIT.2015.64

#### **Bibliographical note**

INT=elt,"Ali, Mubashir"

Source: Scopus

Source ID: 84964689604

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

#### **SimpleTree: An Efficient Open Source Tool to Build Tree Models from TLS Clouds**

An open source tool named SimpleTree, capable of modelling highly accurate cylindrical tree models from terrestrial laser scan point clouds, is presented and evaluated. All important functionalities, accessible in the software via buttons and dialogues, are described including the explanation of all necessary input parameters. The method is validated utilizing 101 point clouds of six different tree species, in the main evergreen and coniferous trees. All scanned trees have been destructively harvested to get accurate estimates of above ground biomass with which we assess the accuracy of the SimpleTree-reconstructed cylinder models. The trees were grouped into four data sets and for each one a Concordance Correlation Coefficient of at least 0.92 (0.92, 0.97, 0.92, 0.94) and an total relative error at most ~8 % (2.42%, 3.59%, -4.59%, 8.27%) was achieved in the comparison of the model results to the ground truth data. A global statistical improvement of derived cylinder radii is presented as well as an efficient optimization approach to automatically improve user given input parameters. An additional check of the SimpleTree results is presented via comparison to the results of trees reconstructed using an alternative, published method.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Mathematics, Research group: MAT Inverse Problems, Mathematical modelling with wide societal impact (MathImpact)

Contributors: Hackenberg, J., Spiecker, H., Calders, K., Disney, M., Raunonen, P.

Number of pages: 50

Pages: 4245-4294

Publication date: 23 Nov 2015

Peer-reviewed: Yes

### Publication information

Journal: Forests: Open Access Journal

Volume: 6

Issue number: 11

ISSN (Print): 1999-4907

Ratings:

Scopus rating (2015): CiteScore 1.76 SJR 0.633 SNIP 0.761

Original language: English

DOIs:

10.3390/f6114245

URLs:

<http://www.mdpi.com/1999-4907/6/11/4245> (Webpage of the article)

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

### Oppivan organisaation kehittäminen osaavaksi organisaatioksi. Tapaustutkimus suomalaisessa teollisuusyriyksessä

#### General information

Publication status: Published

MoE publication type: G4 Doctoral dissertation (monograph)

Organisations: Department of Information Management and Logistics

Contributors: Hagman, S.

Number of pages: 209

Publication date: 22 May 2015

#### Publication information

Publisher: Tampere University of Technology

ISBN (Print): 978-952-15-3516-1

ISBN (Electronic): 978-952-15-3521-5

Original language: Finnish

#### Publication series

Name: Tampere University of Technology. Publication

Publisher: Tampere University of Technology

Volume: 1296

ISSN (Print): 1459-2045

Electronic versions:

hagman\_1296

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3521-5>

#### Bibliographical note

Awarding institution: Tampere University of Technology

Versio 16.12.2015

Research output: Book/Report › Doctoral thesis › Monograph

### Modeling of Age-Dependent Failure Tendency from Incomplete Data

This paper addresses modeling of age-dependent failure rates from incomplete data that includes interval-censored failure ages. Two estimators for cumulative failure rates are presented: a simple non-parametric estimator and a maximum-likelihood method based on the gamma distribution and the non-homogeneous Poisson process. The maximum-likelihood fit of familiar parametric models (e.g., the power law) to the available field data from an aircraft component was far from satisfactory, so a special three-parameter model function had to be worked out. The maximum-likelihood estimate obtained is then used for repeated random generation of different data sets akin to the field data. This way the effect of data set size, censoring rate, and randomness on the non-parametric estimate can be analyzed to get practical appraisals.

#### 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,

Research group: Käyttövarmuuden suunnittelu ja kunnossapito

Contributors: Hagmark, P., Laitinen, J.

Number of pages: 11

Pages: 449-459

Publication date: 2014

### Host publication information

Title of host publication: Engineering Asset Management 2011 : Proceedings of the Sixth World Congress on Engineering Asset Management

Place of publication: London

Publisher: Springer-Verlag London Limited

Editors: Lee, J., Ni, J., Sarangapani, J., Mathew, J.

ISBN (Print): 978-1-4471-4993-4

### Publication series

Name: Lecture Notes in Mechanical Engineering

ISSN (Print): 2195-4356

DOIs:

10.1007/978-1-4471-4993-4\_40

Source: Bibtex

Source ID: urn:d7b891dd2fe21c5e9c101c432e092e18

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

## Normalization of deviance in the construction industry, a managerial perspective

### 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), London South Bank University (LSBU) and CIB, NTNU Norwegian University of Science and Technology

Contributors: Hajikazemi, S., Ahola, T., Aaltonen, K., Aarseth, W., Andersen, B.

Publication date: Jun 2019

### Host publication information

Title of host publication: European Academy of Management Conference 2019, EURAM : 26-28 June, Lissabon, Portugal

ISBN (Electronic): 978-2-9602195-1-7

### Publication series

Name: European academy of management annual conference

ISSN (Electronic): 2466-7498

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

## Site-controlled InAs Quantum Dots for Plasmonics

We present site-controlled epitaxy of InAs quantum dots (QD) for plasmonics and report QD-plasmon coupling in a hybrid structure consisting of site-controlled InAs/GaAs QD chains in the proximity of an Ag film.

### 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: Laboratory for Future Electronics, Department of Physics, Research group: Nanophotonics

Contributors: Hakkarainen, T., Tommila, J., Schramm, A., Simonen, J., Niemi, T., Strelow, C., Kipp, T., Kontio, J., Guina, M.

Publication date: 2016

### Host publication information

Title of host publication: Conference on Lasers and Electro-Optics 2016 : QELS\_Fundamental Science

Publisher: OSA - The Optical Society

Article number: FM1B.3

ISBN (Electronic): 978-1-943580-11-8

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

Keywords: (250.5403) Plasmonics, (160.4236) Nanomaterials, (160.6000) Semiconductor materials

DOIs:

10.1364/CLEO\_QELS.2016.FM1B.3

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

## Photo-acoustic Spectroscopy of Resonant Absorption in III-V Semiconductor Nanowires

We show that photo-acoustic spectroscopy allows determination of the nanowire absorbance properties including resonant peak positions and peak broadening due to collective ensemble properties. Furthermore, we demonstrate chiral optical response in asymmetrically Au-coated nanowires.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: ORC

Contributors: Hakkarainen, T., Leahu, G., Petronijevic, E., Belardini, A., Centini, M., Li Voti, R., Koivusalo, E., Rizzo Piton, M., Guina, M., Sibilia, C.

Publication date: 2017

### Host publication information

Title of host publication: CLEO: Applications and Technology 2017 : San Jose, California United States 14–19 May 2017

Publisher: The Optical Society; OSA

Article number: JTh2A.48

ISBN (Electronic): 978-1-943580-27-9

DOIs:

10.1364/CLEO\_AT.2017.JTh2A.48

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

### 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

### 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

halinoja\_1313

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3566-6>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology

Versio ok 14.12.2015

Research output: Book/Report › Doctoral thesis › Monograph

#### **Value Creation in Private Equity: A Case Study of Outperforming Buyouts in the Nordic Countries**

A number of studies have reported that the returns from acquisitions made by private equity (PE) firms have exceeded those of the public markets, e.g. the S&P 500. The outperformance displayed in the buyouts made by private equity firms is perplexing, particularly given the underperformance and high failure rate typically reported in studies of traditional corporate mergers and acquisitions (M&A). This dissertation strives to shed a light on the dichotomy by examining the activities in a select sample of buyouts during the pre-buyout phase, holding period, and the exit transaction. The study makes a number of significant contributions. It contributes to the theoretical and conceptual understanding of private equity buyouts by materially extending previous models of value creation into a novel taxonomy and cohesive structure. It contributes empirically by filling an important research gap concerning the subset of buyouts that exhibited exceptional outperformance compared to peer firms in PE portfolios. The inductive multiple-case study approach in combination with



access to proprietary interview data permitted an in-depth analysis of the factors conducive to buyout value creation. The analysis indicates the key factors resulting in the outperformance were timing the entry and exit transaction to the business and industry cycles, identifying and executing the apposite business strategy, utilizing alternative modes of debt financing, discerning the pre-buyout target firm characteristics, implementing a pervasive array of operational improvements, and lastly, achieving high-levels of employee motivation and commitment across the organization.

#### **General information**

Publication status: Published  
MoE publication type: G4 Doctoral dissertation (monograph)  
Organisations: Department of Industrial Management  
Contributors: Hannus, S.  
Number of pages: 180  
Publication date: 24 Oct 2015

#### **Publication information**

Publisher: Tampere University of Technology  
ISBN (Print): 978-952-15-3589-5  
ISBN (Electronic): 978-952-15-3614-4  
Original language: English

#### **Publication series**

Name: Tampere University of Technology. Publication  
Publisher: Tampere University of Technology  
Volume: 1328  
ISSN (Print): 1459-2045  
Electronic versions:  
hannus\_1328  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3614-4>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology  
Versio ok 14.12.2015  
Research output: Book/Report > Doctoral thesis > Monograph

#### **On Polyglot Programming in the Web**

Different programming languages have been designed to solve problems efficiently in different domains. The goal of polyglot programming, a technique where several languages are used in the creation of a single application, is to combine and utilize the best solutions from different programming languages and paradigms in a seamless fashion. In this paper, the authors examine polyglot programming in the context of web applications, where it has been commonly used to create compelling applications, but where there is still considerable potential to improve development in various ways.

#### **General information**

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Department of Pervasive Computing, Research area: Software engineering, Ada Drive  
Contributors: Harmanen, J., Mikkonen, T.  
Number of pages: 18  
Pages: 102-119  
Publication date: 2016

#### **Host publication information**

Title of host publication: Modern Software Engineering Methodologies for Mobile and Cloud Environments  
Publisher: IGI Global  
ISBN (Print): 9781466699168  
ISBN (Electronic): 9781466699175  
DOIs:  
10.4018/978-1-4666-9916-8.ch006  
Research output: Chapter in Book/Report/Conference proceeding > Chapter > 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

### Lean-tuotanto ja sen johtaminen: onnistuminen, haasteet ja soveltuminen Suomen yrityksiin ja muihin organisaatioihin

The so-called Lean development methods are today commonly used in many types of workplaces. Many good success stories are reported but Lean-projects and the tools used in them do not always bring the desired results. The central idea in Lean thinking is the distinction of two types of efficiencies; resource efficiency and flow efficiency. Lean production systems aim at high flow efficiency but achieving it requires high resource flexibility and understanding of the uncertainty inherent in the production system. Lean-management is often related to certain methods and techniques, but they do not alone bring improvement without a holistic managerial philosophy that supports improvement on several levels of the organization's activities. Successful application of Lean management implies strategic choices and long-term commitment to organizational learning and development. The popularity of Lean management in Finnish organizations indicates that there is generally room for improvement in the organizations' operational activities. Lean management provides a structured model for development. It can bring successful results if implemented holistically and with a long-term commitment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

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

Contributors: Heikkilä, J., Martinsuo, M.

Number of pages: 7

Pages: 18-24

Publication date: 2015

Peer-reviewed: Yes

### Publication information

Journal: Työpoliittinen aikakauskirja

Issue number: 3

ISSN (Print): 0787-510X

Original language: Finnish

URLs:

<http://www.tem.fi/files/43902/tak32015.pdf>

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

### Long-term effects of purchasing: fact or fiction?

Long-term approach to evaluate the performance of purchasing over its entire life-cycle is challenging. It is especially hard to determine the relationship between the early purchasing actions and the long-term consequences of acquiring complex product-service combinations with a long life-cycle. We carried out an interview study with four companies to explore how the long-term purchasing perspective is perceived in different business environments. The results indicate that practices to create long-term consequences of purchasing activities take many different forms. The study highlights practices of the purchasing function when aiming at creating long-term effects of purchasing.

### 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: Heikkilä, J., Jääskeläinen, A., Thitz, O.

Publication date: 2016

### Host publication information

Title of host publication: Proceedings of 25th IPSERA 2016 conference, 20-23.3.2016, Dortmund, Germany.

Publisher: International Purchasing and Supply Education and Research Association IPSERA

Electronic versions:

paper 102

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708211694>

URLs:

<http://www.ipsera2016.lfo.tu-dortmund.de/welcome-to-ipsera-2016/> (Link to conference web-page)

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

### Power and wavelength scaling using semiconductor disk laser - bismuth fiber MOPA systems

We present a master oscillator power amplifier (MOPA) system that comprises a mode-locked semiconductor disk laser (SDL) emitting at 1.33  $\mu\text{m}$  and a bismuth-doped fiber amplifier. The mode-locked SDL was fabricated by wafer bonding an InP-based gain section with a GaAs-based distributed Bragg reflector (DBR) using (3-Mercaptopropyl)trimethoxysilane. The bismuth-doped fiber amplifier was pumped with a continuous wave SDL emitting at 1.18  $\mu\text{m}$ . The MOPA system produced pulses at a repetition rate of 827 MHz with a pulse energy of 0.62 nJ, which corresponds to an average output power of more than 0.5 W.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Frontier Photonics, Optoelectronics Research Centre, Research group: Ultrafast and intense lasers,

Research group: Semiconductor Technology and Applications, Ulyanovsk State University, Fiber Optics Research Center, Russian Academy of Sciences

Contributors: Heikkinen, J., Gumenyuk, R., Rantamäki, A., Lyytikäinen, J., Leinonen, T., Zolotovskii, I., Melkumov, M., Dianov, E. M., Okhotnikov, O. G.

Number of pages: 7

Publication date: 2015

### Host publication information

Title of host publication: Vertical External Cavity Surface Emitting Lasers (VECSELS) V

Place of publication: BELLINGHAM

Publisher: SPIE

Editor: Guina, M.

Article number: 93490E

ISBN (Print): 9781628414394

### Publication series

Name: Proceedings of SPIE

Publisher: SPIE-INT SOC OPTICAL ENGINEERING

Volume: 9349

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: Semiconductor disk laser (SDL), vertical-external-cavity surface-emitting laser (VECSEL), modelocking, wafer bonding, bismuth-doped fiber, master oscillator power amplifier (MOPA), SUPERCONTINUUM GENERATION, OUTPUT POWER, PICOSECOND, VECSEL, PULSES, GHZ

DOIs:

10.1117/12.2076805

Source: WOS

Source ID: 000353134900011

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

### Surrogate model for rotational stiffness of welded tubular Y-joints

#### 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, Poznan University of Technology, Peter Great St Petersburg Polytech Univ  
Contributors: Heinisuo, M., Mela, K., Tiainen, T., Jokinen, T., Baczkiewicz, J., Garifullin, M.  
Number of pages: 22  
Pages: 18-39  
Publication date: 2015

#### Host publication information

Title of host publication: METNET Tenth International Seminar in Budapest 13.-14.10.2015  
ISBN (Print): 978-951-784-762-9  
ISBN (Electronic): 978-951-784-763-6

#### Publication series

Name: HAMKin julkaisu  
No.: 15  
ISSN (Print): 1795-4231  
ISSN (Electronic): 1795-424X  
URLs:  
<http://urn.fi/URN:ISBN:978-951-784-763-6>  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

### The 13th Nordic Steel Construction Conference (NSCC.2015)

#### General information

Publication status: Published  
MoE publication type: C2 Edited books  
Organisations: Department of Civil Engineering, Research group: Structural Mechanics, Research group: Metal and Light-wight structures  
Contributors: Heinisuo, M. (ed.), Mäkinen, J. (ed.)  
Publication date: 23 Sep 2015

#### Publication information

Place of publication: Tampere  
Publisher: Tampere University of Technology  
ISBN (Print): 978-952-15-3578-9  
ISBN (Electronic): 978-952-15-3579-6  
Original language: English  
Research output: Book/Report > Anthology > Scientific > peer-review

### Kattavasti rivitaloista

### General information

Publication status: Published  
MoE publication type: D1 Article in a trade journal  
Organisations: School of Architecture, Research group: ASUTUT  
Contributors: Helamaa, A.  
Number of pages: 2  
Pages: 80-81  
Publication date: 2015  
Peer-reviewed: Unknown

### Publication information

Journal: Arkkitehti  
Issue number: 3  
ISSN (Print): 0783-3660  
Original language: Finnish  
Research output: Contribution to journal › Book/Film/Article review › Professional

## 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](https://doi.org/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

## 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

## Teoriaa ja kokemuksia arvioinnista MOOCien aikakaudella

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Information Management and Logistics, Research group: Novi, Tampere University of Applied Sciences

Contributors: Helander, N., Myllylä, M.

Number of pages: 7

Pages: 70-77

Publication date: 11 Jul 2016

Peer-reviewed: Yes

### Publication information

Journal: TAMPEREEN AMMATTIKORKEAKOULUN JULKAISUJA. SARJA B, RAPORTEJA

ISSN (Print): 1456-002X

Original language: Finnish

URLs:

<http://julkaisut.tamk.fi/PDF-tiedostot-web/B/88-Floworks.pdf>

Research output: Contribution to journal › Article › 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

## 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)

## The development curve of knowledge management practices: a ten year perspective from top50 Finnish enterprises

### 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 Information Management and Logistics

Contributors: Helander, N., Väyrynen, H., Zhao, X., Kukko, M.

Publication date: 31 Jan 2015

### Host publication information

Title of host publication: 15th Eurasia business and economics society conference : Lisbon, Portugal, January 8-10, 2015

Publisher: Springer

ISBN (Electronic): 978-3-319-27573-4

URLs:

<https://www.ebesweb.org/Conferences/Recent/15th-EBES-Conference-Lisbon.aspx>

### Bibliographical note

INT=tlo,"Zhao, Xuepin"

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

## Pystytäänkö haitallisia ilmanvaihtovikoja havaitsemaan ja poistamaan

### General information

Publication status: Published

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

Organisations: Department of Civil Engineering, Research group: Real estate development, VTT

Contributors: Heljo, J., Kauppinen, T.

Number of pages: 6

Pages: 325-330

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

## Energiätehokkuus 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

### Koko Julkisivua peittävän lasijulkisivun vaikutus Etelä-Ruotsissa sijaitsevan rakennuksen energiatehokkuuteen

Article discuss the effect of the added façade glazing on the building energy consumption in one case building in Malmö, Sweden

### 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, Lund University

Contributors: Hilliaho, K., Nordquist, B., Wallentén, P.

Number of pages: 8

Pages: 509-516

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

### Publication series

Name: Rakennustekniikan laitos. Rakennetekniikka. Seminaarijulkaisu 4

No.: 4

ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

Keywords: Double skin facade, Energy efficiency, New renovation concepts, Innovative HVAC, Earth to air heat exchanger

URLs:  
<http://www.ril.fi/media/files/koulutus/rakennusfysiikka-2015-cfp.pdf>

<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

### Lasitettujen parvekkeiden ja terassien käyttäytyminen tulipaloissa

### General information

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures, Palotekninen insinööritoimisto Markku Kauriala Oy, Lumon Oy

Contributors: Hilliaho, K., Hietaniemi, J., Visa, P.

Number of pages: 6

Pages: 18-23

Publication date: 24 Aug 2015

Peer-reviewed: Unknown

### Publication information

Journal: Palontorjuntatekniikka

Issue number: Erikoisnumero

Original language: Finnish

URLs:

[http://issuu.com/pelastustieto/docs/ptp\\_2015](http://issuu.com/pelastustieto/docs/ptp_2015)

Research output: Contribution to journal > Article > Professional

### Seinäjoen ydinkeskustan olennaiset kehitysvaiheet ja sen 1950 - 70-lukujen rakennusperinnön arvottamisperiaatteita

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: School of Architecture, Research group: Urban Laboratory

Contributors: Hirvonen, T.



Number of pages: 121  
Publication date: 2015

#### Publication information

Place of publication: Tampere  
Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos  
ISBN (Electronic): 978-952-15-3549-9  
Original language: Finnish  
Electronic versions:  
hirvonen\_seinajoen\_ydinkeskustan\_olennaiset\_kehitysvaiheet  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3549-9>

#### Bibliographical note

Versio ok 14.12.2015  
Research output: Book/Report › Commissioned report › Professional

#### The effect of tungsten carbide particles content in a weld deposit on its abrasion resistance

This paper describes the study of a weld deposit which contains tungsten carbide particles. For testing the process of gas metal arc welding in a protective atmosphere of a mixed gas with two types of cored wires were used. The selected cored electrode of a "F-Durit G" type already contains the tungsten carbide particles. The second used option was a cored electrode of a "Megafil A 864M" type with an increased boron content. For the second variant tungsten carbide particles with a 1-2 mm size were added to the weld pool, and a composite material layer was thus created. For the mentioned test two different levels of welding parameters were selected and the final weld deposit properties, particularly their abrasion resistance, were examined.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Materials Science, VSB-Technical University Ostrava, Czech Republic, University of Osijek  
Contributors: Hlavatý, I., Kozák, J., Krejci, L., Samardzic, I., Tuominen, J.  
Number of pages: 5  
Pages: 1345-1349  
Publication date: Oct 2017  
Peer-reviewed: Yes

#### Publication information

Journal: Technical Gazette - Technicki vjesnik  
Volume: 24  
Issue number: 5  
ISSN (Print): 1848-6339  
Original language: English  
Keywords: Hardfacing, Metal matrix composite, Gas metal arc welding, Abrasive wear  
Electronic versions:  
tv\_24\_2017\_5\_1345\_1349-1  
DOIs:  
10.17559/TV-20160503085356  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201710312093>  
Research output: Contribution to journal › Article › Scientific › peer-review

#### 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: Højbjerg 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

### 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

### 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

JUF0ID=72540

Source: Scopus

Source ID: 84952003607

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:tyy-201610194608>

#### Bibliographical note

oa 2015 Holopainen et al tarkistettu 19.10.2016 /KK

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

## Transpositions and duals high-order tensors. On theory and applications in mechanics

### 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.

Number of pages: 6

Pages: 188-193

Publication date: 4 Jun 2015

### Host publication information

Title of host publication: Proceedings of the XII Finnish Mechanics Days : Suomen XII mekaniikkapäivien esitelmät

Publisher: Rakenteiden Mekaniikan Seura ry

Editor: Kouhia, R.

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

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

### Publication series

Name: Journal of Structural Mechanics

Publisher: Rakenteiden mekaniikan seura r.y.

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

## 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

## 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

#### 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

#### On Predicting Video Quality Expectations of Mobile Users

Mobile network operators are currently seeking for simple but accurate methods to predict the levels of satisfaction for their customers using the on-line multimedia applications, such as YouTube. Even though the ultimate user demands are known to be influenced by multiple factors, there is one clear trend - people require an increasingly higher quality of mobile video services. To this end, modeling the corresponding quality of experience (QoE) constitutes a non-trivial task and calls for a careful balance between the key underlying aspects, while maintaining the overall complexity as low as possible. This should in turn deliver the much needed usability of the resulting model across many real-world scenarios, and in this work we develop a novel QoE prediction model based on our extensive user experience investigation of the YouTube service. Our proposed solution allows network operators to estimate the degrees of video quality and thus predict the associated mobile user expectations in their deployments. The design principles behind our methodology, its accuracy evaluation, as well as the obtained numerical results are reported in the course of this paper.

##### 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, Brno University of Technology

Contributors: Hosek, J., Kovac, D., Uhler, D., Galinina, O., Andreev, S., Koucheryavy, Y., Ries, M.

Number of pages: 6

Pages: 110-115

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.2015.7382414

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

### **Target tracking via combination of particle filter and optimisation techniques**

Particle filters (PFs) have been used for the nonlinear estimation for a number of years. However, they suffer from the impoverishment phenomenon. It is brought by resampling which intends to prevent particle degradation, and therefore becomes the inherent weakness of this technique. To solve the problem of sample impoverishment and to improve the performance of the standard particle filter we propose a modification to this method by adding a sampling mechanism inspired by optimisation techniques, namely, the pattern search, particle swarm optimisation, differential evolution and Nelder-Mead algorithms. In the proposed methods, the true state of the target can be better expressed by the optimised particle set and the number of meaningful particles can be grown significantly. The efficiency of the proposed particle filters is supported by a truck-trailer problem. Simulations show that the hybridised particle filter with Nelder-Mead search is better than other optimisation approaches in terms of particle diversity.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Signal Processing, University of Toledo, Bowling Green State University

Contributors: Hosseini, S. S. S., Jamali, M. M., Astola, J., Gorsevski, P. V.

Number of pages: 18

Pages: 212-229

Publication date: 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: International Journal of Mathematical Modelling and Numerical Optimization

Volume: 7

Issue number: 2

ISSN (Print): 2040-3607

Ratings:

Scopus rating (2016): CiteScore 1.44 SJR 0.351 SNIP 0.935

Original language: English

ASJC Scopus subject areas: Numerical Analysis, Modelling and Simulation, Applied Mathematics

Keywords: Differential evolution, Nelder-Mead, Particle filter, Particle swarm optimisation, Pattern search, PSO, Target tracking

DOIs:

10.1504/IJMMNO.2016.077068

Source: Scopus

Source ID: 84990239582

Research output: Contribution to journal › Article › 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

### **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

### **The Workplace for Researchers – Enhancing Concentration and Face-to-face Interaction**

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering  
Contributors: Huhtelin, M., Nenonen, S.  
Pages: 753-764  
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  
Publisher: Tampere University of Technology. Department of Civil Engineering  
ISBN (Electronic): 978-952-15-3741-7  
URLs:  
<http://urn.fi/URN:ISBN:978-952-15-3741-7>

#### **Bibliographical note**

INT=rak,"Huhtelin, Mervi"  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **Resilient Asset Management and Governance for Deteriorating Water Services Infrastructure**

This paper argues that strategic asset management and a sound regulatory regime are required urgently if we want to change the current paradigm of aging and decaying water services infrastructure and expand the coverage of improved water services in the developing economies. In the OECD countries access to safe water supply and sanitation has largely been ensured through substantial investment over many decades. Yet, significant investments will still be required to rehabilitate the existing infrastructures, to bring them into conformity with more stringent environmental and health regulations, and to maintain service quality in the future. In the non-OECD countries the challenges are more daunting.

Large parts of their population have no access and many suffer from unsatisfactory services. Nearly one billion people lack access to clean drinking water and 2.6 billion people lack access to improved sanitation services. Lack of sound economic regulatory frameworks and enforcement regimes, and poor asset management practices, in particular underpricing of water services is a common problem throughout the world.

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Department of Civil Engineering, Department of Chemistry and Bioengineering  
Contributors: Hukka, J. J., Katko, T. S.  
Number of pages: 8  
Pages: 112-119  
Publication date: 2015  
Peer-reviewed: Yes

#### Publication information

Journal: Procedia Economics and Finance  
Volume: 21  
ISSN (Print): 2212-5671  
Original language: English  
Keywords: aging and deteriorating water services infrastructure, investment gap, strategic asset management, regulatory and enforcement framework, sustainability.  
DOIs:  
10.1016/S2212-5671(15)00157-4  
Source: RIS  
Source ID: urn:B63C341C3AC1323B613E64632E9D1135  
Research output: Contribution to journal › Article › 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

### On Detecting the Shape of an Unknown Object in an Electric Field

The problem discussed in this paper is detecting the shape of an unknown object in a 2-dimensional static electric field. For simplicity, the problem is defined in a partially rectangular domain, where on a part of the boundary the potential and/or its normal derivative are known. On the other part of the boundary the boundary curve is unknown, and this curve is to be determined. The unknown part of the boundary curve describes the shape of the unknown object. The problem is defined in the complex plane by an analytic function  $w=f(z) = u(x,y)+iv(x,y)$  with the potential  $u$  as its real part. Then the inverse function is given as  $f^{-1}(w) = x(u,v)+iy(u,v)$ , where the functions  $x$  and  $y$  are harmonic in a rectangle with an unknown boundary condition on one boundary. The alternating-field technique is used to solve the unknown boundary condition.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Mathematics, Research group: MAT Mathematical and semantic modelling, Research group: MAT Intelligent Information Systems Laboratory



Contributors: Humaloja, J., Hämäläinen, T., Pohjolainen, S.  
Publication date: 2016

#### Host publication information

Title of host publication: Progress in Industrial Mathematics at ECMI 2014  
Publisher: Springer International Publishing  
Editors: Russo, G., Capasso, V., Nicosia, G., Romano, V.  
ISBN (Print): 978-3-319-23412-0  
ISBN (Electronic): 978-3-319-23413-7

#### Publication series

Name: Mathematics in Industry  
Publisher: Springer-Verlag  
Volume: 22  
ISSN (Electronic): 1612-3956  
Keywords: free boundary problem, industrial mathematics  
DOIs:  
10.1007/978-3-319-23413-7  
URLs:  
<http://urn.fi/URN:NBN:fi:tty-201606014205>. No embargo end date input  
<https://www.springer.com/gp/book/9783319234120>

#### Bibliographical note

Embargo avoinna, koska ei vielä julkaistu (Due May 3, 2017)  
HO / 2.5.2016

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

#### Winner-Does-Not-Take-All: Selective Attention and Local Bias in Platform-Based Markets

We examine competition between platforms in platform-based markets with agent-based modeling. In our proposed model, a consumer adopts a platform that offers the most relative utility of competing platforms. More specifically, the utility is derived from the local direct network effects arising from the social network of the consumer and the indirect network effects arising from complementary products of the platform. We portray the consumer as selectively attentive and locally biased. We contrast the proposed model to several alternative models with empirical data from the competition between Sony's PlayStation 3 and Microsoft's Xbox 360 and show that the proposed model, where the aforementioned consumer characteristics, and platform pricing, explain the adoption decisions of consumers and thus the division of the market between platforms. We offer important insights on how the dynamics of competition on the macro-level emerge from micro-level interactions between consumers.

#### 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, Lappeenranta University of Technology, Hanken School of Economics  
Contributors: Huotari, P., Järvi, K., Kortelainen, S., Huhtamäki, J.  
Publication date: Jan 2015

#### Host publication information

Title of host publication: Academy of Management Proceedings : Meeting Abstract Supplement  
Publisher: Academy of Management

#### Publication series

Name: Academy of Management. Annual Meeting Proceedings  
Publisher: Academy of Management  
ISSN (Electronic): 2151-6561  
URLs:  
<http://proceedings.aom.org/content/2015/1/16901.short>  
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

#### Theoretical 71-Concept Platform for Advancing Construction-related Business Management

**Abstract** The aim is to advance business management (BM) in construction via the independent literature review. 71 construction-related BM concepts have been published between 1990 and 2013. Focal firms are based in the OECD countries. 34 (48%) concepts are related to construction management (CM), 14 (20%) concepts to industrial management and international marketing, 12 (17%) concepts to project management (PM) and 11 (15%) concepts to corporate real estate. The combined share of 16 Porterian, 16 dynamism-based, 15 organisation-based, and 10 knowledge-based concepts is 81%. The 71-concept platform is neither highly theoretically advanced, nor highly applicable. The propositions are defined for advancement.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering, Research group: Digitalization in the real estate and construction sector

Contributors: Huovinen, P.

Number of pages: 8

Pages: 80-87

Publication date: 2015

Peer-reviewed: Yes

#### Publication information

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

ASJC Scopus subject areas: Business, Management and Accounting(all)

Keywords: Applied research, business management, conceptualisation, construction, literature review, real estate, school of thought

Electronic versions:

CEO2015 Pekka Huovinen Theoretical 71-concept platform Procedia Economics and Finance 21 (2015) 80-87

DOIs:

10.1016/S2212-5671(15)00153-7

URLs:

<http://urn.fi/URN:NBN:fi:tty-201701031010>

<http://www.sciencedirect.com/science/article/pii/S2212567115001537>

Source: RIS

Source ID: urn:2259E842B1A87C3870EDBE85F572BB11

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

#### Leveraging concepts for environmentally sustainable business management in construction - a focused review

The main objective of this paper is to advance applied conceptual knowledge about environmentally sustainable business management (BM) in construction. Environmentally sustainable BM is herein defined to encompass the utilization and development of natural resources in ways which are compatible with the maintenance of these resources, and with the conservation of the natural and built environments, for current and future generations. In principle, concept designers can incorporate environmental sustainability into their BM concepts as a dimension, an element, or an attribute of managing,

or as a criterion in decision making. Readily, the 71 construction-related BM concepts have been published between 1990 and 2013. A focused review resulted in the expected findings, i.e., only the 11 (15%) construction-related BM concepts have been designed along the environmental sustainability dimension. Thus, it is posited that high-sustainability BM concepts be designed by coupling environmental sustainability with the three other necessary dimensions, i.e., content-free frames of reference on BM, schools of thought on generic BM, and focal contexts in construction, respectively. In turn, CIB-related researchers may adopt these couplings and engage themselves with cross-disciplinary BM conceptualization programs in collaboration with farsighted business managers in construction.

### 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: Huovinen, P.

Number of pages: 11

Pages: 286-296

Publication date: 2015

### Host publication information

Title of host publication: CIB Proceedings 2015 : Going North for Sustainability: Leveraging Knowledge and Innovation for Sustainable Construction and Development

Place of publication: London, UK

Publisher: IBEA Publications Ltd

Editor: Egbu, C.

ISBN (Print): 978-1-326-47951-0

ASJC Scopus subject areas: Building and Construction

Keywords: business management, concept design, construction, environmental sustainability, research review

Electronic versions:

CIB 2015 Huovinen Pekka Leveraging environmentally sustainable BM concepts 121115

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201701101042>

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

### Relevance of five generic business ideation approaches vis-a-vis contexts embedded within construction markets

In general, ideation encompasses the formation of ideas or mental images of things not present to the senses or simply the creation of new ideas. Business ideation is herein perceived to be the core area within future-oriented business management (BM). The main aim of the paper is to assess and advance the relevance of the five generic approaches to business ideation vis-à-vis

firms targeting contexts embedded within construction markets. A typology differentiates between the fitting, value-creating, profit generating, systemizing, and commercializing approaches. It is argued that each approach is, at minimum, highly relevant in the case of business unit (BU) management targeting preferred client investment and procurement behavior within construction markets. Approach 1 involves BUs aiming at fit between clients and their needs as well as units' offerings and operations, respectively. Professional clients couple needs with preferred procurement methods whereas competing BUs are trying to achieve best fit between solutions and client behaviors. This approach calls for research on how to sustain such fit between a BU and clients when changes occur. Approach 2 enables BUs to create value by specifying high-value propositions, producing value to clients, and capturing their fair shares of produced values. Farsighted clients look for more or novel values for construction investments and, thus, units are collaborating and co-producing values to clients. This approach calls for research on a BU's value co-production with such clients, value capture, and offerings integration. Approach 3 accommodates BUs that are focusing on generating profits, achieving

high-profit levels, and sustaining them. Pioneering clients pursue complex investment aims that can be met only by radical solutions. This approach calls for research on a BU's profit-generating mechanisms related to clients with complex investment needs and radical solutions. Approach 4 facilitates BUs to systemize businesses around core ideas. Sectoral clients have large or complex needs and, in turn, units are satisfying them by engineering systems as wholes and delivering them as parts. This approach calls for research on BUs with systems and clients, multi-dimensional investments, and system engineering as wholes and parts. Approach 5 facilitates BUs to couple ideas with commercializing dimensions such as entrepreneurship, innovation, business development, venturing, or spin-offing. Risk-taking clients prefer to enter high-innovation contracts and, thus, units are offering novel solutions and emerging business cases. This approach calls for research on a BU's entrepreneurial competencies and risk-taking clients, wicked investment needs, and high-innovation contracts. In the same vein, the suggestions are put forth to CIB-related scholars for directing research on along the BM and ideation dimensions and adopting most relevant approaches. Likewise, management in firms and BUs competing in construction markets are encouraged to assess the business case-sensitive relevance of each of Approaches 1-5 and try out those with initial high relevance.

### 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: Huovinen, P.  
Number of pages: 12  
Pages: 1129-1140  
Publication date: 28 May 2016

#### Host publication information

Title of host publication: Proceedings of the CIB World Building Congress 2016, May 30 - June 3, 2016, Tampere, Finland  
: Advancing products and services  
Volume: V  
Place of publication: Tampere  
Publisher: Tampere University of Technology. Department of Civil Engineering  
Editor: Achour, N.  
ISBN (Print): 978-952-15-3745-5  
Keywords: Business ideation, business management, construction markets, literature review  
Electronic versions:  
CIB WBC16 Pekka Huovinen Final paper (camera-ready) 280316  
URLs:  
<http://urn.fi/URN:NBN:fi:ty-201611214721>  
URLs:  
<http://www.wbc16.com/wbc16/welcome.html>  
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

#### Suuren lämmöneristämättömän maanvastaisen alapohjan vaikutus rakennuksen energiankulutukseen

#### 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: Huttunen, P., Rantala, J., Vinha, J.  
Number of pages: 8  
Pages: 335-342  
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: 1

Place of publication: Tampere

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.

Publisher: Tampereen teknillinen yliopisto

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@1102/@web/@p/documents/liit/x229155.pdf](http://www.tut.fi/cs/groups/public_news/@1102/@web/@p/documents/liit/x229155.pdf)

#### Bibliographical note

INT=rak,"Rantala, Juha"

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

#### 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

#### 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

#### Puu-Hubi: Perinteestä uusiin innovaatioihin

Maailmalla on menossa puurakentamisen buumi, jolle ennakoidaan pitkää ikää ja valoisa tulevaisuutta. Kehityksen etulinjassa on saksankielinen Keski-Eurooppa, Ruotsi ja Norja. Myös Kanadassa ja Yhdysvalloissa puurakentamisella on pitkät perinteet ja laajat markkinat. Vahvin muutosajuri puun käytön lisäämiselle on ilmastonmuutos. Suomi on mukana kansainvälisissä sopimuksissa, jotka sitovat meidät hiilidioksidipäästöjen runsaaseen pienentämiseen lähitulevaisuudessa. Mutta vaikka ympäristösopimukset asettavat kovia velvoitteita, ne tarjoavat myös uusia taloudellisia mahdollisuuksia.

Seinäjoen Ammattikorkeakoulun ja Tampereen teknillisen yliopiston yhteistyössä käynnistämä Puu-Hubi-projekti pyrki edistämään eteläpohjalaista puurakentamista. Tavoitteena oli puukerrostalon rakentamisessa vaadittava osaaminen ja tuotetarjonta, sekä näiden myötä kasvava liiketoiminta. Tässä kirjassa esitellään teemoja, joita hankkeen kuluessa kohdattiin, ja jotka tuntuivat tuoreilta. Kirjan tekstit eivät ole ”yhdestä puusta”, vaan ne rönnyvät omia uomiaan kohti yhteistä aihettamme, suomalaisen puurakentamisen uutta tulemistä.

#### General information

Publication status: Published  
MoE publication type: D4 Published development or research report or study  
Organisations: School of Architecture, Research group: Urban Laboratory  
Contributors: Hynynen, A. (ed.), Panu, A. (ed.), Taanila, T. (ed.)  
Number of pages: 107  
Publication date: 2015

#### Publication information

Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos  
ISBN (Print): 978-952-15-3497-3  
ISBN (Electronic): 978-952-15-3498-0  
Original language: Finnish  
Electronic versions:

puu\_hubi

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3498-0>

#### Bibliographical note

Versio ok 14.12.2015

Research output: Book/Report › Commissioned report › Professional

#### Puurakentamisesta potkua alueiden ja kaupunkien kehittämiseen

#### General information

Publication status: Published  
MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material  
Organisations: School of Architecture, Research group: Urban Laboratory

Contributors: Hynynen, A.  
Number of pages: 19  
Pages: 75-93  
Publication date: 2015

#### Host publication information

Title of host publication: Puu-Hubi. : Perinteestä uusiin innovaatioihin  
Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos  
Editors: Hynynen, A., Panu, A., Taanila, T.  
ISBN (Print): 978-952-15-3497-3  
ISBN (Electronic): 978-952-15-3498-0  
URLs:

<http://URN.fi/URN:ISBN:978-952-15-3498-0>

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

#### 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

#### 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 0.28 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

### Professional knowledge, skills and competencies of the new graduates and the engineering professionals - Comparison of the importance in working-life

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Industrial Management, Policy Academic Engineers and Architects in Finland, TEK  
Contributors: Hyötynen, P., Mursu, S., Teini, J.  
Publication date: 2014

#### Host publication information

Title of host publication: SEFI Annual Conference 2014  
Place of publication: Brussel  
Publisher: European Society for Engineering Education SEFI  
ISBN (Print): 978-2-87352-004-5  
ASJC Scopus subject areas: Engineering(all), Education  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84939191998&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus  
Source ID: 84939191998  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Non-Instantaneous Polarization Dynamics in Resonant Dielectrics

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Optoelectronics Research Centre  
Contributors: Hyyti, J., Hofmann, M., Birkholz, S., Bock, M., Das, S. K., Grunwald, R., Hoffmann, M., Nagy, T., Demircan, A., Jupé, M., Ristau, D., Morgner, U., Brée, C., Woerner, M., Elsaesser, T., Steinmeyer, G.  
Publication date: 2015

#### Host publication information

Title of host publication: 2015 European Conference on Lasers and Electro-Optics - European Quantum Electronics Conference  
Place of publication: Washington, D.C.  
Publisher: Optical Society of America  
Article number: EE\_5b\_2



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

URLs:

[http://www.osapublishing.org/abstract.cfm?URI=EQEC-2015-EE\\_5b\\_2](http://www.osapublishing.org/abstract.cfm?URI=EQEC-2015-EE_5b_2)

Source: Bibtex

Source ID: urn:11581f3548cd9222d9ce827d8dba37e4

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

## **Liikuntapalveluiden ulkoistaminen ja palveluiden turvallisuus. Nykytilanne ja kuntien kokemukset – Loppuraportti**

### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Industrial Management, Research group: Safety Management and Engineering

Contributors: Hyytinen, T., Kivistö-Rahnasto, J.

Number of pages: 27

Publication date: 2015

### **Publication information**

Place of publication: Helsinki

Publisher: OPETUS- JA KULTTUURIMINISTERIÖ

ISBN (Electronic): 978-952-263-342-2

Original language: Finnish

### **Publication series**

Name: Opetus- ja kulttuuriministeriön julkaisuja

ISSN (Electronic): 1799-0351

URLs:

<http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2015/liitteet/okm9.pdf?lang=fi>

Research output: Book/Report > Commissioned report > Professional

## **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: Iaroyi, 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

## **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

#### Validation of the method to evaluate the corrosion propagation stage by hygrothermal simulation

Evaluating the propagation period for reinforcement corrosion in concrete facades is an important but complex task which contains a high level of uncertainty. Corrosion current intensity during the propagation period have been measured in a large number of studies and there is a general consensus in regard to factors affecting carbonation induced corrosion. Hence, a proper evaluation of hygrothermal conditions in concrete facade becomes crucial. In this study a method to calculate the corrosion propagation period was validated based upon a field survey of prefabricated concrete facades in large-panel apartment buildings. The method combines existing corrosion propagation models and the Delphin dynamic hygrothermal simulation tool, and takes into consideration material properties, carbonation depth, concrete cover depth, indoor and outdoor climate loads. With the proposed method, propagation consists of a time that is required for a concrete cover to begin cracking and a further expansion of the crack to open to 0.3 mm in width. As a result, the method is validated via the correlation between measured and calculated propagation periods across a range of twenty years. The sensitivity of the results are also studied. The method allows for an evaluation to be carried out on degradation, residual service life, and the need for the renovation of reinforced concrete facades.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures, Tallinn University of Technology

Contributors: Ilomets, S., Kalamees, T., Lahdensivu, J.

Number of pages: 8

Pages: 1113-1120

Publication date: 2016

#### Host publication information

Title of host publication: CESB 2016 - Central Europe Towards Sustainable Building 2016: Innovations for Sustainable Future

Publisher: Czech Technical University in Prague

ISBN (Electronic): 9788027102488

ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

Keywords: Concrete damage, Corrosion model, Corrosion propagation, Hygrothermal simulation, Service life

#### Bibliographical note

EXT="Kalamees, Targo"

Source: Scopus

Source ID: 84986883167

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

### **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

**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., Højbjerg Clarke, A.

Keywords: Public sector, Innovation, Service providers

URLs:

<http://www.impconference2015.com/>

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

### Recognising the culture context in information search

#### 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-University Kiel

Contributors: Jaakkola, H., Thalheim, B.

Number of pages: 9

Pages: 167-185

Publication date: 2016

#### Host publication information

Title of host publication: Proceedings of the 26th International Conference on Information Modelling and Knowledge Bases - EJC 2016. : June 6-10, 2016, Tampere, Finland.

Volume: 18

Place of publication: Tampere

Publisher: Tampere University of Technology Pori Department

Editors: Jaakkola, H., Thalheim, B., Kiyoki, Y., Yoshida, N.

ISBN (Electronic): 978-952-15-3747-9

#### Publication series

Name: Tampere University of Technology Pori Department Publications

No.: 18

ISSN (Electronic): 2323-8976

URLs:

<http://www.tut.fi/en/ejc/ejc-2016/index.htm>

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

### Proceedings of the 26th International Conference on Information Modelling and Knowledge Bases - EJC 2016: June 6-10, 2016, Tampere, Finland.

#### General information

Publication status: Published

MoE publication type: C2 Edited books

Organisations: Pori Department, Research group: Software Engineering and Intelligent Systems, Christian-Albrechts-University Kiel, Keio University, Japan, Komazawa University

Contributors: Jaakkola, H. (ed.), Thalheim, B. (ed.), Kiyoki, Y. (ed.), Yoshida, N. (ed.)

Publication date: 2016

#### Publication information

Place of publication: Tampere

Publisher: Tampere University of Technology

ISBN (Electronic): 978-952-15-3747-9

Original language: English

#### Publication series

Name: Tampere University of Technology, Pori Department Publications

Publisher: Tampere University of Technology

ISSN (Electronic): 2323-8976

URLs:

<http://www.tut.fi/en/ejc/ejc-2016/>

Research output: Book/Report › Anthology › 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

## **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

### **The role of the purchasing function in non-financial value creation**

Costs and transactions have been highlighted in the earlier research and practice around purchasing and supply management (PSM). This study investigates in-depth the role of the PSM function in creating non-financial value for the buying company and its customers. Interview study was used to examine four large organizations both in service and manufacturing industries. The findings indicate that relationship value gives a strong potential for developing successful buyer-seller relationships. Service support and personal interaction arise as important differentiators in building the relationships. Key differences across the different contexts existent in this study are also provided.

#### **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: Jääskeläinen, A., Thitz, O., Heikkilä, J.

Publication date: 2016

#### **Host publication information**

Title of host publication: 25th Proceedings of IPSERA 2016 conference, : 20-23.3.2016, Dortmund, Germany.

Electronic versions:

Non-financial value creation\_full paper

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201708211695>

URLs:

<http://www.ipsera2016.lfo.tu-dortmund.de/welcome-to-ipsera-2016/> (Conference web-site)

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

### **The role of performance measurement in supplier-buyer value-creation**

#### **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: Jääskeläinen, A., Thitz, O., Heikkilä, J.

Publication date: 2017

#### **Host publication information**

Title of host publication: Proceedings of 9th Conference on Performance Measurement and Management Control : 13-15 September 2017, Nice, France

Publisher: EIASM

#### **Publication series**

Name: Conference on Performance Measurement and Management Control

Publisher: EIASM

ISSN (Electronic): 2295-1660

URLs:

[http://www.eiasm.org/frontoffice/event\\_announcement.asp?event\\_id=1187#4844](http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=1187#4844)

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:

Social capital and solution provision\_AOM  
DOIs:

10.5465/AMBPP.2018.16278abstract

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

## 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

## 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, kaavamerkinnät, kaavamääräykset

URLs:

<http://urn.fi/URN:ISBN:978-952-11-4780-7>

Research output: Book/Report > Commissioned report > Professional

### 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 hiekkatekonurmipinnan joustosta. Pinnan joustoon vaikuttaa hiekan rakeisuus sekä nukan laatu (nukkatiheys, nukan pituus) ja kunto. Kenttärakenteen jousto-ominaisuuksia mitattiin kannettavalla pudotuspainolaitteella, Loadman II. Laitteen ”tehollinen” mittaussyvyys on n. 200 mm. Vuosina 2013–2014 mitattujen 30 hiekkatekonurmipintaisten pesäpallokentän joustomoduulin (E2) keskiarvo kenttäalueelta Loadmanilla (10 kg paino, Ø 132 mm kuormituslevy) mitattuna oli 100,8 MPa. Aikaisemmassa tutkimuksessa pesäpallokentiltä vuosina 1994–1995 mitattujen kymmenen uuden kentän joustomoduulin (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 joustomoduulin (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 täyttöhiekka tiivistyy sään ja kuormituksen vaikutuksesta. Myöhemmin kentän jousto-ominaisuudet eivät merkittävästi muutu. Uusi kenttä koetaan myös pelaajien mielestä usein pehmeäksi.

Pesäpallossa kovasta kentästä (korkea joustomoduuliarvo) 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 nyrjähdyskentän 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 mittausten mukaan 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 tekonurmen täyttöhiekka ilmavana (irtonaisena) ja nukka pystyssä, jolloin maksimoidaan sen hoitomahdollisuudet ja käyttöikä. Hyvällä hoidolla hiekkatekonurmipintaisten pesäpallokenttien 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:  
jäniskangas\_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

#### 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- Aware Display\_JarusriboonchaiEtAL\_CHI\_EA\_2015  
DOIs:  
10.1145/2702613.2732833  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Kolloidisten suspensioiden online -analysointi: tutkimuksesta liiketoimintaa

#### General information

Publication status: Published  
MoE publication type: D1 Article in a trade journal  
Organisations: Department of Materials Science, Research group: Ceramic materials, Department of Automation Science and Engineering, Research area: Measurement Technology and Process Control, Research area: Microsystems, Research area: Dynamic Systems

Contributors: Järveläinen, M., Yli-Hallila, T., Salpavaara, T., Verho, J., Vilkkö, M., Levänen, E.  
Number of pages: 4  
Pages: 54-57  
Publication date: Oct 2015  
Peer-reviewed: Unknown

#### Publication information

Journal: *Materia*  
Issue number: 5/2015  
ISSN (Print): 1459-9694  
Original language: Finnish  
Electronic versions:

*Materia* 5-2015\_kolloidisten  
URLs:

<http://urn.fi/URN:NBN:fi:tty-201705191418>

<http://www.vuorimiesyhdistys.fi/sites/default/files/materia/pdf/Materia%205-2015.pdf>

#### Bibliographical note

ORG=mol,0.5

ORG=ase,0.5

Research output: Contribution to journal › Article › Professional

#### 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:tty-201606134234> . Embargo ended: 18/08/16

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

### Monitoring urban air quality with a diffusion charger based electrical particle sensor

Abstract Urban air contains considerable amounts of harmful gaseous substances and aerosol particles. In this study, a recently introduced diffusion charger based PPS-M particle sensor (Pegasor Oy, Tampere, Finland) was evaluated for outdoor air quality measurements in urban environment. The PPS-M particle sensor was used in two stationary air quality measurement stations, one located in the roadside environment and the other in residential area, and in a mobile laboratory. The sampling of urban aerosol to the PPS-M sensor was performed without any pre-conditioning of aerosol. The sensor response to PM<sub>2.5</sub> varied between the measurements, being between 7 and 30 fA/( $\mu\text{g}/\text{m}^3$ ) depending on the aerosol source. The highest PM<sub>2.5</sub> response was observed in the roadside study for exhaust particles while the lowest PM<sub>2.5</sub> response was observed for large long range transported aerosol particles having relatively large mean particle size. The sensor signal was found to produce very linear response, with only minimal deviation, to the lung deposited particle surface area concentration (from 4.5 to 6 fA/( $\mu\text{m}^2/\text{cm}^3$ )) and to the condensation sink of urban air particles (from  $1.0 \times 10^4$  to  $1.2 \times 10^4$  fA cm<sup>3</sup>). The sensor response to particle number concentration was defined to be 0.0044 fA/(1/cm<sup>3</sup>) in roadside environment. In this environment, the signal was found to correlate also with NO and NO<sub>2</sub> concentrations of roadside air due to the same origin of particulate and gaseous pollutants. Similar correlation between NO<sub>x</sub> and the PPS-M signal was not observed in residential area.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Department of Signal Processing, Research area: Aerosol Physics, Urban circular bioeconomy (UrCirBio)

Contributors: Järvinen, A., Kuuluvainen, H., Niemi, J., Saari, S., Dal Maso, M., Pirjola, L., Hillamo, R., Janka, K., Keskinen, J., Rönkkö, T.

Publication date: 2015

Peer-reviewed: Yes

Early online date: 2014

#### Publication information

Journal: Urban Climate

Volume: 14

Issue number: 3

ISSN (Print): 2212-0955

Ratings:

Scopus rating (2015): CiteScore 2.23 SJR 0.879 SNIP 1.032

Original language: English

Keywords: Particle sensor, Urban air quality, Traffic emissions, Instrument comparison

DOIs:

10.1016/j.uclim.2014.10.002

#### Bibliographical note

ORG=fys,0.5

ORG=sgn,0.5

Source: RIS

Source ID: urn:C09F5E550C75A3945CB60BFFC830456C

Research output: Contribution to journal > Article > 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

### **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

### **On the effect of damping on stability of non-conservative systems**

Anomalous damping-induced destabilization is investigated in a simple, small system consisting of a double pendulum with springs. Linearized and fully non-linear results are presented.

#### **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, Tampere University of Technology

Contributors: Jeronen, J., Kouhia, R.

Number of pages: 82

Pages: 77

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)

#### **Bibliographical note**

AUX=mei,"Jeronen, Juha"

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

### **Multi-site delamination analysis using virtual crack closure technique for a composite aircraft wing flap**

In this study, we investigate the application of virtual crack closure technique (VCCT) for a multi-site delamination damage in the F-18 Hornet fighter aircraft's wing flap. The work focuses on the interaction between multiple delamination sites at different ply interfaces. The effects of numerical analysis parameters, such as energy release rate tolerance, on the criticality of the delamination and on the delamination growth are also studied.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, Research group: Plastics and Elastomer Technology, Aalto University

Contributors: Jokinen, J., Kanerva, M., Saarela, O.

Publication date: Sep 2018

#### **Host publication information**

Title of host publication: 31st Congress of the International Council of the Aeronautical Sciences (Proceedings) : Belo Horizonte, Brazil September 9-14, 2018

Publisher: ICAS Press

ISBN (Electronic): 978-3-932182-88-4

Keywords: Multi-site damage, Finite element analysis, Fighter aircraft, Flap

URLs:

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

[https://www.icas.org/Papers\\_previous\\_congresses.html](https://www.icas.org/Papers_previous_congresses.html)

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

### **Kustannusoptimaaliset energiakorjaus- ja uusiutuvan energian tuotannon ratkaisut kunnallisissa palvelurakennuksissa**

#### **General information**

Publication status: Published

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

Organisations: Civil Engineering, Research group: Building Physics, Aalto Univ, Aalto University, Sch Engrn, Dept Energy Technol, Equa Simulation Finland Oy

Contributors: Jokisalo, J., Sankelo, P., Sirén, K., Vinha, J.

Number of pages: 6

Pages: 287-292

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: 1

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, Rakennustekniikka, Rakennusfysiikka

Editors: Vinha, J., Kivioja, H.

ISBN (Print): 978-952-15-4022-6

ASJC Scopus subject areas: Engineering(all), Energy(all)

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@l102/@web/@p/documents/liit/x229238.pdf](http://www.tut.fi/cs/groups/public_news/@l102/@web/@p/documents/liit/x229238.pdf)

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

### **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

### **Puurunkoisten tuuletettujen yläpohjien kosteustekninen toiminta**

#### **General information**

Publication status: Published

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

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

Contributors: Junttila, H., Laukkarinen, A., Vinha, J.

Number of pages: 6

Pages: 77-82

Publication date: 22 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

#### **Publication series**

Name: Rakennustekniikan laitos. Rakennetekniikka. Seminaarijulkaisu

No.: 4

ASJC Scopus subject areas: Building and Construction, Civil and Structural Engineering

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

### **Social media applications in external B2B transactions: An empirical analysis of the Finnish technology industry**

Despite the popularity of the topic, social media research is still limited and focuses largely on the role of consumer-to-consumer (C2C) and business-to-consumer (B2C) domains (Volpentesta and Felicetti, 2012; Michaelidou et al., 2011). In many aspects, B2C social media practices are not directly useful for inter-organizational and business-to-business (B2B) purposes. The main aim of this paper is to increase the understanding of the current applications of social media in external B2B transactions. This is carried out through an extensive survey of companies in the technology industry which are operating purely in B2B markets, having only other companies as customers.

We wanted to understand how industrial B2B companies currently apply social media in their own inter-organizational applications, what potential they see for social media in this context, and what kind of support they need to better adopt social media together with

their customers and partners.

A population of 2488 Finnish decision makers from the Federation of Finnish Technology Industries were observed. Based on the answers of 143 different companies, 125 companies were found to wholly (100%) represent B2B markets, and these were chosen as the sample of this particular study.

Studies on social media, especially survey-based studies, have not focused solely on B2B companies, particularly on the inter-organizational applications of social media in B2Bs, except for the B2B-marketing oriented study of Michaelidou et al. (2011) and the study of social media utilization in B2B relationships by Pettersson et al. (2014). This study extends these previous studies by creating new understanding of the maturity of social media integration in businesses, organizational business problems that companies perceive can be solved with social media, and approaches that can support social media adoption in B2B companies.

Managerially, the results can be used, for instance, to better understand the various possibilities of applying social media for inter-organizational use in B2Bs, which are currently only superficially understood by a significant portion of managers. This can help support and facilitate external social media use in B2Bs.

### **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. J., Kärkkäinen, H., Aramo-Immonen, H., Ammirato, S., Michele Felicetti, A., Della Gala, M.

Number of pages: 11

Pages: 1930-1940

Publication date: 2015

### **Host publication information**

Title of host publication: 10th International Forum on Knowledge Asset Dynamics : Culture, Innovation and Entrepreneurship: connecting the knowledge dots

Volume: 10

Place of publication: Bari

ISBN (Electronic): 978-88-96687-07-9

Keywords: social media, business-to-business, enterprise social, survey, inter-organizational

URLs:

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

### **Bibliographical note**

ORG=tlo,0.5

ORG=pla,0.5

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

### **Social Media in Business-to-Business Companies' Innovation**

Regarding the increasingly important paradigm of open innovation, it is recognized that valuable innovation-related knowledge is distributed ever more widely to various actors outside the company borders, such as users, customers, and communities. Various types of novel collaborative web tools and approaches, such as social media, can enable and significantly increase the use of distributed knowledge both within and outside company borders.

It is a common assumption that it is much more difficult to utilize social media in business-to-business (B2B) innovation and the customer interface because of the significant differences in B2B markets, B2B products, and product

development, for example. Despite the growing number of company experiments and academic studies, social media are still new to many businesses. The opportunities and benefits of social media are not well understood in business, especially in B2B context. Despite the recent increasing interest in the use of social media in B2B marketing, it has received little attention from the innovation perspective.

The general purpose of this thesis is to study and help to understand the use of social media in B2B companies' innovation. The thesis focuses on the innovation process, customer interface and the related perspective of the creation and sharing of customer knowledge. The main objectives of the dissertation are to understand the challenges, new opportunities, use and benefits, as well as, functions and roles of social media in B2B innovation. The choice of carrying out the dissertation as an article thesis has offered the researcher the opportunity to study from multiple perspectives a phenomenon that has been little researched or understood. The thesis combines quantitative and qualitative research. Quantitative research approach was used to determine the current use and perceived potential of social media tools in innovation, as well as to identify challenges of social media use in B2B company innovation. Qualitative research was used to gain a deep understanding of the challenges and benefits, and roles and functions of social media in B2B innovation.

The thesis contributes to the increasing understanding on the rather little understood topic of social media and its potential in B2B companies' innovation. Based on the research, new understanding was gained on the challenges that B2B companies face in using social media in innovation, on the new possibilities and benefits that social media provide for innovation, as well as on the applications and the roles of social media in B2B innovation.

In addition, models and theories were developed for enhancing social media use: based on the qualitative research, for example, a Social Customer Learning model was built, which aims to help researchers and managers to identify and evaluate different social media approaches in business-to-business customer interface and innovation; modifications and improvements were proposed for media richness theory and channel expansion theory for the better consideration of the social media and the innovation contexts.

#### **General information**

Publication status: Published

MoE publication type: G5 Doctoral dissertation (article)

Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT)

Contributors: Jussila, J.

Number of pages: 70

Publication date: 6 Nov 2015

#### **Publication information**

Publisher: Tampere University of Technology

ISBN (Print): 978-952-15-3599-4

ISBN (Electronic): 978-952-15-3621-2

Original language: English

#### **Publication series**

Name: Tampere University of Technology. Publication

Publisher: Tampere University of Technology

Volume: 1333

ISSN (Print): 1459-2045

Electronic versions:

jussila\_1333

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3621-2>

#### **Bibliographical note**

Awarding institution: Tampere University of Technology

Versio ok 14.12.2015

Research output: Book/Report > Doctoral thesis > Collection of Articles

### **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

#### Sosiaalinen media brändi- ja asiakastiedon lähteenä

##### General information

Publication status: Published  
MoE publication type: Not Eligible  
Organisations: Department of Information Management and Logistics, Research group: Novi, Managing digital industrial transformation (mDIT), University of Vaasa (UVA), University of Tampere  
Contributors: Jussila, J., Helander, N., Vuori, V., Okkonen, J.  
Number of pages: 2  
Pages: 55-56  
Publication date: 23 Sep 2016

##### Host publication information

Title of host publication: TiedeAreena 2016  
Volume: 11  
Place of publication: Pori  
Publisher: Tampereen teknillinen yliopisto, Porin laitos  
Editor: Tuomi, P.  
ISBN (Print): 978-952-15-3802-5  
ISBN (Electronic): 978-952-15-3803-2  
Keywords: sosiaalinen media, brändi, asiakastieto  
URLs:  
[https://tutcris.tut.fi/portal/files/8228327/TiedeAreena\\_2016.pdf](https://tutcris.tut.fi/portal/files/8228327/TiedeAreena_2016.pdf)  
URLs:  
<http://www.ucpori.fi/tiedeareena-ohjelma>  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

#### Reliability and Perceived Value of Sentiment Analysis for Twitter Data

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Managing digital industrial transformation (mDIT), Industrial and Information Management, Research group: Business Data Research Group, Research group: Knowledge and Learning Research Center, University of Vaasa, University of Tampere  
Contributors: Jussila, J., Vuori, V., Okkonen, J., Helander, N.  
Pages: 43-48  
Publication date: 3 Jun 2017

##### Host publication information

Title of host publication: 5th International Conference on Strategic Innovative Marketing, At Athens, Greece, : 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:

Reliability and perceived value

DOIs:

10.1007/978-3-319-56288-9\_7

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910033678>

URLs:

<http://www.icsim.net/>

#### **Bibliographical note**

jufoid=84314

EXT="Vuori, Vilma"

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

### **Social Media Analytics Empowering Customer Experience Insight**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Managing digital industrial transformation (mDIT), Industrial and Information Management, Research group: Business Data Research Group, Research group: Knowledge and Learning Research Center, Tampere University of Applied Science, Turku University of Applied Science

Contributors: Jussila, J., Boedeker, M., Jalonen, H., Helander, N.

Pages: 25-30

Publication date: 3 Jun 2017

#### **Host publication information**

Title of host publication: 5th International Conference on Strategic Innovative Marketing, Volume: 5 : September 23-26, 2016 At Athens, Greece

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

URLs:

<http://www.icsim.net/>

#### **Bibliographical note**

jufoid=84314

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

### **Social media analytics empowering marketing insight- A framework for analyzing affective experiences from social media content**

#### **General information**

Publication status: Published

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

Contributors: Jussila, J., Boedeker, M., Jalonen, H., Helander, N.

Publication date: 27 May 2016

Peer-reviewed: Unknown

Event: Paper presented at EMAC 2016, Oslo, Norway.

URLs:

<http://www.emac2016.org/>

Research output: Other conference contribution > Paper, poster or abstract > Scientific

### **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

### Who is who in Big Social Data? A Bibliographic Network Analysis Study

The aim of the study is to investigate who are advancing the knowledge on Big Social Data and the related concept of Social Big Data, 'who' are these people citing and building their work on, and what are the topics and outlets where the discussion takes place. For that purpose, data was extracted from Thomson Reuters Web of Science with the search term "Big Social Data" and "Social Big Data" spanning the years from 2012 to 2016. The search resulted in 58 articles in 39 different outlets. In order to go into the depth of Big Social Data and Social Big Data, co-author bibliographic network analysis was performed on the extracted data. The co-author network analysis revealed 149 nodes (authors), and 308 edges (co-authoring relationships) between the authors. Betweenness centrality were calculated for the nodes to demonstrate who are the central authorities and their domain on the topic of Big Social Data and Social Big Data. The visualisation based on co-author network analysis provides insight into the possible clusters of authors in the topics of Big Social Data and Social Big Data. Co-citation analysis was performed for the combined network of Big Social Data and Social Big Data authors. This study was carried out using Ostinato process model for visual network analysis. The findings of the

study provide insights on the leading authorities (authors) advancing the knowledge in Big Social Data. From the community of Big Social Data three authoritative clusters were identified, one with authors located in Singapore and Scotland, another with authors located in Denmark, and third based in London, England. The Social Big Data communities were mainly located in Asia, with two authoritative clusters, one located in Japan, and another with authors located in South-Korea and Spain. The topic modelling uncovered that the themes discussed in Big Social Data and Social Big Data communities were fairly similar, dealing with analysis of social media data in various ways. Most commonly the focus was on Twitter or Facebook data analysis. Further, the bibliometric analysis provides an indication for potential outlets (Journals and Conferences) for Big Social Data and Social Big Data themed articles, as well as, their impact on the field.

### 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

Contributors: Jussila, J., Menon, K., Gupta, J., Kärkkäinen, H.

Pages: 161-169

Publication date: 3 Jul 2017

### Host publication information

Title of host publication: Proceedings of the 4th European Conference on Social Media ECSM 2017

Volume: 4

Place of publication: Reading, UK

Publisher: Academic Conferences and Publishing International Limited

ISBN (Print): 978-1-911218-46-3

ISBN (Electronic): 978-1-911218-47-0

ASJC Scopus subject areas: Computer Science(all)

Keywords: social media

Electronic versions:

Who is who in Big Social Data? A Bibliographic Network Analysis Study

URLs:

<http://urn.fi/URN:NBN:fi:tty-201802141223>

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

## Sata vuotta Suomen suurimmasta lavantautiepidemiasta

### General information

Publication status: Published  
MoE publication type: A2 Review article in a scientific journal  
Organisations: Civil Engineering  
Contributors: Juuti, P., Rajala, R.  
Number of pages: 3  
Pages: 12-14  
Publication date: 2017  
Peer-reviewed: Yes

### Publication information

Journal: Vesitalous  
Volume: 2017  
Issue number: 1  
ISSN (Print): 0505-3838  
Original language: Finnish  
URLs:

<http://www.vesitalous.fi/vesitalous-lehdet/vesien-historia/>

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

## Valkea kaupunki, mustat vedet

### General information

Publication status: Published  
MoE publication type: A2 Review article in a scientific journal  
Organisations: Civil Engineering  
Contributors: Juuti, P., Rajala, R.  
Number of pages: 3  
Pages: 15-17  
Publication date: 2017  
Peer-reviewed: Yes

### Publication information

Journal: Vesitalous  
Volume: 2017  
Issue number: 1  
ISSN (Print): 0505-3838  
Original language: English  
URLs:

<http://www.vesitalous.fi/vesitalous-lehdet/vesien-historia/>

Research output: Contribution to journal › Review Article › 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, Itä-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

## Vesi, ongelma ennen ja nyt?

### General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Civil Engineering

Contributors: Juuti, P.

Pages: 54-65

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: Finnish

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 › Review Article › Scientific › peer-review

## Local narratives in the long term water conflicts: Case of Turku Region in Finland

### General information

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Civil Engineering

Contributors: Juuti, P. S., Kurki, V., Rajala, R.

Pages: 39-49

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 › Review Article › Scientific › peer-review

## 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

## Sata vuotta vesihuoltoa Suomessa

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering

Contributors: Juuti, P., Katko, T. S., Rajala, R.

Number of pages: 3

Pages: 13-15

Publication date: Dec 2017

Peer-reviewed: Yes

### Publication information

Journal: Vesitalous

Volume: 58

Issue number: 6

ISSN (Print): 0505-3838

Original language: Finnish

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

## 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

## Towards Business Potential of Workplace Services in Finland

People no longer work as they worked 15 years ago. One of the major changes, as Laing (2013) stated, is that the employee no longer has to go to work, but information technology brings the work to the employee. Due to the independency of work from time and place, employees are working in a new way in multiple locations. For service providers, this offers a new business field. Thus, the paper focuses on this new business opportunity. The aim of the paper is to identify the business potential to build up and elaborate the workplace service business. Interviews with national

workplace service providers and international workplace experts were conducted in order to get practical insight on the topic. Based on the interviews, two development steps are required to utilise the new business opportunity: (1) the transaction-oriented way to provide workplace services should be substituted by new business models, and (2) the workplace service should be re-thought and re-designed as a service that is not solely dependent on physical space. Based on the new business model and service, a new business opportunity could be harnessed.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

Contributors: Jylhä, T., Vuolle, M., Nenonen, S., Virtaneva, M.

Number of pages: 6

Pages: 518-523

Publication date: 2015

### Host publication information

Title of host publication: 8th Nordic Conference on Construction Economics and Organization : May 28-29 2015, Tampere, Finland

Volume: 21

Publisher: Elsevier

### Publication series

Name: Procedia Economics and Finance

ISSN (Print): 2212-5671

Keywords: Workplace services, multi-locational work, co-working, business model

DOIs:

10.1016/S2212-5671(15)00207-5

Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > 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 the 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  $Y^{(\alpha)} = e^{-(\alpha)t} x_{(\tau_t)}$ , where  $\tau_t = (H e^{\alpha t}) / \alpha$  and  $\{Z_t: t \geq 0\}$  is fractional Brownian motion. We find out that the process  $Y^{(\alpha)} := \{Y_{\tau_t}^{(\alpha)}: t \geq 0\}$ , if scaled properly, has the same finite dimensional distributions as the process  $Y^{(1)} := \{Y_{t^H}^{(1)}: t \geq 0\}$ . 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  $\{Y_{t^H}^{(1)}: t \in \mathbb{R}\}$  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  $Y^{(\alpha)}$  and  $Y^{(1)}$  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  $Y^{(\alpha)}$  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  $Y^{(\alpha)}$ , and using that we investigate the covariance of  $Y^{(\alpha)}$  and the variance of  $Y^{(\alpha)}$ , when  $t$  tends to infinity. One of our main results is that the increment process of  $Y^{(\alpha)}$  is short-range dependent. We also study weak convergence and tightness and then finally prove that  $1/\sqrt{\alpha} Y_{\alpha t}^{(\alpha)}$  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

### **Kehittämistutkimus: vuorovaikusteisten Matlab-opetusohjelmien vaikutus minäpystyvyyteen ja oppimistuloksiin yliopistomatematiikassa**

#### General information

Publication status: Published  
MoE publication type: A1 Journal article-refereed  
Organisations: Mathematics, Research group: Computer Science and Applied Logics, Research group: Positioning  
Contributors: Kaarakka, T. E., Ali-Löytty, S., Huhtanen, M.  
Number of pages: 11  
Pages: 67-77  
Publication date: 2018  
Peer-reviewed: Yes

#### Publication information

Journal: FMSERA Journal  
Volume: 2  
Issue number: 1  
ISSN (Print): 2489-4583  
Original language: Finnish  
URLs:  
<https://journal.fi/fmsera/issue/view/5356>  
Research output: Contribution to journal › Article › 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

### 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

## 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

## Proceedings of the CIB World Building Congress 2016: Volume I - Creating built environments of new opportunities

### 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.), Keinänen, M. (ed.)

Number of pages: 917

Publication date: 27 May 2016

### Publication information

Publisher: Tampere University of Technology. Department of Civil Engineering

Volume: 1

ISBN (Electronic): 978-952-15-3741-7

Original language: English

### Publication series

Name: Tampere University of Technology. Department of Civil Engineering. Construction Management and Economics. Report

Volume: 18

ISSN (Print): 1797-8904

Electronic versions:

WBC16 Vol 1

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3741-7>

### Bibliographical note

JUFOID=84376

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

### Quality evaluation on of contractor's schedule for building renovation

In building and construction projects, the phase schedule developed by the contractor for the bidding phase, or after the contract award, has to be evaluated by owner's consultant for schedule approval. After approval, the phase schedule becomes the baseline for project control process and therefore it becomes very important to both owner and contractor to ensure that contract obligations will be respected. The baseline schedule developed by the contractor is frequently used by project supervisors or construction managers to justify (or deny) a request of time extensions, or to evaluate process efficiency and the possibility of late completion, and therefore can have major consequences in project cost management. In the owner's perspective, three are the main requirements to be fulfilled in a baseline schedule. Firstly, the construction total duration, i.e. contract time requirements about milestones and project completion. Secondly, baseline schedule entails the promised average process production rate that should fulfill contract requirements for progress payments. Thirdly, the construction safety coordination requirement, i.e. the compliance of the schedule with the safety – oriented project schedule developed by the safety coordinator (under the health and safety EU directive). In addition to this, the review of the phase schedule should give evidence of the quality of the schedule itself, i.e. give proof of its validity.

In the research behind this paper, a Schedule Health Assessment procedure has been proposed for the evaluation of the schedule quality, and it is suggested to adopt the Schedule Health Assessment approach for the contractor's schedule review and approval. A case study of a renovation building project has been analyzed to test the proposed procedure and the possibility of using it for contractor's schedule approval in design-bid-build or design – build projects.

#### General information

Publication status: Published

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

Organisations: 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., Brandt, J.

Number of pages: 10

Pages: 175-184

Publication date: 1 Aug 2017

#### Host publication information

Title of host publication: Re-shaping the construction industry

Publisher: ISTeA Italian Society of Science, Technology and Engineering of Architecture; Maggioli Editore

Editors: Ciribini, A., Alaimo, G., Capone, P., Daniotti, B., Dell'Osso, G., Nicoletta, M.

ISBN (Electronic): 978-88-916-2486-4

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

#### MECSELS with direct emission in the 760 nm to 810 nm spectral range: A single- and double-side pumping comparison and high-power continuous-wave operation

We compared single-side pumping (SSP) and double-side pumping (DSP) of a semiconductor membrane external-cavity surface-emitting laser (MECSEL). The MECSEL's active region was based on a 4×3 AlGaAs quantum well (QW) structure. This structure was embedded between two silicon carbide (SiC) wafer pieces that were used as transparent intra-cavity (IC) heat spreaders creating a symmetrical cooling environment. The MECSEL structure targeted emission at 780nm and was operated at 20°C heat sink temperature. Via DSP the differential efficiency was improved from 31.9% to 34.4 %. The laser threshold was reduced from 0.79 W to 0.69 W of absorbed pump power while the maximum output power was increased from 3.13 W to 3.22 W. The DSP configuration enabled these improvements by a reduced thermal resistance of the gain element by 9 %. The MECSEL operated at a fundamental Gaussian TEM<sub>00</sub> mode profile and the beam quality was measured to be  $M^2 < 1.09$ . We further demonstrate a maximum tuning range from 767 nm to 811 nm. A similar active region with about half the thickness (2×3 AlGaAs QWs) was investigated using the DSP configuration and first results are presented here. 500-µm-thick sapphire IC heat spreaders were used instead of SiC. The output power exceeded 0.5W and the emission was spectrally located around 770 nm.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Physics

Contributors: Kahle, H., Penttinen, J. P., Phung, H. M., Rajala, P., Tukiainen, A., Ranta, S., Guina, M.

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: 109010D

ISBN (Electronic): 9781510624443

#### Publication series

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

Volume: 10901

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: AlGaAs, DBR-free, MECSEL, Near infra-red, Thermal management, Thermal resistance, VECSEL

DOIs:

10.1117/12.2512111

#### Bibliographical note

INT=phys,"Rajala, Patrik"

jufoid=71479

Source: Scopus

Source ID: 85066635597

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

### **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

#### **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

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

#### **Strengthening student engagement by integrating the contents of a flipped course around a well-confined real life theme**

#### **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

Contributors: Kangas, J., Lunden, O.

Number of pages: 9

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

ISBN (Print): 9782873520144

URLs:

[http://www.sefi.be/conference-2016/papers/University-Business\\_Cooperation\\_\\_Curriculum\\_Development/kangas-strengthening-student-engagement-by-integrating-the-contents-161.pdf](http://www.sefi.be/conference-2016/papers/University-Business_Cooperation__Curriculum_Development/kangas-strengthening-student-engagement-by-integrating-the-contents-161.pdf)

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

## Underpinning Interrelated Factors of Physical, Virtual, and Social Learning Environments

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Research group: Urban Planning and Design, Architecture

Contributors: Kangas, J., Poutanen, J.

Pages: 8087-8096

Publication date: 2018

### Host publication information

Title of host publication: ICERI2018 Proceedings

ISBN (Electronic): 978-84-09-05948-5

### Publication series

Name: ICERI proceedings

ISSN (Electronic): 2340-1095

Electronic versions:

iceri18\_kangas\_poutanen\_id459

DOIs:

10.21125/iceri.2018.0459

URLs:

<http://urn.fi/URN:NBN:fi:tuni-201910013623>

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

## 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

### 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°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

### 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: Semiconductors 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

### 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: 85049150395

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

### **Reaction heat utilization in aluminosilicate-based ceramics synthesis and sintering**

Self-propagating high-temperature synthesis (SHS) is a widely known and extensively studied highly exothermic reaction-utilizing technique for making certain advanced composites and intermetallic compounds. However, only few studies have been published about the SHS of pure aluminosilicate ceramics. In the current work, possibilities for aluminosilicate ceramic synthesis and sintering requiring less energy based on the utilization of SHS in air was studied. Kaolinite powder and exothermically reactive metallic aluminium powder were used as raw materials. Thermodynamic calculations for the possible reactions and reaction paths were performed to show the theoretical possibilities for SHS utilization. The chemical reactions, thermal expansion behaviour and formed phase- and microstructures after SHS were compared to the conventional reaction sintering of mullite. Results conclude that highly exothermic reactions above 900 °C relating mainly to aluminium oxidation can ignite the SHS reaction in air atmosphere. After initialization, the reaction proceeded in a self-sustaining manner through entire test pieces, resulting in the formation of an Al<sub>2</sub>O<sub>3</sub> - Si phase structure. Thermodynamic calculations showed the total energy balance for mullite formation from aluminium and kaolinite mixtures as highly exothermic in nature only if sufficient oxygen is available to complete the reactions. However, future research is needed to fully utilize SHS in aluminosilicate ceramics processing.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Materials Science, Research group: Ceramic materials, VTT Technical Research Centre of Finland

Contributors: Karhu, M., Lagerbom, J., Kivikytö-Reponen, P., Ismailov, A., Levänen, E.

Number of pages: 12

Pages: 101-112

Publication date: 1 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 1.4 SJR 0.374 SNIP 0.801

Original language: English

ASJC Scopus subject areas: Ceramics and Composites

Keywords: Aluminosilicate ceramics, Exothermic reactions, Self-propagating high-temperature synthesis, SHS, Sintering, Synthesis



DOIs:

10.4416/JCST2016-00094

#### **Bibliographical note**

EXT="Lagerbom, J."

Source: Scopus

Source ID: 85017026033

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

#### **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

#### **Quenching nematicon fluctuations via photo-stabilization**

Light localization into optical spatial solitons can be achieved by launching optical beams in nonlocal nonlinear nematic liquid crystals. Such solitons often undergo undesired fluctuations of their trajectories. We demonstrate that partial polymerization in monoacrylate-doped nematic liquid crystals is effective in quenching such fluctuations in transverse space.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Research area: Optics, Research group: Nonlinear Optics, Department of Chemistry and Bioengineering, Research group: Supramolecular photochemistry

Contributors: Karimi, N., Alberucci, A., Virkki, M., Priimägi, A., Kauranen, M., Assanto, G.

Number of pages: 3

Pages: 2-4

Publication date: 31 Mar 2016

Peer-reviewed: Yes

#### **Publication information**

Journal: Photonics Letters of Poland

Volume: 8

Issue number: 1

ISSN (Print): 2080-2242

Ratings:

Scopus rating (2016): CiteScore 0.37 SJR 0.197 SNIP 0.272

Original language: English

Electronic versions:

626-2449-1-PB

DOIs:

10.4302/plp.2016.1.02

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201604253877>

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

## Multi-wavelength mid-IR light source for gas sensing

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Photonics, Research group: Semiconductor Technology and Applications, VTT Technical Research Ctr. of Finland Ltd., Institute of Electronic Materials Technology, Vaisala Oyj, GasSecure AS, VIGO System S.A.

Contributors: Karioja, P., Alajoki, T., Cherchi, M., Ollila, J., Harjanne, M., Heinilehto, N., Suomalainen, S., Viheriälä, J., Zia, N., Guina, M., Buczyński, R., Kasztelanica, R., Kujawa, I., Salo, T., Virtanen, S., Kluczynski, P., Sagberg, H., Ratajczyk, M., Kalinowski, P.

Publication date: 20 Feb 2017

### Host publication information

Title of host publication: Proc. SPIE 10110 : Photonic Instrumentation Engineering IV

Volume: 10110

Publisher: SPIE

Article number: 101100P

ISBN (Print): 9781510606616

ISBN (Electronic): 9781510606623

### Publication series

Name: Proceedings of SPIE

Volume: 10110

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

DOIs:

10.1117/12.2249126

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., Buczyński, R., Kasztelanica, 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

## Muuttuvat ajotilanteet aiheuttavat uudentyyppisiä ajoneuvojen hiukkaspäästöjä

### General information

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Physics, Research area: Aerosol Physics

Contributors: Karjalainen, P.

Number of pages: 4

Pages: 28-31

Publication date: 12 Oct 2015

Peer-reviewed: Unknown

### Publication information

Journal: Ympäristö ja terveys

Volume: 46

Issue number: 6

ISSN (Print): 0358-3333

Original language: Finnish

Research output: Contribution to journal > Article > Professional

## Time-resolved characterization of primary and secondary particle emissions of a modern gasoline passenger car

Changes in traffic systems and vehicle emission reduction technologies significantly affect traffic-related emissions in urban areas. In many densely populated areas the amount of traffic is increasing, keeping the emission level high or even increasing. To understand the health effects of traffic related emissions, both primary and secondary particles that are formed in the atmosphere from gaseous exhaust emissions need to be characterized. In this study we used a comprehensive set of measurements to characterize both primary and secondary particulate emissions of a modern gasoline passenger car. Our aerosol particle study covers the whole process chain in emission formation, from the engine to the atmosphere, and takes into account also differences in driving patterns. We observed that in mass terms, the amount of secondary particles was 13 times higher than the amount of primary particles. The formation, composition, number, and mass of secondary particles was significantly affected by driving patterns and engine conditions. The highest gaseous and particulate emissions were observed at the beginning of the test cycle when the performance of the engine and the catalyst was below optimal. The key parameter for secondary particle formation was the amount of gaseous hydrocarbons in primary emissions; however, also the primary particle population had an influence. Thus, in order to enhance human health and wellbeing in urban areas, our study strongly indicates that in future legislation, special attention should be directed into the reduction of gaseous hydrocarbons.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Research area: Aerosol Physics, Finnish Meteorological Institute, Helsinki, VTT Technical Research Centre of Finland, Pennsylvania State University, Atmospheric Composition Research, Finnish Meteorological Institute

Contributors: Karjalainen, P., Timonen, H., Saukko, E., Kuuluvainen, H., Saarikoski, S., Aakko-Saksa, P., Murtonen, T., Dal Maso, M., Ahlberg, E., Svenningsson, B., Brune, W. H., Hillamo, R., Keskinen, J., Rönkkö, T.

Number of pages: 29

Pages: 33253-33282

Publication date: 25 Nov 2015

Peer-reviewed: Yes

### Publication information

Journal: Atmospheric Chemistry and Physics Discussions  
Volume: 15  
Issue number: 22  
ISSN (Print): 1680-7367  
Ratings:  
Scopus rating (2015): SNIP 0.101  
Original language: English  
DOIs:  
10.5194/acpd-15-33253-2015  
URLs:  
<http://www.atmos-chem-phys-discuss.net/15/33253/2015/>  
Research output: Contribution to journal › Article › Scientific › peer-review

### **Some aspects of molecular physics in measuring tissue samples using enose for disease diagnostics**

eNose technologies can be used for disease diagnostics. One technology is based on ionized molecules and their drifting speed in an electric field. Ionized molecules can be measured with ion mobility spectrometry and with electrical mobility measurements. Depending on the size scale of these molecules, different physical effects are relevant. We studied the relevance of size scale dependent physics for disease diagnostics.

#### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Automation Science and Engineering, Integrated Technologies for Tissue Engineering Research (ITTE), University of Tampere, Medical School, Tampere University Hospital  
Contributors: Karjalainen, M., Roine, A., Oksala, N., Lekkala, J.  
Publication date: 2015

#### **Host publication information**

Title of host publication: XXI IMEKO World Congress "Measurement in Research and Industry"  
Publisher: IMEKO-International Measurement Federation Secretariat  
ISBN (Electronic): 978-80-01-05793-3  
ASJC Scopus subject areas: Electrical and Electronic Engineering  
Keywords: Aerosol physics, Disease diagnostics, Ion mobility spectrometry  
URLs:  
<http://www.scopus.com/inward/record.url?scp=84951173545&partnerID=8YFLogxK> (Link to publication in Scopus)  
Source: Scopus  
Source ID: 84951173545  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### **The New Era of Crowdsourcing — Industrial Crowdsourcing**

#### **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), DIGILE – Finnish Center for Science and Innovation in the Internet Economy  
Contributors: Kärkkäinen, H., Jussila, J., Erkinheimo, P.  
Number of pages: 7  
Pages: 25-31  
Publication date: 2015

#### **Host publication information**

Title of host publication: Open Innovation Yearbook 2015  
Place of publication: Brussel  
Publisher: European Commission  
Editor: Salmelin, B.  
ISBN (Electronic): 978-92-79-43962-9  
Keywords: crowdsourcing, industrial crowdsourcing  
DOIs:  
10.2759/92658  
URLs:  
[http://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=9637](http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=9637)  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › 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

### **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

## **Tampereelta valmistuneiden vesihuoltoalan diplomi-insinöörien sijoittuminen ja odotukset yliopisto-opetukselle**

### **General information**

Publication status: Published

MoE publication type: D1 Article in a trade journal

Organisations: Department of Chemistry and Bioengineering, Department of Civil Engineering, Tampere University of Technology, University of Tampere

Contributors: Katko, T. S., Lukka, A., Rajala, R.

Number of pages: 3

Pages: 45-47

Publication date: 2015

Peer-reviewed: Unknown

### **Publication information**

Journal: Vesitalous

Issue number: 2

ISSN (Print): 0505-3838

Original language: Finnish

### **Bibliographical note**

ORG=keb,1

ORG=rak,0

AUX=orc,"Lukka, Anna"

Research output: Contribution to journal › Article › Professional

## **Social and Economic Importance of Water Services in the Built Environment: Need for More Structured Thinking**

Abstract Community water supply takes priority over other water use purposes worldwide. Investment in water and sanitation systems in developing economies brings a multitude of economic and social benefits. Water infrastructure systems across the world will deteriorate unless substantially more rehabilitation is done. This paper presents a structured and hierarchical framework for sustained water services development consisting of institutions, provision, water infrastructure and production of services that hopefully create better understanding of how to develop our systems and services as part of the built environment for more sustained futures.

### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering

Contributors: Katko, T. S., Hukka, J. J.

Number of pages: 7

Pages: 217-223

Publication date: 2015

Peer-reviewed: Yes

### **Publication information**

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

Keywords: ageing water infrastructure, institutional development, priorities, production, provision, special features.

DOIs:

10.1016/S2212-5671(15)00170-7

Source: RIS

Source ID: urn:E2D918716A9EA0A2093B36459CF62676

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

### Water services heritage and institutional diversity

#### General information

Publication status: Published

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

Organisations: Department of Civil Engineering, Research group: Industrial Bioengineering and Applied Organic Chemistry

Contributors: Katko, T. S., Juuti, P., Pietilä, P., Rajala, R.

Publication date: 2015

#### Host publication information

Title of host publication: Water and Heritage: material, conceptual and spiritual connections

Publisher: Sidestone Press

Editors: Willems, W., van Schaik, H.

ISBN (Print): 9789088902789

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

### Kohti tasapuolisempaa tutkimuksen arviointia: Pääkirjoitus

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering

Contributors: Katko, T. S.

Number of pages: 2

Pages: 4-5

Publication date: 2015

Peer-reviewed: Yes

#### Publication information

Journal: Ympäristöhistoria: Finnish Journal of Environmental History

Volume: 5

Issue number: 1

ISSN (Print): 1799-6953

Original language: Finnish

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)

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

### Suomen vesihuollon kehitys ja opit kansainvälisessä kontekstissa

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering

Contributors: Katko, T. S.  
Number of pages: 4  
Pages: 8-11  
Publication date: 2017  
Peer-reviewed: Yes

#### Publication information

Journal: Vesitalous  
Volume: 58  
Issue number: 1  
ISSN (Print): 0505-3838  
Original language: Finnish  
URLs:

<http://www.vesitalous.fi/vesitalous-lehdet/vesien-historia/>  
Research output: Contribution to journal › Article › Scientific › peer-review

#### 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

#### Multiwavelength surface contouring from phase-coded diffraction patterns

We propose a new algorithm for absolute phase retrieval from multiwavelength noisy phase coded diffraction patterns in the task of surface contouring. A lensless optical setup is considered with a set of successive single wavelength experiments. The phase masks are applied for modulation of the multiwavelength object wavefronts. The algorithm uses the forward and backward propagation for coherent light beams and sparsely encoding wavefronts which leads to the complex-domain block-matching 3D filtering. The key-element of the algorithm is an original aggregation of the multiwavelength object wavefronts for high-dynamic-range profile measurement. Numerical experiments demonstrate that the developed approach leads to the effective solutions explicitly using the sparsity for noise suppression and high-accuracy object profile reconstruction.



### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Research group: Computational Imaging-CI, ITMO University

Contributors: Katkovnik, V., Shevkunov, I., Petrov, N. V., Eguiazarian, K.

Publication date: 1 Jan 2018

### Host publication information

Title of host publication: Unconventional Optical Imaging 2018. Strasbourg, France

Volume: 10677

Publisher: SPIE

Article number: 106771B

ISBN (Print): 978-1-5106-1880-0

### Publication series

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

Volume: 10677

ISSN (Electronic): 0277-786X

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

Keywords: absolute phase retrieval, discrete optical signal processing, Multiwavelength phase retrieval, phase imaging, surface contouring

DOIs:

10.1117/12.2306127

Source: Scopus

Source ID: 85052446644

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

## Paine-erot Pirkanmaan ja Helsingin julkisissa palvelurakennuksissa

### 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: Kauppinen, A., Kiviste, M., Pirhonen, J., Vinha, J.

Number of pages: 7

Pages: 215-221

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: 1

Place of publication: Tampere

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.

ASJC Scopus subject areas: Civil and Structural Engineering

URLs:

[http://www.tut.fi/cs/groups/public\\_news/@l102/@web/@p/documents/liit/x251128.pdf](http://www.tut.fi/cs/groups/public_news/@l102/@web/@p/documents/liit/x251128.pdf)

### Bibliographical note

INT=RAK, "Pirhonen, Joni"

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

## 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

## 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:

<http://www.wbc16.com/wbc16/welcome.html>

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

URLs:

[https://in\\_bo.unibo.it/issue/view/751/showToc](https://in_bo.unibo.it/issue/view/751/showToc)

<http://urn.fi/URN:NBN:fi:tty-201901281176>

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**

JUF0ID=72715

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

### **Tutkimuskatsaus: Uusia menetelmiä haavan paranemisen arviointiin ja seurantaan**

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Faculty of Biomedical Sciences and Engineering, Turku Univ Hosp, University of Turku, Åbo Akademi

Contributors: Kekonen, A., Bergelin, M., Viik, J.

Number of pages: 3

Pages: 30-32

Publication date: 20 Oct 2018

Peer-reviewed: Yes

#### **Publication information**

Journal: HAAVA

Volume: 20

Issue number: 3

ISSN (Print): 1456-3037

Original language: Finnish

ASJC Scopus subject areas: Biomedical Engineering, Dermatology

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

### **Long-term monitoring of acute wound healing from beneath the primary wound dressings**

Our group has developed a quasimonopolar bioimpedance measurement-based method and a measurement system to determine the status of wound healing. So far, we have shown that the bioimpedance method is a prospective tool for assessment of wound healing by monitoring the healing of both acute wounds and venous ulcers at discrete time points. The objective of this study was to demonstrate that the method is capable for monitoring wound healing also long-term while the wound is covered by the primary dressings. For this purpose we arranged a follow-up study of a single acute wound. The purpose-built multi-electrode dressing was applied on the wound and left under the primary dressings until the complete re-epithelization was achieved. The bioimpedance of the wound and surrounding skin area was measured

regularly during a 120 hours study. Based on the results, we can confirm that the method applies for long-term monitoring of acute wound healing without necessity to remove the primary dressings.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research group: Physiological Measurement Systems and Methods Group, BioMediTech, CutoSense Ltd.

Contributors: Kekonen, A., Bergelin, M., Eriksson, J., Vesa, M., Johansson, M., Viik, J.

Number of pages: 4

Publication date: Oct 2018

#### Host publication information

Title of host publication: 2018 16th Biennial Baltic Electronics Conference (BEC)

Publisher: IEEE

ISBN (Print): 978-1-5386-7313-3

ISBN (Electronic): 978-1-5386-7312-6

Keywords: Electrodes, Wounds, Impedance, Skin, Biomedical measurement, Monitoring, Bioimpedance, bioimpedance beneath dressing, healing, longterm wound monitoring, multi-electrode

DOIs:

10.1109/BEC.2018.8600956

Source: Bibtex

Source ID: urn:054660b869151d1efd2f9613e80b4431

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

#### 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

### **Model for efficient 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. However, the development of criteria is inadequately supported by currently available guidance. The relevant guidance is mostly related to criteria selection. The abstraction level of the guidance is high. This may lead to inefficient criteria development work. In addition, the resulting criteria may not fully meet their goals. To ensure efficient criteria development, the guidance should be supported with concrete level implementation guidelines. This paper proposes a model for efficient development of security audit criteria. The model consists of criteria design goals and concrete implementation guidelines to achieve these goals. The model is based on the guidance given by ISACA and on the criteria development work by FICORA, the Finnish Communications Regulatory Authority. During the years 2008-2017, FICORA has actively participated in development and usage of three versions of Katakri, the Finnish national security audit criteria. The paper includes a case study that applies the model to existing security criteria. The case study covers a review of the criteria composed of the Finnish VAHTI-instructions. During the review, all supported design goals and implementation guidelines of the model were scrutinised. The results of the case study indicate that the model is useful for reviewing existing criteria. The rationale is twofold. First, several remarkable shortcomings were identified. Second, the identification process was time-efficient. The results also suggest that the model would be useful for criteria under development. Addressing the identified shortcomings during the development phase would have made the criteria more efficient, usable and understandable.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Univ of Oulu, Population Register Centre, Finnish Communications Regulatory Authority

Contributors: Kelo, T., Eronen, J., Rousku, K.

Number of pages: 9

Pages: 244-252

Publication date: 2018

#### **Host publication information**

Title of host publication: Proceedings of the 17th European Conference on Cyber Warfare and Security, ECCWS 2018

Publisher: Curran Associates

ISBN (Electronic): 9781911218852

ASJC Scopus subject areas: Information Systems, Information Systems and Management, Safety, Risk, Reliability and Quality

Keywords: Audit, Criteria, Katakri, Security, VAHTI

Source: Scopus

Source ID: 85050826806

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

### **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](https://doi.org/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

### **New introductory courses and teacher tutoring: Keys to an efficient beginning for university studies in engineering**

Becoming a university student is a big transition for a college student. Everything is

new; places, practicalities, regulations, and the ropes have to be adopted quickly. At the same time, the requirements of working life and need for better generic skills after graduation have been elevated to general discussion.

To meet these challenges, the orientation and beginning of studies in Tampere University of Technology were renewed in 2013. In Faculty of Computing and Electrical Engineering, we tried to achieve better study experience for our students, better study success during first year studies and further bachelor's degree. Our methods were to adopt systematic teacher tutoring and to focus on co-working in smaller student groups as well as combine generic skills to technological skills in two new introduction courses in the beginning of university studies. The courses were planned to give as much support in generic skills development as possible.

Our results have been very promising so far. The amount of ECTS credits as well as passing rates of compulsory courses during the first year have improved. Also the student feedback of the courses has been very good.

#### **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, Teaching and Learning Services, Department of Pervasive Computing, Research

area: Computer engineering, Tampere University of Technology

Contributors: Ketola, S., Sipilä, E., Pajarre, E., Takala, J.

Publication date: 12 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

Keywords: engineering education

URLs:

[http://www.sefi.be/conference-2016/papers/Engineering\\_Skills/ketola-new-introductory-courses-and-teacher-tutoring-13\\_a.pdf](http://www.sefi.be/conference-2016/papers/Engineering_Skills/ketola-new-introductory-courses-and-teacher-tutoring-13_a.pdf)

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

## **Reinventing organisational creativity and innovation through adapting a service-based working culture**

### **General information**

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Department of Information Management and Logistics  
Contributors: Ketonen-Oksi, S.  
Number of pages: 20  
Pages: 1-20  
Publication date: 2017

### **Host publication information**

Title of host publication: Integrating arts and creativity into business practice  
Publisher: IGI Global  
Editors: Schiuma, G., Lerro, A.  
ISBN (Electronic): 978-1-5225-2050-4  
DOIs:  
10.4018/978-1-5225-2050-4  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

## **Re-inventing organizational creativity and innovation through adopting a service-based working culture**

By considering creativity to be a necessity for organisational competitiveness in today's rigorously changing working environments, this study seeks to examine whether adopting a service-based working culture could significantly improve organisational creativity and innovation. Grounded on the concepts of the Service-Dominant Logic and Complex Adaptive Systems, this research develops on understanding of the complexity of the emerging socially and digitally connected networks of individuals, teams and institutions. By introducing a novel framework for facilitating and improving the adaptability of a service-based working culture, this study offers both deliberation and practical advice for business organisations seeking valuable insight into how to develop and manage organisational creativity and innovation in increasingly digitalised service ecosystems. Specifically, the proposed framework encourages organisations to invest in the learning capacities and motivations of their employees.;

### **General information**

Publication status: Published  
MoE publication type: A3 Part of a book or another research book  
Organisations: Industrial and Information Management  
Contributors: Ketonen-Oksi, S.  
Number of pages: 20  
Pages: 1-20  
Publication date: 28 Dec 2016

### **Host publication information**

Title of host publication: Integrating Art and Creativity into Business Practice  
Publisher: IGI Global  
ISBN (Print): 9781522520504  
ISBN (Electronic): 9781522520511  
ASJC Scopus subject areas: Arts and Humanities(all), Economics, Econometrics and Finance(all), Business, Management and Accounting(all)



DOIs:

10.4018/978-1-5225-2050-4.ch001

Source: Scopus

Source ID: 85016922803

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%209\\_4\\_2017\\_ok\\_ok.pdf](http://www.harrijalonen.fi/files/files/IFKAD%20final%209_4_2017_ok_ok.pdf)

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

### **Two-turns antenna and magnetic materials for effective powering of mm-size implant in wireless brain-machine interface system**

#### **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)

Contributors: Khan, W., Björninen, T., Ukkonen, L., Sydänheimo, L.

Number of pages: 2

Pages: 103-104

Publication date: Sep 2015

#### **Host publication information**

Title of host publication: 2015 IEEE MTT-S 2015 International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare Applications (IMWS-BIO)

Publisher: IEEE

ISBN (Print): 9781479985432

DOIs:

10.1109/IMWS-BIO.2015.7303798

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

### **Wirelessly powered implantable system for wireless long-term monitoring of intracranial pressure**

This paper presents the pressure readout results from a piezoresistive pressure sensor in a biological environment mimicking the human head properties for intracranial pressure (ICP) monitoring application. The piezoresistive pressure sensor is wirelessly powered through inductively coupled antennas. After successful activation of the sensor, the pressure readout is demonstrated from 0 mmHg to 30 mmHg with a resolution of one mmHg.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Faculty of Biomedical Sciences and Engineering, Research area: Dynamic Systems, Research group:

Wireless Identification and Sensing Systems Research Group

Contributors: Khan, M. W. A., Björninen, T., Sydänheimo, L., Ukkonen, L.

Pages: 122-124

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:

8572183

DOIs:

10.1109/IWAT.2017.7915334

URLs:

<http://urn.fi/URN:NBN:fi:tty-201712202421>

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

### **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 2.68 SJR 0.779 SNIP 1.163

Original language: English

Electronic versions:

Khorramdel Kraft Mäntysalo - 2017 - Inkjet printed metallic micropillars for bare-die flip-chip bonding

DOIs:

10.1088/2058-8585/aa9171

URLs:

<http://urn.fi/URN:NBN:fi:tty-201901291191>

Source: Bibtex

Source ID: urn:8f4049c2ab7f16fafb13e340ca8b6ef9

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

### **Management and Planning Under Complexities of Metro Construction**

Nowadays, the majority of construction projects can be considered as complex and ambiguous endeavours. Each kind of construction project has its own characteristics and complexities whereas then specific management approaches and solutions are needed. Regarding the rapid development of cities, underground constructions at urban regions, such as metro construction, have been largely used for extending daily human life into underground spaces. Therefore, the recognition of the complex elements of a metro construction can play a significant role in its management and planning. The aim of this study is to investigate these complexities in subway construction. This may develop the possibility of high predictability for these challenges. As metro projects are also urban underground projects, both internal and external issues are studied and their impacts on project management are discussed. It is concluded that exceptional differences in the managing and planning of these constructions is that combined internal and external complexities are carried out simultaneously.

#### **General information**

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Civil Engineering

Contributors: Khosravi, M., Kähkönen, K.

Number of pages: 7

Pages: 415-421

Publication date: 2015

Peer-reviewed: Yes

#### **Publication information**

Journal: Procedia Economics and Finance

Volume: 21

ISSN (Print): 2212-5671

Original language: English

Keywords: Complexities, construction management, construction planning, metro construction, underground construction.

DOIs:

10.1016/S2212-5671(15)00194-X

#### **Bibliographical note**

EXT="Khosravi, Mahdi"

Source: RIS

Source ID: urn:CC947509283DD701C463455CFB0539A5

Research output: Contribution to journal > Article > 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-yttria-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

#### 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

#### Rational Number Knowledge Assessment and Training With a Game Competition

Raising awareness of educational games and game-based learning is an important step for large-scale adoption of these new educational methods. Digital game-based learning provides unique opportunities to engage students in learning, which is especially important for subjects that students struggle with, such as mathematics. Therefore, the aim of the current paper was to evaluate the usefulness of a math game competition for engaging, assessing, and training rational numbers in students from different schools. In particular, we investigated whether playing a digital game would improve students' magnitude understanding of rational numbers and whether playing behavior can be used for assessment purposes. Finnish fourth ( $n = 59$ ;  $Mage = 10.36$ ) and sixth-graders ( $n = 105$ ;  $Mage = 12.34$ ) participated in a math game competition relying on intra-classroom cooperation and inter-classroom competition. The students played a digital rational number

game called Semideus, which is founded on number line estimation task mechanics in which players have to estimate the spatial position of a target number on a number line with only its start and endpoint specified. In previous empirical studies, this task mechanic has been successfully used to assess and foster students number magnitude understanding in conventional non-game based settings. Consequently, students were allowed to play the game as much as they wanted during a three-week period in order to improve their rational number knowledge and were able to check the status of the competition online. As expected, sixth grade students performed more accurately than fourth grade students in the game-based rational number magnitude estimation tasks. Moreover, results indicated that students benefited significantly from participating in the math game competition with respect to rational number knowledge. Importantly, the Semideus game was particularly effective with students who started with less rational number knowledge. Overall, the study demonstrated that participation in a math game competition seems to be a useful and engaging approach to assess and support the development of students' rational number knowledge.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Pervasive Computing, Research group: TUT Game Lab

Contributors: Kiili, K., Ojansuu, K., Lindstedt, A., Ninaus, M.

Pages: 320-327

Publication date: Oct 2017

#### Host publication information

Title of host publication: Proceedings of The 11th European Conference on Game-Based Learning ECGBL 2017

Publisher: Academic Conferences and Publishing International Limited

ISBN (Electronic): 978-1-911218-57-9

Keywords: Rational numbers, Game-based learning, Competition, Assessment, Number line

Electronic versions:

Rational Number Knowledge Assessment and Training With a Game Competition

URLs:

<http://urn.fi/URN:NBN:fi:tty-201901221136>

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

#### The Effects of Product Line Length on Firm Performance

What products to offer represents one of the most important strategic choices a firm has to make in order to survive in competitive environments. Decisions about the length and breadth of a firm's product line are difficult but vital to its success. Despite this, the performance effects of product line length are a topic of continuing discussion in the academia. There are also multiple ways to define both product line length and breadth, further hindering the analysis and comparison of the results. This study defines both product line length and breadth, and distinguishes them as separate dimensions of a firm's product portfolio. Additionally, the relationship between product line length and firm performance is analyzed through customer evaluations. The study is set in the digital camera industry, focusing on the new product introductions into the compact product category during 2000–2014. Our results offer indication that there exists an inverted U-shaped relationship between product line length and firm performance.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Industrial and Information Management, Research group: Center for Innovation and Technology Research

Contributors: Kirjavainen, J., Mäkinen, S., Sommarberg, M.

Number of pages: 5

Publication date: 8 Oct 2018

#### Host publication information

Title of host publication: 2018 Portland International Conference on Management of Engineering and Technology (PICMET)

Publisher: IEEE

ISBN (Electronic): 978-1-890843-37-3

Keywords: Digital cameras , Industries , Length measurement , Lenses , Time measurement , Mirrors

DOIs:

10.23919/PICMET.2018.8481780

#### Bibliographical note

jufoid=9093

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

## 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

Source: Scopus

Source ID: 84932108897

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

## Testing the near field/far field model performance for prediction of particulate matter emissions in a paint factory

A Near Field/Far Field (NF/FF) model is a well-accepted tool for precautionary exposure assessment but its capability to estimate particulate matter (PM) concentrations is not well studied. The main concern is related to emission source characterization which is not as well defined for PM emitters compared to e.g. for solvents. One way to characterize PM emission source strength is by using the material dustiness index which is scaled to correspond to industrial use by using modifying factors, such as handling energy factors. In this study we investigate how well the NF/FF model predicts PM concentration levels in a paint factory. PM concentration levels were measured during big bag and small bag powder pouring. Rotating drum dustiness indices were determined for the specific powders used and applied in the NF/FF model to predict mass concentrations. Modeled process specific concentration levels were adjusted to be similar to the measured concentration levels by adjusting the handling energy factor. The handling energy factors were found to vary considerably depending on the material and process even-though they have the same values as modifying factors in the exposure models. This suggests that the PM source characteristics and process-specific handling energies should be studied in more detail to improve the model-based exposure assessment.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Danmarks Tekniske Universitet, DTU Informatik, Denmark Technical University DTU, National Research Centre for the Working Environment, Department of Micro and Nanotechnology

Contributors: Koivisto, A. J., Jensen, A. C. Ø., Levin, M., Kling, K. I., Maso, M. D., Nielsen, S. H., Jensen, K. A., Koponen, I. K.

Number of pages: 12

Pages: 62-73

Publication date: 1 Jan 2015

Peer-reviewed: Yes

### Publication information

Journal: Environmental Sciences: Processes and Impacts

Volume: 17

Issue number: 1

ISSN (Print): 2050-7887

Ratings:

Scopus rating (2015): CiteScore 2.5 SJR 0.998 SNIP 0.923

Original language: English

ASJC Scopus subject areas: Environmental Chemistry, Public Health, Environmental and Occupational Health, Management, Monitoring, Policy and Law, Medicine(all)

DOIs:

10.1039/c4em00532e

URLs:

<http://www.scopus.com/inward/record.url?scp=84920000979&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

EXT="Koivisto, A. J."

Source: Scopus

Source ID: 84920000979

Research output: Contribution to journal > Article > 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](http://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

URLs:

<http://www.ngm2016.com/>

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

### Smart microphone sensor system platform

A platform for a flexible, smart microphone system using available hardware components is presented. Three subsystems are employed, specifically: (a) a set of digital MEMs microphones, with a one-bit serial output; (b) a preprocessing/digital-to-digital converter; and (c) a CPU/DSP-based embedded system with I2S connectivity. Basic preprocessing functions, such as noise gating and filtering can be performed in the preprocessing stage, while application-specific algorithms such

as word spotting, beam-forming, and reverberation suppression can be handled by the embedded system. Widely used high-level operating systems are supported including drivers for a number of peripheral devices. Finally, an employment scenario for a wireless home automation speech activated front-end sensor system using the platform is analyzed.

#### General information

Publication status: Published

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

Organisations: University of Patras, BLUE dev Ltd., Former organisation of the author, Ionian University

Contributors: Kokkinis, E., Drossos, K., Tatlás, N., Floros, A., Tsilfidis, A., Agavanakis, K.

Number of pages: 4

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=16604>

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

### 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

### Raudoitteiden korroosionopeuden määrittäminen betonijulkisivussa korkean aikaresoluution säädätan avulla

#### 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, Research group: Building Physics, The Finnish Meteorological Institute. Ilmatieteen laitos.

Contributors: Köliö, A., Hohti, H., Pakkala, T., Laukkarinen, A., Lahdensivu, J., Mattila, J.

Number of pages: 8

Pages: 195-202

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.

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

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

#### Publication series

Name: Rakennustekniikan laitos. Rakennetekniikka. Seminaarijulkaisu

No.: 4

ASJC Scopus subject areas: Building and Construction, Civil and Structural Engineering

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

### Reinforcement Corrosion Modelling in Renovation Strategy for Concrete Facades

#### General information

Publication status: Published



MoE publication type: A4 Article in a conference publication  
Organisations: Department of Civil Engineering, Research group: Service Life Engineering of Structures  
Contributors: Kölliö, A., Lahdensivu, J., Pentti, M.  
Pages: 199-211  
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  
Publisher: Tampere University of Technology. Department of Civil Engineering  
ISBN (Electronic): 978-952-15-3743-1  
URLs:

<http://urn.fi/URN:ISBN:978-952-15-3743-1>

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

#### New mechanistic design approach for subgrade rutting of Low Volume Roads

Until recently very few mechanistic design approaches for Low Volume Road (LVR) structures have been available, which is why they have been mostly built based on local experience and traditions. This paper describes a new mechanistic design approach intended for assessing the risk of subgrade rutting of LVRs. It is based essentially on 3D Finite Element Modelling of LVR structures, but the final results of these fairly sophisticated analyses have also been compiled into simple analytical design equations so as to make implementation of the design approach easy enough for everyday practical applications. The description of the theoretical approach is illustrated by a few application examples.

#### 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, Life Cycle Effectiveness of the Built Environment (LCE@BE)

Contributors: Kolisoja, P., Kalliainen, A., Vuorimies, N.

Number of pages: 6

Pages: 301-306

Publication date: 2015

#### Host publication information

Title of host publication: XVI ECSMGE 2015, 13-17 September 2015 - Edinburgh : Geotechnical engineering for infrastructure and development

ISBN (Print): 978-0-7277-6067-8

Electronic versions:

XVI-ECSMGE-Paper-0561-Kolisoja\_et\_al

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201705121386>

URLs:

<http://xvi-ecsmge-2015.org.uk/>

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

#### Low-cost 3D lidar for the mapping of autonomous mobile work machine

Autonomous mobile work machines need the capability of sensing and mapping the surrounding area. Machines can utilize several sensors such as laser scanners and cameras for this purpose. The challenge in their use is the relatively high price compared to the value of mobile work machines, and the sensitivity of sensors to harsh operating conditions. This paper presents a low-cost 3D LIDAR for the sensing and mapping of autonomous work machine, which is based on 2D laser scanner and electric motor drive that rotates the scanner. The 2D laser scanner provides range and intensity values from the measured plane and the controller of electric motor provides the rotation angle and rotation speed of the scanner. By combining these values together with navigation data of the machine, 3D point cloud of the surrounding area can be created. This paper presents the development of hardware and control system for the rotating of the 2D laser scanner. Their integration to autonomous mobile work machine and example of mapping results are also presented.

#### 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, Tampere University of Technology

Contributors: Kolu, A., Rajapolvi, K., Hyvönen, M., Multanen, P., Huhtala, K.

Number of pages: 10

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  
ISBN (Electronic): 978-952-15-3530-7  
Keywords: Autonomous mobile machine, Mobile robotics, 3D LIDAR, CANopen, Measurement data time synchronization  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3530-7>

### Bibliographical note

AUX=iha,"Rajapolvi, Kimmo"

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

### Performance comparison of selected wired and wireless networks on chip architectures

In this paper we compare performance intra-core communications in network on chips. We consider two alternative architectures, wired and wireless. The wired one is based on a common bus (ring) with all the cores attached to it. We compare it to the mesh (point-to-point) architecture based on THz wireless links operating in 0.1-0.54 frequency band. Using reference latencies of inter-core communications in modern CPUs we perform an applicability assessment of considered schemes. As performance metrics of interest we consider both delay and capacity. Our results indicate that the latter architecture outperforms the former by a significant margin. The proposed system can be realized implementing directional antennas at all cores and ensuring that cores are placed on a chip such that there is no interference between them.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Tampere University of Technology, Department of Electronics and Communications Engineering, P.G. Demidov Yaroslavl State University

Contributors: Komar, M.

Number of pages: 7

Pages: 68-74

Publication date: 3 Jun 2015

### Host publication information

Title of host publication: 2015 17TH Conference of Open Innovations Association (FRUCT)

### 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.2015.7117974

### Bibliographical note

INT=elt,"Komar, Maria"

Source: Scopus

Source ID: 84936951198

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

#### The role of inorganics in modelling of biomass gasification

In this work, a summary of the research carried out about the role of inorganic elements in biomass gasification is presented. The research work has focused on the catalytic effects of alkali and alkaline earth metals in char gasification. The work has included gasification experiments using thermogravimetric analysis (TGA) and fluidized beds as well as modeling techniques. The results of the research presented in this paper indicate that the laboratory measured TGA reactivity numbers and correlations (including the effect of fuel ash inorganics) are possible to be converted to numbers predicting carbon conversion in a large scale fluidized bed gasification reactor. The model, called Carbon Conversion Predictor, is a relatively simple and transparent tool for the comparison of the gasification reactivity of different fuels in fluidized bed gasification.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Chemistry and Bioengineering, Research group: Bio- and Circular Economy, Univ Seville, University of Sevilla, Chem & Environm Engn Dept, Bioenergy Grp, Escuela Super Ingenieros, Åbo Akademi University, Process Chemistry Center  
Contributors: Konttinen, J., Kramb, J., DeMartini, N., Gomez-Barea, A.  
Number of pages: 5  
Pages: 443-447  
Publication date: 13 Jun 2017

#### Host publication information

Title of host publication: EUBCE 2017 Online Conference Proceedings  
Publisher: ETA-Florence Renewable Energies  
Editors: Ek, L., Ernrooth, H., Scarlat, N., Grassi, A., Helm, P.  
ISBN (Electronic): 978-88-89407-17-2

#### Publication series

Name: European biomass conference and exhibition proceedings  
Publisher: ETA Florence renewable energies  
ISSN (Electronic): 2282-5819  
DOIs:  
10.5071/25thEUBCE2017-2BO.6.4  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

#### Postmodernismi Suomen rakennusperinnössä

#### General information

Publication status: Published  
MoE publication type: D1 Article in a trade journal  
Organisations: School of Architecture, Research group: History of Architecture  
Contributors: Koponen, O.  
Number of pages: 3  
Pages: 72-74  
Publication date: 2015  
Peer-reviewed: Unknown

### Publication information

Journal: Arkkitehti  
Volume: 2015  
Issue number: 2/2015  
ISSN (Print): 0783-3660  
Original language: Finnish  
Research output: Contribution to journal › Article › Professional

### Kangasala-talo: Vanhan kulttuuripitäjän uusi kulttuuritalo

#### General information

Publication status: Published  
MoE publication type: D1 Article in a trade journal  
Organisations: School of Architecture, Research group: History of Architecture  
Contributors: Koponen, O.  
Number of pages: 3  
Pages: 67-69  
Publication date: 2015  
Peer-reviewed: Unknown

### Publication information

Journal: Arkkitehti  
Volume: 2015  
Issue number: 4/2015  
ISSN (Print): 0783-3660  
Original language: Finnish  
Research output: Contribution to journal › Article › Professional

### Tammerkoski ja Hämeenkatu Tampereen arkkitehtonisen identiteetin ankkureina

#### General information

Publication status: Published  
MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material  
Organisations: School of Architecture  
Contributors: Koponen, O.  
Number of pages: 8  
Pages: 35-42  
Publication date: 2015

#### Host publication information

Title of host publication: Tampereen tarina : Teollisuuden synnyttämä kaupunki harjujen ja järvien solmukohtassa  
Volume: Julkaisuja 5/2015  
Place of publication: Kaupunkiympäristön kehittäminen  
Publisher: Tampereen kaupunki  
Editor: Hautamäki, R.  
ISBN (Print): 978-951-609-783-4

#### Publication series

Name: Tampereen kaupunki/Kaupunkiympäristön kehittäminen  
Publisher: Tampereen kaupunki  
Volume: 5/2015  
ISSN (Print): 1797-321X  
URLs:  
[http://www.tampere.fi/liitteet/t/bV6J59ALc/Tampereen\\_tarina.pdf](http://www.tampere.fi/liitteet/t/bV6J59ALc/Tampereen_tarina.pdf)  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Professional

### Meeting of Vernacular and Modern Architecture in Urbino: Giancarlo De Carlo and reading of the context

#### General information

Publication status: Published  
MoE publication type: B2 Part of a book or another research book  
Organisations: School of Architecture, Research group: History of Architecture  
Contributors: Koponen, O.

Number of pages: 4  
Pages: 26-29  
Publication date: 2015

#### Host publication information

Title of host publication: Italian Vernadoc 2015 – Amandola : Studying Italia and its architecture. The first 10 VERNADOC-years

Place of publication: Helsinki

Publisher: Suomen ICOMOS, kansanrakentamisen komitea

Editor: Mattila, M.

ISBN (Print): 978-952-67465-9-3

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

#### 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:tty-201808172164>

Source: Scopus

Source ID: 85050244199

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

### Savukaasun NOx-päästöjen epäsuora monitorointi maakaasukäyttöisissä polttolaitoksissa

#### 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, Research area: Dynamic Systems, Helen Oy

Contributors: Korpela, T., Kumpulainen, P., Majanne, Y., Häyrynen, A.

Number of pages: 6

Pages: 1-6

Publication date: 2015

#### Host publication information

Title of host publication: Automaatio XXI seminaari

Publisher: Suomen Automaatioseura

Editor: Jämsä-Jounela, S.

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

#### Publication series

Name: SAS julkaisusarja

No.: 44

ISSN (Print): 1455-6502

URLs:

<http://xxi.automaatioseura.fi/>

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

### Monolithic GaInNAsSb/GaAs VECSEL emitting at 1550 nm

We report the first monolithic GaAs-based vertical external-cavity surface-emitting laser (VECSEL) operating at 1550 nm. The VECSEL is based on a gain mirror which was grown by plasma-assisted molecular beam epitaxy and comprises 8 GaInNAsSb/GaAs quantum wells and an AlAs/GaAs distributed Bragg reflector. When pumped by an 808 nm diode laser, the laser exhibited an output power of 80 mW for a mount temperature of 16 °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, Frontier Photonics

Contributors: Korpijärvi, V., Kantola, E. L., Leinonen, T., Guina, M.

Publication date: 2015

#### Host publication information

Title of host publication: SPIE conference proceedings

Volume: 9349

Publisher: SPIE

Article number: 93490D

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: dilute nitride, diode-pumped lasers, GaInNAsSb, semiconductor disk lasers, Semiconductor lasers, vertical external cavity surface emitting lasers

DOIs:

10.1117/12.2077517

Source: Scopus

Source ID: 84925652903

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

### Single-mode 1180 nm GaInNAs/GaAs DBR laser diode for frequency doubling to 590 nm: paper CB\_11\_4

#### 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

Contributors: Korpijärvi, V., Viheriälä, J., Aho, A., Guina, M.

Publication date: 24 Jun 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: DBR laser, GaInNAs

URLs:

[https://www.osapublishing.org/abstract.cfm?uri=cleo\\_europe-2015-CB\\_11\\_4](https://www.osapublishing.org/abstract.cfm?uri=cleo_europe-2015-CB_11_4)

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

### **Non-resonant enhancement of second-harmonic generation from metal nanoislands coated with dielectric layers**

Second-harmonic generation from gold nanoisland films increases with the dielectric TiO<sub>2</sub> coating thickness. This occurs although the plasmon resonance shifts away from the second-harmonic wavelength, due to enhanced non-resonant local fields at the fundamental wavelength.

#### **General information**

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Photonics, Research group: Nonlinear Optics, Peter The Great St. Petersburg Polytechnic University, University of Eastern Finland, Peter the Great St. Petersburg Polytechnic University

Contributors: Koskinen, K., Scherbak, S., Chervinskii, S., Lipovskii, A., Kauranen, M.

Number of pages: 2

Publication date: 2018

#### **Host publication information**

Title of host publication: CLEO : QELS\_Fundamental Science 2018

Publisher: OSA

Article number: JTU2A.134

ISBN (Electronic): 978-1-943580-42-2

Electronic versions:

cleous\_18\_paper\_final. Embargo ended: 18/05/19

DOIs:

10.1364/CLEO\_AT.2018.JTu2A.134

URLs:

<http://urn.fi/URN:NBN:fi:tty-201806041911>. Embargo ended: 18/05/19

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

### **Perspective of Social Usability in the Change Processes of an Academic Workplace**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Kostiainen, E., Nenonen, S.

Pages: 688-701

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

### **Joustavat asuin ympäristöt: 10 visiota aikaa kestävään 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  
Electronic versions:

joustavat\_asuinymparistot

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3477-5>

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3477-5>

#### Bibliographical note

Versio ja lupa ok 12.1.2016 KK  
Research output: Book/Report > Anthology > Professional

#### Matkalla joustaviin asuinympäristöihin

##### General information

Publication status: Published  
MoE publication type: D2 Article in professional manuals or guides or professional information systems or text book material  
Organisations: School of Architecture, Research group: ASUTUT  
Contributors: Kotilainen, S.  
Number of pages: 4  
Pages: 10-13  
Publication date: 31 Mar 2015

##### Host publication information

Title of host publication: Joustavat asuinympäristöt : 10 visiota aikaa kestävään kaupunkiasumiseen  
Volume: 16  
Place of publication: Tampere  
Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos  
Article number: 1  
ISBN (Print): 978-952-15-3476-8  
ISBN (Electronic): 978-952-15-3477-5

##### Publication series

Name: Housing Design  
Publisher: Tampere University of Technology. School of Architecture.  
Volume: 16

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3477-5>

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

#### 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

## Menetelmä parvekelasien ääneneristävyyden mitoittamiseksi liikennemelualueilla

### General information

Publication status: Published

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

Organisations: Department of Civil Engineering, Research group: Building Acoustics

Contributors: Kovalainen, V., Kylliäinen, M.

Number of pages: 6

Pages: 617-622

Publication date: 22 Oct 2015

### Host publication information

Title of host publication: Rakennusfysiikka 2015

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, noise control

URLs:

<http://www.tut.fi/fi/tietoa->

[yliopistosta/laitokset/rakennustekniikka/tutkimus/rakennetekniikka/rakennusfysiikka/rakennusfysiikkaseminaarit/index.htm](http://www.tut.fi/fi/tietoa-yliopistosta/laitokset/rakennustekniikka/tutkimus/rakennetekniikka/rakennusfysiikka/rakennusfysiikkaseminaarit/index.htm)

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

## Method of data compression for traffic monitoring

In this paper a problem of compressing data containing information on basic parameters of network traffic is considered. Six test sets with different types of network traffic for known monitoring tool Wireshark are formed. Analysis of compression efficiency for these datasets by widely used archivers is carried out. It is shown that the main part of memory in compressed data relates to timestamps. A method for compressing timestamps that consists in delta calculation, Burrows-Wheeler transform (BWT), distance coding (DC) and recursive group coding (RGC) at the final stage is proposed. It is demonstrated that the use of RGC at the final stage provides more efficient coding compared to known methods. It is also shown that the proposed method of timestamps coding produces about twice larger compression ratio than WinRar.

### 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: Kozhemiakina, N., Lukin, V., Ponomarenko, N., Akulynichev, A., Astola, J., Egiazarian, K.

Number of pages: 4

Pages: 153-156

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: Burrows-Wheeler transform, data compression, distance coding, traffic monitoring and analysis tools

DOIs:

10.1109/INFOCOMMST.2015.7357299

Source: Scopus

Source ID: 84962870220

### **The Parallel Diode and Trap Behaviour of Ternary Polymer Solar Cells**

This paper investigates the use of ternary blends (two donor polymers and fullerene acceptor) in bulk-heterojunction (BHJ) photovoltaic devices to compare the parallel diode and trap model. Our initial study involved the blending of equivalent quantities of two of the three chosen complimentary donor polymers (red, green, blue) with [60]PCBM. Through EQE measurements, it was shown that even devices with blends exhibiting poor efficiencies, caused by traps, both polymers contributed to the PV effect. However, traps were avoided to create a parallel-like BHJ when two polymers were chosen with the appropriate HOMO-HOMO energy band alignment. Ternary blend device performance is explained in terms of transport properties issued from photogenerated current vs. light intensity and bias polarization studies, as well as a dark conductivity vs. temperature investigation. Additionally, the parallel diode circuit model is implemented to calculate the blend combination which exhibits the highest power conversion efficiency. Device optimization issued from both models is compared.

#### **General information**

Publication status: Published

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

Organisations: Univ Limoges, University of Limoges, XLIM CNRS 7252, Former organisation of the author, Queens Univ, Queens University - Canada, Dept Chem, Univ Limoges, Centre National de la Recherche Scientifique (CNRS), University of Limoges, XLIM, CNRS, UMR 6172

Contributors: Kraft, T., Cristoferi, C., Trigaud, T., Nunzi, J., Ratier, B.

Publication date: Sep 2014

#### **Host publication information**

Title of host publication: EU PVSEC Proceedings

Volume: EU PVSEC 2014

Publisher: EU PVSEC

Article number: 3BV.5.23

ISBN (Electronic): 3-936338-34-5

URLs:

<https://www.eupvsec-proceedings.com/proceedings?eventId=17&topicId=116&subtopicId=359&paper=31499>

#### **Bibliographical note**

ISBN: 3-936338-34-5

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

### **Printed and organic diodes: devices, circuits and applications**

We review the history and current state of the art of diodes fabricated with organic semiconductors and other printable materials. In particular, we look at the integration of printed diodes into circuits and systems for applications, with particular emphasis on rectification, energy harvesting, and negative differential resistance (e.g. tunnel diodes). An overview of solution processed and printable organic and inorganic materials utilised in diodes is provided with an in depth analysis of their physics of operation. Furthermore, it is explained how the diverse array in which printed diodes can be implemented demonstrates their potential in the printed electronics industry.

#### **General information**

Publication status: Published

MoE publication type: A2 Review article in a scientific journal

Organisations: Electronics and Communications Engineering, Research group: Laboratory for Future Electronics, Research group: Wireless Communications and Positioning

Contributors: Kraft, T., Berger, P., Lupo, D.

Number of pages: 19

Publication date: 29 Sep 2017

Peer-reviewed: Yes

#### **Publication information**

Journal: Flexible and Printed Electronics

Volume: 2

Issue number: 3

Article number: 033001

ISSN (Print): 2058-8585

Ratings:

Scopus rating (2017): CiteScore 2.68 SJR 0.779 SNIP 1.163

Original language: English

Keywords: printed diodes, Printed electronics, Organic electronics, Energy Harvesting, rectification, tunnel diodes

DOIs:

### **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

### **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:ty-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

#### 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

#### Roadmap towards the vision of the future power system and electricity market

This paper reports the results of the Finnish national project "Roadmap 2025" which had two main objectives. The first one was to clarify the long term vision (up to 2035) of the power system and electricity market, and the second one was to create a roadmap, a development path towards the vision. The project was partially an update of the project "Vision of the Power System 2030", reported at CIRED 2007. However, instead of focusing only on technological issues, the project also included electricity market and service market perspectives and emphasized the necessary actions needed in changing the present system into the system of the future. The main results can be summarized as follows: Challenges of the future flexible power system which will be achieved by strong transmission network, cross-border grid connections, automation, undergrounding of MV and LV networks, microgrids, controllable loads, energy storages and renewable energy.

##### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Electrical Engineering, Research area: Power engineering, University of Vaasa (UVA), Department of Chemistry and Bioengineering, Lappeenranta University of Technology, Oy Merinova Ab  
Contributors: Kumpulainen, L., Kauhaniemi, K., Repo, S., Valkealahti, S., Honkapuro, S., Partanen, J., Koivisto-Rasmussen, R., Järventausta, P.  
Publication date: 2016

##### Host publication information

Title of host publication: CIRED Workshop 2016

Publisher: Institution of Engineering and Technology

ISBN (Electronic): 978-1-78561-202-2

ASJC Scopus subject areas: Electrical and Electronic Engineering

DOIs:

10.1049/cp.2016.0690

Source: Scopus

Source ID: 85007529978

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

## **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

## **Negotiating water governance: towards cooperation in contentious groundwater recharge projects**

### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering

Contributors: Kurki, V.  
Pages: 91-102  
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

Publisher: Tampere University of Technology. Department of Civil Engineering

ISBN (Electronic): 978-952-15-3741-7

URLs:

<http://urn.fi/URN:ISBN:978-952-15-3741-7>

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

#### Towards better learning by increased student engagement

Three basic courses obligatory in the bachelor studies of civil engineering were redesigned to increase the student engagement and to support the continuous learning through increased interaction and feedback. Two new courses on geotechnical engineering and soil mechanics were created summing up to the same total credits as the three old courses on engineering geology, soil investigations and soil mechanics.

The analysis of the learning outcomes and the core content formed the base of the development work. Good components, such as soil laboratory and field exercises enabling learning by going and giving memorable experiences, as graduated students commented, were retained, but developed further to enable the self-directed group work and flipped learning. The calculation exercise groups in soil mechanics course were cut down into smaller groups to support collateral learning and to dissipate the gap between the teacher and student. Personal design calculation assignments were added with direct feedback. Weekly moodle quizzes were used to motivate the continuous learning and the lecture attendance.

The results after two and three implementations of the new courses were analysed based on the grades, passing percentage and student feedback, comparing the three old courses with the two new courses. Based on the both the

grades and the passing percentage the learning results were improved. Especially the number and achieved grades of student passing with the interval exams on soil mechanics course were improved significantly. In the new basic course, where the final exam is no longer compulsory, the result is not as evident, since during the first two implementations the highest grade possible to achieve by assignments was three.

One important achievement was improving the reputation of these courses. Senior students pass on their attitudes to the young, and created prejudices effect on the student's performance. It takes several years to chance the image. Therefore, it's important to react to the student feedback and to make the development work and teacher's interest visible to the students.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Civil Engineering, Research group: Earth Constructions

Contributors: Kuula, P. H., Leppänen, M. M., Penttilä, M. E.

Number of pages: 10

Publication date: 12 Sep 2016

#### **Host publication information**

Title of host publication: Proceedings of the 44th SEFI Annual Conference 2016 : 12th-15th September 2016, Tampere, Finland

Place of publication: Tampere

Publisher: European Society for Engineering Education SEFI

Editors: Niemi, T., Järvinen, H.

ISBN (Print): 978-2-87352-014-4

Keywords: active learning, learning by doing, engineering education, blended learning, evaluation method

URLs:

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

[http://www.sefi.be/conference-](http://www.sefi.be/conference-2016/papers/Open_and_Online_Engineering_Education__Engineering_Education_Research/kuula-towards-better-learning-by-increased-student-engagement-69.pdf)

[2016/papers/Open\\_and\\_Online\\_Engineering\\_Education\\_\\_Engineering\\_Education\\_Research/kuula-towards-better-learning-by-increased-student-engagement-69.pdf](http://www.sefi.be/conference-2016/papers/Open_and_Online_Engineering_Education__Engineering_Education_Research/kuula-towards-better-learning-by-increased-student-engagement-69.pdf)

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

### **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

### **Preparation and antimicrobial characterization of silver-containing packaging materials for meat**

In food technology, antimicrobial packaging materials could inhibit or limit the growth of spoilage bacteria and thus improve the shelf life of packaged products. The present study provides new insights into the preparation and antimicrobial characterization of silver-containing packaging materials and their efficacy against typical meat spoilage bacteria. Antimicrobial efficacy of packaging films produced by coextrusion or liquid flame spray process was determined by bioluminescence imaging and conventional antimicrobial assay. Fresh pork sirloin was packaged in selected films and composition of meat microbiota was analyzed by 16S rRNA amplicon sequencing. Shelf life of meat was not affected by any of the silver-containing packaging films, even though meat microbiota mostly consisted of bacteria that were inhibited or retarded in vitro by nanoscale silver coating. This may be due to different release dynamics of silver ions on meat surfaces compared to the circumstances in the antimicrobial assay or interactions between silver and amino acids.

#### **General information**



Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Materials Science, Research group: Paper Converting and Packaging, Department of Chemistry and Bioengineering, Engineering materials science and solutions (EMASS), Urban circular bioeconomy (UrCirBio), University of Helsinki, Department of Food Hygiene and Environmental Health

Contributors: Kuuliala, L., Pippuri, T., Hultman, J., Auvinen, S., Kolppo, K., Nieminen, T., Karp, M., Björkroth, J., Kuusipalo, J., Jääskeläinen, E.

Number of pages: 8

Pages: 53-60

Publication date: 1 Dec 2015

Peer-reviewed: Yes

### Publication information

Journal: Food Packaging and Shelf Life

Volume: 6

Article number: 67

ISSN (Print): 2214-2894

Ratings:

Scopus rating (2015): CiteScore 2.21 SJR 0.695 SNIP 0.947

Original language: English

ASJC Scopus subject areas: Food Science, Safety, Risk, Reliability and Quality, Biomaterials, Polymers and Plastics, Microbiology (medical)

Keywords: Active packaging, Antimicrobial film, Bioluminescence, Lactic acid bacteria, Liquid flame spray, Silver nanoparticle

DOIs:

10.1016/j.fpsl.2015.09.004

URLs:

<http://www.scopus.com/inward/record.url?scp=84945244937&partnerID=8YFLogxK> (Link to publication in Scopus)

### Bibliographical note

ORG=mol,0.5

ORG=keb,0.5

Source: Scopus

Source ID: 84945244937

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

## Triboelectric charging of fungal spores during resuspension and rebound

### 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., Saari, S., Mensah-Attipoe, J., Pasanen, P., Reponen, T., Keskinen, J.

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

## 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

## 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

## Measurements of particulates and gas phase precursors emissions from fresh ship plumes during the Big Glenn 2014 Campaign

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Physics, Research area: Aerosol Physics, University of Gothenburg

Contributors: Kuuluvainen, H., Faxon, C., Psichoudaki, M., Thomson, E. S., Eriksson, A., Kristensson, A., Svenningson, B., Mellqvist, J., Salo, K., 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

## Tampere University of Technology, laboratory of materials science, paper converting and packaging technology Tampere, Finland

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, Research group: Paper Converting and Packaging

Contributors: Kuusipalo, J., Lahti, J.

Number of pages: 1

Publication date: 1 Jan 2017

### Host publication information

Title of host publication: 16th TAPPI European PLACE Conference 2017 : Basel; Switzerland; 22 May 2017 through 24 May 2017

Volume: May-2017

Publisher: TAPPI Press

ISBN (Electronic): 9781510850880

ASJC Scopus subject areas: Media Technology, Chemical Engineering(all), Chemistry(all), Mechanical Engineering, Materials Science(all)

URLs:

<http://www.scopus.com/inward/record.url?scp=85044476202&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 85044476202

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

## **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

## **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

### Rakenteiden ääneneristyskyvystä asumismelun kokemiseen

#### 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: Building Acoustics  
Contributors: Kylliäinen, M.  
Number of pages: 5  
Pages: 92-96  
Publication date: 2015

#### Host publication information

Title of host publication: Rakentajain Kalenteri  
Place of publication: Helsinki  
Publisher: Rakennustieto Oy  
ASJC Scopus subject areas: Acoustics and Ultrasonics  
Keywords: acoustics, building acoustics, sound insulation  
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Professional

### White Knights of the Smart City

In this paper we will demonstrate how a science fiction storyboard was used as a means for delivering and discussing future technology and design innovations. We present a case in which an illustrated storyboard exemplified the interactions of an experience-centered technology design concept - a winter caretaking system for a smart city and two devices that could assist its citizens. In the science fiction introduced, the emphasis is on the experience-centered design approach, particularly experiences relating to nurture, sympathy and control.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Pervasive Computing, Research area: User experience, VTT Tech Res Ctr Finland, VTT Technical Research Center Finland, Human Factors Complex Syst  
Contributors: Kymäläinen, T., Sahar, F., Palviainen, J.  
Number of pages: 12  
Pages: 223-234  
Publication date: 2014

#### Host publication information

Title of host publication: Workshop Proceedings of the 10th International Conference on Intelligent Environments  
Publisher: IOS Press  
Editors: Augusto, J., Zhang, T.  
ISBN (Print): 978-1-61499-410-7

#### Publication series

Name: Ambient Intelligence and Smart Environments  
Publisher: IOS PRESS  
Volume: 18  
ISSN (Print): 1875-4163

Keywords: Science-fiction prototype, storyboard, intelligent city, user experience design, experience-centered design

DOIs:

10.3233/978-1-61499-411-4-223

Source: WOS

Source ID: 000360238400028

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

## **Kohti kestäväää Skanssia**

### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: School of Architecture

Contributors: Laak, M. (ed.), Del Barrio Batista, J. (ed.)

Number of pages: 87

Publication date: 2014

### **Publication information**

Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos

ISBN (Print): 978-952-15-3248-1

ISBN (Electronic): 978-952-15-3249-8

Original language: Finnish

Electronic versions:

kohti\_kestavaa\_skanssia

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3249-8>

### **Bibliographical note**

Versio ok 14.12.2015

Research output: Book/Report > Commissioned report > Professional

## **Towards a sustainable Skanssi**

Course publication. The publication contains course works submitted for the Sustainable Design Studio 2013 which concentrate on the future development of the Skanssi area in Turku. For the publication six student groups' analyses and structure & masterplan –proposals have been gathered. In addition to that, selected individual works by 12 students are shown in this publication. Furthermore this publication contains a green roof and storm water management analysis and an environmental and landscape management proposal for the new residential areas.

### **General information**

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: School of Architecture

Contributors: Laak, M. (ed.), Del Barrio Batista, J. (ed.)

Number of pages: 87

Publication date: 2014

### **Publication information**

Publisher: Tampere University of Technology, School of Architecture

ISBN (Electronic): 978-952-15-3260-3

Original language: English

Electronic versions:

towards\_a\_sustainable\_skanssi

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3260-3>

### **Bibliographical note**

AUX=ark,"Del Barrio Batista, Juan"

Versio ok 14.12.2015

Research output: Book/Report > Commissioned report > Professional

## **Orimattilan Henna**

Kurssijulkaisu. Vuoden 2014 yhdyskuntasuunnittelun ammattikurssi 1 opiskelijoiden harjoitustyöt. Kurssin harjoitustöiden teemana oli uuden kaupunginosan suunnittelu Lahti-Kerava -oikoradan varteen. Kurssi ja julkaisu toteutettiin yhteistyössä

Orimattilan kaupungin kanssa.

#### General information

Publication status: Published  
MoE publication type: D4 Published development or research report or study  
Organisations: School of Architecture  
Contributors: Laak, M. (ed.)  
Number of pages: 89  
Publication date: 2014

#### Publication information

Publisher: Tampereen teknillinen yliopisto. Arkkitehtuurin laitos  
ISBN (Print): 978-952-15-3321-1  
ISBN (Electronic): 978-952-15-3322-8  
Original language: Finnish  
Electronic versions:

orimattilan\_henna

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3322-8>

#### Bibliographical note

Versio ok 16.12.2015

Research output: Book/Report > Commissioned report > Professional

#### The Fourteenth Scandinavian International Conference on Fluid Power, SICFP15: Proceedings

At this time the conference includes various themes like hybrids, drives, digital hydraulics and pneumatics. Special attention in the program is given for energy efficiency, renewable energy production and energy recovery. They are reflecting well the situation, where environmental issues and energy saving are increasingly important issues.

#### General information

Publication status: Published  
MoE publication type: C2 Edited books  
Organisations: Department of Intelligent Hydraulics and Automation, Research group: Fluid power automation in mobile machines  
Contributors: Laamanen, A. (ed.), Huhtala, K. (ed.)  
Number of pages: 835  
Publication date: 2015

#### Publication information

Publisher: Tampere University of Technology. Department of Intelligent Hydraulics and Automation  
ISBN (Electronic): 978-952-15-3530-7, 978-952-15-3658-8  
Original language: English

#### Publication series

Name: Scandinavian International Conference on Fluid Power (SICFP)

Publisher: Tampere University of Technology

ISSN (Print): 2342-2726

Electronic versions:

SICFP15\_proceedings

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3530-7>

#### Bibliographical note

Versio ok 16.12.2015

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

#### The Fourteenth Scandinavian International Conference on Fluid Power, SICFP15: Abstracts

At this time the conference includes various themes like hybrids, drives, digital hydraulics and pneumatics. Special attention in the program is given for energy efficiency, renewable energy production and energy recovery. They are reflecting well the situation, where environmental issues and energy saving are increasingly important issues.

#### General information

Publication status: Published  
MoE publication type: C2 Edited books

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

Contributors: Laamanen, A. (ed.), Huhtala, K. (ed.)

Number of pages: 100

Publication date: 2015

#### Publication information

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

ISBN (Print): 978-952-15-3529-1

ISBN (Electronic): 978-952-15-3548-2

Original language: English

Electronic versions:

sicfp15\_abstract\_book

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3548-2>

#### Bibliographical note

sicfp15\_abstract\_book ok 8.1.2016 KK

Varsinainen proceedings-julkaisu hyväksytty tiedonkeruuseen

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

#### Lahdelma & Mahlamäki Architects: Works

##### General information

Publication status: Published

MoE publication type: D5 Text book, professional manual or guide or a dictionary

Organisations: School of Architecture, Research group: Architecture: History, Theory and Innovations

Contributors: Lahdelma, I.

Number of pages: 152

Publication date: 2014

##### Publication information

Publisher: Rakennustieto

ISBN (Print): 978-952-267-071-7

Original language: English

Research output: Book/Report > Book > Professional

#### Nanoscale barrier coating on BOPP packaging film by ALD

##### 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

Contributors: Lahti, J.

Number of pages: 13

Pages: 493-505

Publication date: 2016

##### Host publication information

Title of host publication: TAPPI PLACE Conference 2016: Exploring New Frontiers

Publisher: TAPPI Press

ISBN (Electronic): 9781510823563

ASJC Scopus subject areas: Media Technology, Mechanical Engineering, Materials Science(all), Chemistry(all), Chemical Engineering(all)

Source: Scopus

Source ID: 84981736600

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

#### **Novel equipment to simulate hot air heat sealability of packaging materials**

##### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Materials Science, Research group: Paper Converting and Packaging  
Contributors: Lahti, J., Kuusipalo, J., Auvinen, S.  
Number of pages: 12  
Pages: 237-248  
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: 85044468996  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Novel bio-based materials for active and intelligent packaging**

##### **General information**

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Materials Science  
Contributors: Lahti, J., Kamppuri, T., Kuusipalo, J.  
Number of pages: 1  
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: 85044445672  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### **Managing intellectual liabilities by service recovery**

Purpose – The paper studies intangible liabilities in a practical management setting with an overall aim to develop better managerial practices to avoid depreciation of organizations' intangible assets.

Design/methodology/approach – Empirical examination of the studied phenomenon was carried out in construction industry. Empirical data was gathered in two phases. First, 16 persons engaged to customer service in four construction companies were interviewed. The purpose was to identify intangible liabilities. After the interviews, two workshops in two



companies were organized to reflect findings and to improve and develop organizations' service recovery practices.

Originality/value – The novelty value of the suggested approach lies in cross-disciplinary consideration of customer experience as an antecedent of various processes that may have negative impact on organizations' intellectual capital, and further on performance. The paper conceptualizes the hidden renewal capability of contradictory and negative customer experiences by analyzing their potential implications on IC, especially in relational capital.

Practical implications – Contributions of the paper relate to its practical research approach and focus on relational liabilities. The paper provides new understanding about intellectual liabilities within a certain industrial context and discusses more generalizable aspects to be considered in managing intellectual capital.

Keywords – Intellectual liabilities, Intellectual capital, Service recovery, Customer satisfaction

Paper type – Academic Research Paper

#### **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, University of Tampere

Contributors: Laihonon, H., Sillanpää, V., Vuolle, M.

Number of pages: 14

Pages: 1570-1583

Publication date: 9 Jun 2017

#### **Host publication information**

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

Publisher: IKAM - Institute of Knowledge Asset Management

Editors: Schiuma, G., Spender, J., Garvilova, T.

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

#### **Publication series**

Name: Proceedings IFKAD

ISSN (Print): 2280-787X

ASJC Scopus subject areas: Business, Management and Accounting(all)

Keywords: Intellectual liabilities, Intellectual capital, Service recovery, Customer satisfaction

URLs:

[http://www.ifkad.org/Proceedings/2017/papers/264\\_IFKAD2017.pdf](http://www.ifkad.org/Proceedings/2017/papers/264_IFKAD2017.pdf)

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

### **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

### **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

### **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

#### 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

#### Multi-Objective Optimization of Fin Array Heat Sinks

A method is presented to determine the temperature field of an electronics cooling heat sink. The method is based on calculation of heat conduction in a solid numerically with the finite volume method and on solving fluid convection from analytical equations. The model is suitable for forced and natural convection heat sinks, and it uses solutions of a parallel plate channel for the friction factor and the convection Nusselt number. The validity of the method is verified by comparing its results to measured data and to CFD calculations. After verification, two practical multi-objective optimization examples are given. The first one, an industrial application, is a forced convection heat sink composed of nine heat generating components at the base plate. Then, natural convection optimization is performed on a reference array with two components. In both cases, mass is minimized, the other criterion being the maximum temperature for forced convection case, and the heat sink outer volume for natural convection case.

##### 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: Applied Mechanics  
Contributors: Lampio, K., Karvinen, R.  
Number of pages: 4  
Publication date: 21 Nov 2016

##### Host publication information

Title of host publication: Thermnic 2016 : 22nd international workshop Thermal investigations of ICs and Systems  
Publisher: IEEE  
ISBN (Print): 978-1-5090-5450-3  
ISBN (Electronic): 978-1-5090-5451-0  
DOIs:  
10.1109/THERMINIC.2016.7749070

## Varmuuden kohdentaminen geotekniikassa, miten Eurokoodeja voisi kehittää?

### General information

Publication status: Published

MoE publication type: D3 Professional conference proceedings

Organisations: Department of Civil Engineering, Research group: Foundation Structures

Contributors: Länsivaara, T.

Publication date: 2015

### Host publication information

Title of host publication: Geotekniikan päivä 2015

Publisher: SGY

URLs:

<http://www.getunderground.fi/web/page.aspx?refid=38>

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

## Recognition of shading events caused by moving clouds and determination of shadow velocity from solar radiation measurements

Fast variability of solar radiation is the main cause of fluctuating photovoltaic (PV) power production and shadows caused by overpassing clouds are the main reason of such variability. Fast irradiance transitions caused by the edges of shadows can lead to situations where the grid inverter is not able to follow the global maximum power point (MPP) causing extra losses. Further, fast fluctuations of the power fed to the electric grid can cause, for example, power balance and quality problems. This paper presents a method to recognize shading events caused by moving clouds from measured irradiance data. The developed recognition method has been used to analyse shading events from 15 months of full-time irradiance recordings and the results of the analysis are presented. Further, the Linear Cloud Edge (LCE) method has been used to determinate velocities of the shadows.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

Contributors: Lappalainen, K., Valkealahti, S.

Number of pages: 6

Pages: 1568-1573

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/EUPVSEC20152015-5AO.7.5

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

## Mathematical Parametrisation of Irradiance Transitions Caused by Moving Clouds for PV System Analysis

Irradiance transitions caused by moving clouds can have considerable negative effects on the operation of photovoltaic (PV) systems. They may lead to failures in maximum power point tracking causing extra losses and to mismatch power losses due to partial shading. Further, they can cause significant fluctuations in the output power of PV systems. This paper presents a method to parametrise irradiance transitions caused by moving clouds based on a mathematical model of the transitions. Irradiance transitions were parametrised by four variables: shading strength, shape related parameter  $b$ , speed and direction of movement which have no correlation with each other. The applicability of the parametrisation method in PV system analysis was demonstrated by simulations. The simulation results show that the developed parametrisation method is suitable for long-term PV system analysis.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

Contributors: Lappalainen, K., Valkealahti, S.

Number of pages: 5

Pages: 1485-1489

Publication date: 2016

### Host publication information

Title of host publication: 32nd European Photovoltaic Solar Energy Conference and Exhibition (32nd EU PVSEC), 20–24 June, 2016, Munich, Germany

ISBN (Electronic): 3-936338-41-8

DOIs:

10.4229/EUPVSEC20162016-5AO.8.4

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

### Microrobotic system for multi-rate measurement of bio-based fibres Z-directional bond strength

The core content of this study is micro-testing of microscale objects - an emerging application area for microrobotics - where microrobotics has been used in paper industry for measuring properties at the single fibre level. Pulp and paper scientists are interested to have experimental data of single fibre-fibre bond strength distribution of paper/board products in different loading modes and rates. Meeting this demand is quite challenging since the system should be able to measure the bond strength i) in the individual fibre level, ii) in different loading modes, and iii) in different loading rates. The current methods of measurement do not satisfy all these three requirements. Among the four different loading modes, the Z-directional behaviour of paper/board products is a matter of high significance for papermaking and paper converting companies. The Z-directional properties influence compressive properties, and accordingly the performance of structural paper/board products. According to the literature, there is not any reported method to facilitate the measurement of Z-directional strength at the single fibre level in different loading rates. This paper reports an in-depth study of a measurement method for experimental evaluation of Z-directional individual fibre-fibre bond strength in multiple loading rates using microrobotics and a Polyvinylidene fluoride (PVDF) film microforce sensor. The results from the measurement system are promising. In summary, the first concept for multi-rate measurement of Z-directional bond strength at the individual fibre level is developed during this work which has a high practical impact on the fibre characterization research field.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

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

Contributors: Latifi, S. K., Sakeri, P., Kallio, P.

Number of pages: 14

Pages: 13-26

Publication date: 24 May 2015

Peer-reviewed: Yes

### Publication information

Journal: Journal of Micro-Bio Robotics

Volume: 10

Issue number: 1

Article number: 1

ISSN (Print): 2194-6418

Ratings:

Scopus rating (2015): CiteScore 1 SJR 0.423 SNIP 1.004

Original language: English

ASJC Scopus subject areas: Engineering(all)

Keywords: Microrobotics , Micro-testing , Multi-rate microforce sensing, Polyvinylidene fluoride (PVDF) , Z-directional strength

DOIs:

10.1007/s12213-015-0080-9

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

### Puuväli­pohjien akustiset ominaisuudet

#### 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

Contributors: Latvanne, P., Kylliäinen, M.

Number of pages: 6

Pages: 567-572

Publication date: 22 Oct 2015

### Host publication information

Title of host publication: Rakennusfysiikka 2015

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

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

### Linear and nonlinear light beam propagation in chiral nematic liquid crystal waveguides

We employ a thick layer of chiral nematic liquid crystals to demonstrate the evolution of a one-dimensional (1D) higher-order guided mode into a beam self-confined in both transverse dimensions at various wavelengths. We also report the experimental observation of higher-order modes guided by soliton-induced waveguides in chiral nematic liquid crystals.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Politechnika Warszawska, University of Warsaw, Aerosol Physics Laboratory, Nonlinear Optics and OptoElectronics Lab, University "Roma Tre"

Contributors: Laudyn, U. A., Kwaśny, M., Jung, P. S., Trippenbach, M., Assanto, G., Karpierz, M. A.

Number of pages: 3

Pages: 11-13

Publication date: 2016

Peer-reviewed: Yes

### Publication information

Journal: Photonics Letters of Poland

Volume: 8

Issue number: 1

ISSN (Print): 2080-2242

Ratings:

Scopus rating (2016): CiteScore 0.37 SJR 0.197 SNIP 0.272

Original language: English

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials

Electronic versions:

Linear and nonlinear light beam propagation in chiral nematic liquid crystal waveguides

DOIs:

[10.4302/plp.2016.1.05](https://doi.org/10.4302/plp.2016.1.05)

URLs:

<http://urn.fi/URN:NBN:fi:tty-201604253878>

Source: Scopus

Source ID: 84962158419

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

### Three-color vector nematicon

Light localization via reorientation in nematic liquid crystals supports multi-component optical spatial solitons, i.e., vector nematicons. By launching three optical beams of different wavelengths and the same input polarization in a bias-free planar cell, we demonstrate a three-color vector nematicon which is self-trapped thanks to its incoherent nature.

### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Photonics, Politechnika Warszawska, Univ Roma Tre, Roma Tre University, Dept Elect Engn, NooEL, University "Roma Tre", Aerosol Physics Laboratory

Contributors: Laudyn, U. A., Kwaśny, M., Karpierz, M. A., Assanto, G.

Number of pages: 3

Pages: 36-38

Publication date: 2017

Peer-reviewed: Yes

### Publication information

Journal: Photonics Letters of Poland

Volume: 9

Issue number: 2

ISSN (Print): 2080-2242

Ratings:

Scopus rating (2017): CiteScore 0.48 SJR 0.25 SNIP 0.36

Original language: English

ASJC Scopus subject areas: Electronic, Optical and Magnetic Materials

Electronic versions:

718-2839-1-PB

DOIs:

10.4302/plp.v9i2.718

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708071660>

Source: Scopus

Source ID: 85021814168

Research output: Contribution to journal › Article › 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

#### Publication information

Place of publication: Tampere  
Publisher: Tampere University of Technology  
ISBN (Print): 978-952-15-3542-0  
ISBN (Electronic): 978-952-15-3567-3  
Original language: English

#### Publication series

Name: Tampere University of Technology. Publication  
Publisher: Tampere University of Technology  
Volume: 1306  
ISSN (Print): 1459-2045  
Electronic versions:  
laukkarinen\_1306  
URLs:  
<http://URN.fi/URN:ISBN:978-952-15-3567-3>

#### Bibliographical note

Awarding institution: Tampere University of Technology  
Versio ok 16.12.2015  
Research output: Book/Report > Doctoral thesis > Collection of Articles

### Lasitetun parvekkeen lämpötilan ja lämpöhäviöiden laskenta

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Department of Civil Engineering, Research group: Building Physics, Research group: Service Life Engineering of Structures  
Contributors: Laukkarinen, A., Hilliaho, K.  
Number of pages: 6  
Pages: 181-186  
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  
Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka  
Editors: Vinha, J., Ruuska, T.  
ISBN (Print): 978-952-15-3580-2

#### Publication series

Name: Rakennustekniikan laitos. Rakennetekniikka. Seminaarijulkaisu  
No.: 4  
ASJC Scopus subject areas: Building and Construction, Civil and Structural Engineering  
URLs:  
<http://www.ril.fi/media/files/koulutus/rakennusfysiikka-2015-cfp.pdf>  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific

### Maanvastaisten seinien lämpö- ja kosteustekninen toiminta

#### 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: Laukkarinen, A., Heiskanen, R., Vinha, J.



Number of pages: 6  
Pages: 71-76  
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: 1  
Place of publication: Tampere  
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.  
ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

#### Bibliographical note

INT=rak,"Heiskanen, Roosa"  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### Puukerrostalon työmaavaiheen lämpö- ja kosteusolosuhteiden mittaukset

#### General information

Publication status: Published  
MoE publication type: B3 Non-refereed article in conference proceedings  
Organisations: Civil Engineering, Research group: Building Physics, Research group: Capacity Development of Water and Environmental Services CADWES, Laboratory of Civil Engineering, Tampere University of Technology  
Contributors: Laukkarinen, A., Musakka, S., Penttilä, O., Teriö, O., Vinha, J.  
Number of pages: 6  
Pages: 167-172  
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: 1  
Place of publication: Tampere  
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.  
ASJC Scopus subject areas: Civil and Structural Engineering, Building and Construction

#### Bibliographical note

INT=RAK, "Musakka, Sami"  
INT=RAK, "Penttilä, Olavi"  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific

### 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

### **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

### **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/>

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

#### Leadership instead of grading - The new goals of assessment

##### 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: Lehtonen, T., Juuti, T., Vanhatalo, M., Kopra, M. J., Rättyä, K.

Number of pages: 8

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

Keywords: Assessment, Lifelong learning, Situational leadership

URLs:

[http://www.sefi.be/conference-2016/papers/Sustainability\\_and\\_Engineering\\_Education/lehtonen-from-grading-towards-leadership---new-goals-for-assessment-55\\_a.pdf](http://www.sefi.be/conference-2016/papers/Sustainability_and_Engineering_Education/lehtonen-from-grading-towards-leadership---new-goals-for-assessment-55_a.pdf)

Source: Scopus

Source ID: 85014096858

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

#### Natural Gas Engine Emission Reduction by Catalysts

In order to meet stringent emission limits, after-treatment systems are increasingly utilized in natural gas engine applications. In this work, two catalyst systems were studied in order to clarify how the catalysts affect, e.g. hydrocarbons, NO<sub>x</sub> and particles present in natural gas engine exhaust. A passenger car engine modified to run with natural gas was used in a research facility with possibilities to modify the exhaust gas properties. High NO<sub>x</sub> reductions were observed when using selective catalytic reduction, although a clear decrease in the NO<sub>x</sub> reduction was recorded at higher temperatures. The relatively fresh methane oxidation catalyst was found to reach reductions greater than 50% when the exhaust temperature and the catalyst size were sufficient. Both the studied catalyst systems were found to have a significant effect on particulate emissions. The observed particle mass reduction was found to be due to a decrease in the amount of organics passing over the catalyst. However, especially at high exhaust temperatures, high nanoparticle concentrations were observed downstream of the catalysts together with higher sulphate concentrations in particles. This study contributes to understanding emissions from future natural gas engine applications with catalysts in use.

##### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Department of Physics, Research area: Aerosol Physics, Finnish Meteorological Institute, Helsinki, VTT Technical Research Centre of Finland, Atmospheric Composition Research, Finnish Meteorological Institute, Dinex Ecocat Oy, Dinex Ecocat Oy, Catalyst Res

Contributors: Lehtoranta, K., Murtonen, T., Vesala, H., Koponen, P., Alanen, J., Simonen, P., Rönkkö, T., Timonen, H., Saarikoski, S., Maunula, T., Kallinen, K., Korhonen, S.

Number of pages: 10

Pages: 142-152

Publication date: Jun 2017

Peer-reviewed: Yes

Early online date: 23 Dec 2016

### Publication information

Journal: Emission Control Science and Technology

Volume: 3

Issue number: 2

ISSN (Print): 2199-3629

Ratings:

Scopus rating (2017): CiteScore 1.98 SJR 0.731 SNIP 1.435

Original language: English

DOIs:

10.1007/s40825-016-0057-8

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

### Uusia tuulia Euroopasta

#### General information

Publication status: Published

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

Organisations: School of Architecture, Research group: Built Environment in Transition, Research group: Urban Planning Theory

Contributors: Lehtovuori, P.

Number of pages: 18

Pages: 42-59

Publication date: 2015

#### Host publication information

Title of host publication: Asukkaan ehdoilla : moninaisuutta asumamuotoihin

Place of publication: Helsinki

Publisher: Rakennustieto Oy

ISBN (Print): 978-952-267-100-4

URLs:

<https://www.rakennustietokauppa.fi/asukkaan-ehdoilla-moninaisuutta-asumamuotoihin-/112609/dp?nosto=recommended>

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

### >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, OPSL, 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

## Rakennusten energiatehokkuuden parantamisen vaikutukset - Insulate-projektin tuloksia

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: 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., Turunen, M., Aaltonen, A., Kiviste, M., Pekkonen, M., Haverinen-Shaughnessy, U.

Number of pages: 12

Pages: 369-380

Publication date: 2015

### Host publication information

Title of host publication: Rakennusfysiikka 2015 : Uusimmat tutkimustulokset ja hyvät käytännön ratkaisut, 20.-22-10.2015, Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

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

URLs:

<http://www.tut.fi/cs/groups/public/@!912/@web/@p/documents/liit/x124278.pdf>

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 0.92 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:tyy-201605023900>

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

## Ventilation rates and CO2-levels before and after energy retrofit in Finnish apartment buildings

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: 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., Aaltonen, A., Turunen, M., Du, L., Kiviste, M., Haverinen-Shaughnessy, U.  
Publication date: 2016

#### Host publication information

Title of host publication: CLIMA 2016 - Proceedings of the 12th REHVA World Congress. Aalborg. Aalborg University.  
Department of Civil Engineering. : Volume 1. Building Retrofit

Volume: 1

Place of publication: Aalborg

Publisher: Aalborg university, Department of Civil Engineering

Editor: Kvolts Heiselberg, P.

Article number: 192 (in vol 1)

ISBN (Electronic): 87-91606-26-8

URLs:

<http://vbn.aau.dk/en/activities/clima-2016--12th-rehva-world-congress%2843019fd3-70a7-4c5c-9176-825add5913f%29.html>

URLs:

[http://vbn.aau.dk/files/233707103/paper\\_192.pdf](http://vbn.aau.dk/files/233707103/paper_192.pdf)

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

#### Muovipäällysteisten lattioiden vaurioituminen kosteuden vaikutuksesta

##### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering, Research group: Concrete and Bridge Structures, Materials Science and Environmental Engineering, Research group: Service Life Engineering of Structures, Research area: Structural Engineering

Contributors: Leivo, V., Sarlin, E., Suonketo, J., Pikkuvirta, J., Pentti, M.

Number of pages: 6

Pages: 383-388

Publication date: 14 Mar 2019

##### Host publication information

Title of host publication: Sisäilmastoseminaari 2019: 14.3.2019 : Sisäilmayhdistys raportti 37

Publisher: SIY SISÄILMATIETO OY

ISBN (Electronic): 978-952-5236-49-1

##### Publication series

Name: SIY Raportti

Publisher: SIY Sisäilmatieto Oy

No.: 37

ISSN (Electronic): 1237-1866

URLs:

[https://www.sisailmautiset.fi/Sisailmastoseminaari\\_2019.pdf](https://www.sisailmautiset.fi/Sisailmastoseminaari_2019.pdf)

##### Bibliographical note

INT=ceng,"Pikkuvirta, Jussa"

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

### Life Beyond the Binary Code: Select Prose and Poetry

This is a collection of fourteen short stories and five poems from the first-ever creative writing course offered at the Language Center at Tampere University of Technology. Thematically varied, the writings range in humor, irony, wit, and compassion from high adventure to human oddity to drama, conflict and their resolution. Imaginative and well crafted, the collection testifies to the writers' enthusiasm, creativity, and commitment to learning the necessary expressive skills.

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Language Centre

Contributors: Lepistö, T. (ed.)

Number of pages: 79

Publication date: 2014

### Publication information

Publisher: Tampere University of Technology, Language Center

ISBN (Print): 978-952-15-3290-0

ISBN (Electronic): 978-952-15-3291-7

Original language: English

Electronic versions:

[life\\_beyond\\_the\\_binary\\_code](#)

URLs:

<http://URN.fi/URN:ISBN:978-952-15-3291-7>

### Bibliographical note

Versio ok 16.12.2015

Research output: Book/Report > Commissioned report > Professional

### Simulation of ash-forming compounds in the kraft recovery boiler

This paper presents a summary of the doctoral dissertation titled "Modeling Fume Particle Dynamics and Deposition with Alkali Metal Chemistry in Kraft Recovery Boilers". In the thesis, a computational model was developed and used to simulate the behavior of alkali metal compounds in kraft recovery boilers. The model combines, for the first time, the methods of CFD (Computational Fluid Dynamics), equilibrium chemistry, and fine particle dynamics to model the formation and deposition of fume particles. Fume particles are below 1  $\mu\text{m}$  in diameter and form through the condensation of the alkali metal compounds. The model has been partially validated in an operating recovery boiler in terms of fume particle composition, but the modeling results also shed light on processes that cannot be investigated through experimental methods alone. For example, the modeling results indicate that thermophoresis is the main factor leading to fume deposit formation.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Chemistry and Bioengineering, Research group: Power Plant and Combustion Technology  
Contributors: Leppänen, A., Välimäki, E., Oksanen, A.  
Number of pages: 10  
Publication date: 2015

#### Host publication information

Title of host publication: 10th European Conference on Industrial Furnaces and Boilers  
Place of publication: Porto, Portugal  
ISBN (Electronic): 978-972-99309-7-3  
Keywords: kraft recovery boiler, alkali metal, fine particle, deposition, computational fluid dynamics  
URLs:  
<http://www.cenertec.pt/infub/>  
Source: Bibtex  
Source ID: urn:c88098f51c0b1f0404f1a0f11bbb345f  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Two patterns for minimizing human resources in a startup

In this paper, we describe two patterns that are part of a larger pattern language for software startup companies. These two particular patterns help startup companies to focus on the essential; the product itself and keeping their team intact and productive. In this way, the startup may operate with a sustainable team size.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Department of Pervasive Computing, Research area: Software engineering  
Contributors: Leppänen, M.  
Publication date: 10 Apr 2014

#### Host publication information

Title of host publication: VikingPLoP 2014 Proceedings of the 8th Nordic Conference on Pattern Languages of Programs (VikingPLoP)  
Publisher: ACM  
Article number: 4  
ISBN (Print): 9781450326605  
ASJC Scopus subject areas: Human-Computer Interaction, Computer Networks and Communications, Computer Vision and Pattern Recognition, Software  
Keywords: Lean startup, Organization, Organizational patterns, Patterns, Software engineering, Software product, Team DOIs:  
10.1145/2676680.2676686  
Source: Scopus  
Source ID: 84940021370  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### 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

## Liite 6: Yleistä kaivannaisjätealueista ja patoturvallisuudesta

### 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: Earth Constructions

Contributors: Leppänen, M., Välisalo, T. (ed.), Laasonen, J.

Publication date: 2014

### Host publication information

Title of host publication: Kaivosten stressitesti 2013

Publisher: Ympäristöministeriö

ISBN (Electronic): 978-952-11-4269-7

### Publication series

Name: Ympäristöministeriön raportteja

URLs:

[http://www.ym.fi/fi-FI/Ajankohtaista/Julkaisut/YMra\\_22014\\_Kaivosten\\_stressitesti\\_2013%2828221%29](http://www.ym.fi/fi-FI/Ajankohtaista/Julkaisut/YMra_22014_Kaivosten_stressitesti_2013%2828221%29)

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

### Technical suitability of the fine fraction of municipal solid waste incineration bottom ash to the landfill capping liner

To protect the natural aggregates and promote the circular economy the suitable secondary aggregates have been studied intensively in last decades in Finland. One promising secondary aggregate is bottom ash from the municipal solid waste incineration (MSWI) process.

The municipal incinerator bottom ash (MIBA, also called MSWI BA) contains heavy metals and other contaminants limiting its environmental acceptability. The fines contain typically the highest concentrations of contaminants. The portion of inert particles such as rock, glass and mineral waste is higher in coarser fractions.

The aim of the study was to assess the suitability of the fines of MIBA to the mineral liner in landfill capping. Based on the environmental permit, the target permeability value for capping liner is  $k \leq 1 \cdot 10^{-9}$  m/s. The permeability of the fines of MIBA is typically around  $1 \cdot 10^{-7}$  m/s when well compacted. In order to achieve the required permeability, bentonite or other additives are needed. The grains are porous and the pH is high, typically 10-12, which effect on the amount of bentonite required. In addition, the MIBA contain high concentrations of diluting chlorides, sulfides and calcium, which decrease the swelling properties of the bentonite. The swelling capacity of bentonite decreases when permeating aggressive leakages with high cation concentration. Therefore a special polymer treated bentonite were chosen for the tests. The addition of superabsorbent polymers, which have much higher resistance to aggressive leakages, greatly improve the performance and self-healing capacity of bentonite.

First, laboratory tests were performed to estimate the proper amount and quality of the bentonite needed to achieve the permeability required. Two bentonite types were tested, the common natural bentonite and a special polymer modified bentonite produced by Cetco. The swelling index of both types of bentonite were tested by a eluate of MIBA. Several permeability tests were performed to evaluate the effect of dry density, bentonite quality and dose, and portion of coarser grains (2-5 mm).

After laboratory testing, a test area was constructed on an old waste fill to the Ämmässuo. During the construction, it was noticed that the water content effects significantly on the compaction result. The mineral liner was covered by a 1,5 mm thick LLDPE geomembrane and protective geotextile. The liner structure is covered only by a 0,5 m thick drainage layer from crushed rock. No surface layer were constructed.

After one year, the liner was exposed and studied. The quality of the structures, especially the mineral liner were visually evaluated and gas emissions were measured from the surface. The density of the layer was measured by volymer and troxler and the water content and permeability were measured in laboratory. Based on the visual inspection the surface of the mineral liner was smooth, and the layer homogenous and hardened

### General information

Publication status: Published

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

Organisations: Civil Engineering, Research group: Earth Constructions

Contributors: Leppänen, M., Sarkkila, J., Hämäläinen, H., Rinkinen, J.

Pages: 168-175

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 WASCON 2018 : No Gradle, No Grave - Circular Economy into Practice

Publisher: RIL - Finnish Association of Civil Engineers

Editors: Raasakka, V., Lahtinen, P.

ISBN (Electronic): 978-951-758-631-3

Keywords: municipal solid waste bottom slag, Landfill cover, bentonite, chemical incompatibility

Research output: Chapter in Book/Report/Conference proceeding > Chapter > 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:tyy-201907151962>

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

### Measurements of impact force excitation on wooden floors

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Civil Engineering, Research group: Metal and Light-weight structures, Materials Science, Research group: Tribology and Machine Elements, Research group: Building Acoustics, Research group: Structural Mechanics

Contributors: Lietzen, J., Miettinen, J., Kylliäinen, M., Pajunen, S.

Number of pages: 6

Pages: 1617-1622

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, Crete, May 27-31, 2018

Place of publication: Hersonissos, Crete, Greece  
Publisher: European Acoustic Association EAA  
Article number: 272.161

#### **Publication series**

Name: Proceedings : European Conference on Noise Control  
ISSN (Electronic): 2226-5147  
URLs:

<http://www.euronoise2018.eu/component/contentbuilder/details/11/304/euronoise-2018-17-6-predicting-vibration-impact-structure-borne-sound-in-buildings?Itemid=256&start=0>

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

### **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/tietoeduskunnasta/julkaisut/Documents/tuvj\\_12+2014.pdf](https://www.eduskunta.fi/FI/tietoeduskunnasta/julkaisut/Documents/tuvj_12+2014.pdf)

#### **Bibliographical note**

AUX=pla,"Lilja, Kari"

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

### **Numerically Efficient Flow Model for On/Off Valves**

#### **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

Contributors: Linjama, M., Siivonen, L., Huova, M.

Pages: 164-172

Publication date: Feb 2015

#### **Host publication information**

Title of host publication: Proceedings of the Seventh Workshop on Digital Fluid Power

Place of publication: Linz, Austria

Publisher: LCM GmbH

Editors: Scheidl, R., Winkler, B., Kogler, H.

ISBN (Print): 978-3-200-04014-4

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

### **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

### **Real-time human pose estimation with convolutional neural networks**

In this paper, we present a method for real-time multi-person human pose estimation from video by utilizing convolutional neural networks. Our method is aimed for use case specific applications, where good accuracy is essential and variation of the background and poses is limited. This enables us to use a generic network architecture, which is both accurate and fast. We divide the problem into two phases: (1) pre-training and (2) finetuning. In pre-training, the network is learned with highly diverse input data from publicly available datasets, while in finetuning we train with application specific data, which we record with Kinect. Our method differs from most of the state-of-the-art methods in that we consider the whole system, including person detector, pose estimator and an automatic way to record application specific training material for finetuning. Our method is considerably faster than many of the state-of-the-art methods. Our method can be thought of as a replacement for Kinect in restricted environments. It can be used for tasks, such as gesture control, games, person tracking, action recognition and action tracking. We achieved accuracy of 96.8% (PCK@0.2) with application specific data.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Signal Processing, Univ of Oulu, Aalto University

Contributors: Linna, M., Kannala, J., Rahtu, E.  
Number of pages: 8  
Pages: 335-342  
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: Convolutional neural networks, Human pose estimation, Person detection

DOIs:

10.5220/0006624403350342

URLs:

<https://arxiv.org/pdf/1609.07420>

Source: Scopus

Source ID: 85047804818

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

#### On service composition - dynamic formation and orchestration of service workflows

Service-oriented approach to system engineering makes engineers to rethink the way to build and maintain a system. Use of Web Service technologies enables to remove rigid connections between software components to reassemble them dynamically at run-time according to the actual needs of applications. Such an approach can in some cases provide additional necessary functionality, which may not have been envisioned at the design time. This chapter presents an approach to orchestration allowing dynamic formation of service hierarchies in in-line with production needs, which allows tracking on all the existing service workflows. Hence the locus of control for the overall system is kept. The use of eScop Manufacturing System Ontology (MSO) for orchestration purposes is also proposed to keep the track on orchestration workflows.

#### 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: Lobov, A.

Number of pages: 9

Pages: 311-319

Publication date: 2015

#### Host publication information

Title of host publication: Open Knowledge-Driven Manufacturing and 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

#### 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

#### 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

#### Kiviaines- ja luonnonkiviteollisuuden kehitysnäkymät

##### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Civil Engineering, Research group: Track Structures, Työ- ja elinkeinoministeriö, Infra ry, Suomen ympäristökeskus SYKE - Finnish Environment Institute, Kiviteollisuusliitto ry, Geologian tutkimuskeskus, Aalto University, Geological Survey of Finland

Contributors: Loukola-Ruskeeniemi, K. (ed.), Lonka, H. (ed.), Ehrukainen, E., Gustafsson, J., Honkanen, M., Härmä, P., Jauhiainen, P., Kuula, P., Nenonen, K., Pellinen, T., Rintala, J., Selonen, O., Martikainen, M., Aalto, M.

Number of pages: 72

Publication date: 2015

#### Publication information

Place of publication: Helsinki  
Publisher: Työ- ja elinkeinoministeriö  
Volume: 2015  
ISBN (Print): 978-952-327-047-3  
ISBN (Electronic): 978-952-327-048-0  
Original language: Finnish

#### Publication series

Name: Työ- ja elinkeinoministeriön julkaisu  
Publisher: Työ- ja elinkeinoministeriö  
Volume: 2015  
No.: 54  
ISSN (Print): 1797-3554  
ISSN (Electronic): 1797-3562  
URLs:  
[https://www.tem.fi/files/44123/TEMjul\\_54\\_2015\\_web\\_28102015.pdf](https://www.tem.fi/files/44123/TEMjul_54_2015_web_28102015.pdf)  
Research output: Book/Report › Commissioned report › Professional

#### 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

#### Wearable e-textile split ring passive UHF RFID tag: Body-worn performance evaluation

We present a wearable e-textile passive UHF RFID tag based on a split ring resonator antenna. The antenna was optimised using a full-wave electromagnetic solver and the prototyped tag was tested in wireless measurements. The detection range of the tag is 2.8 metres at 915 MHz when affixed to the upper back of a person on a textile substrate with the thickness of only two millimetres. In the wireless measurement, we found a close match with the simulations where a homogenous dielectric cuboid representing the torso of a person and studied the impact of non-optimal antenna-body alignments and separations. Overall, the results indicate that the uniplanar split ring antenna achieves robust operation required in the practical wearable applications.

#### 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: Ma, S., Ukkonen, L., Sydänheimo, L., Björninen, T.  
Publication date: Nov 2017

#### Host publication information

Title of host publication: 2017 IEEE Asia Pacific Microwave Conference (APMC)  
Publisher: IEEE  
ISBN (Print): 978-1-5386-0641-4  
ISBN (Electronic): 978-1-5386-0640-7

Keywords: Split ring antenna, electro-textile, Wearable antenna, RFID

Electronic versions:

submitted paper

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

### **Massive Open Online Research: An approach to deal with wicked problems**

Humans are hardwired as problem-solvers. Professional education, in particular, enables us to solve complex problems. Even decades ago, we could safely send a crew to the moon and back. A moon-bound project is a very challenging and complex problem, but it is a tame one. The problem is clearly defined and the challenge becomes how to find the best solution. As the world and issues become more interconnected, there is a different type of problem in the horizon - 'wicked' problems. A wicked problem is normally complex and challenging, but differs from the 'tame' problem because there is no agreement in terms of problem definition. A wicked problem does not allow for the 'choice' of best solution. Solutions tend to only mitigate the problem and sometimes generate unpredictable consequences. For instance, climate change is an issue that requires a level of ingenuity that cannot be achieved by a limited group of people, regardless how brilliant they are. It cannot be addressed by our dominant scientific, reductionist, discipline-based, and proprietary approach either. This paper proposes Massive Online Open Research (MOOR) as a better approach to deal with wicked problems. In terms of organization, this paper includes a literature review on online collaboration, focusing on the dynamics of knowledge creation and innovation. Selected open online research initiatives are used to contextualize the literature review. Based on the literature review and real cases, a MOOR framework is presented and discussed. Limitations and opportunities for future research are also included.

#### **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, Kwantlen Polytechnic University

Contributors: Machado, M., Verghese, G., Peltola, T.

Number of pages: 7

Pages: 236-242

Publication date: 10 Oct 2014

#### **Host publication information**

Title of host publication: PICMET 14 Conference, Portland International Center for Management of Engineering and Technology : Infrastructure and Service Integration

Place of publication: Portland

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

Article number: 6921178

ISBN (Print): 9781890843304

ASJC Scopus subject areas: Management of Technology and Innovation, Strategy and Management, Transportation  
URLs:

<http://www.scopus.com/inward/record.url?scp=84910125519&partnerID=8YFLogxK> (Link to publication in Scopus)

Source: Scopus

Source ID: 84910125519

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

#### Systematic literature review on customer emotions in social media

Customers are human beings who express their emotions openly on social media platforms. There is a wealth of social media data that companies can make use of to improve their business decision making and tailor their marketing strategies. In order to benefit from this, organizations need to apply computational methods, which can save time and effort rather than applying traditional consumer research approaches, such as surveys or interviews. The purpose of this study is to investigate existing computational studies on detecting consumer emotions from social media data. We conducted a systematic literature review on articles published in ScienceDirect, IEEE Explore, ACM Digital Library, and Emerald Insight from the period 2009-2017. The aim was to discover how social media data was extracted, how large datasets were used in detecting emotions, the type of computational methods used, and the accuracy of the results obtained from the existing studies. Most of the studies were focused on sentiment analysis and different machine learning algorithms. The computational methods were applied in business decision making and marketing functions. Practical scenarios included emotion detection in customer reviews and sentiment analysis of retail brands. Based on these studies, we have uncovered situations where the results of the analysis are either sufficiently accurate or supportive for decision making. We provide recommendations for organizations and managers on developing their resources to make use of different computational methods for emotion and sentiment detection. Finally, we present the limitations of these methods and provide recommendations for aligning future research studies toward big social data analytics on customer emotions.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial and Information Management, Research group: Business Ecosystems, Networks and Innovations , Tampere University of Technology, University of Örebro Business School, University of Jyväskylä  
Contributors: Madhala, P., Jussila, J., Aramo-Immonen, H., Suominen, A.  
Number of pages: 10  
Publication date: 21 Jun 2018

#### Host publication information

Title of host publication: ECSM - Proceedings of the 5th European Conference on Social Media  
Place of publication: Limerick, Ireland  
Editors: Cunnane, V., Corcoran, N.  
ISBN (Print): 978-1-911218-83-8  
ISBN (Electronic): 978-1-911218-84-5  
Keywords: social media, big data, emotions, consumer behaviour, sentiment analysis  
Electronic versions:  
ECSM\_2018\_Paper\_Final\_Revised  
URLs:  
<http://urn.fi/URN:NBN:fi:ju-201807053476>  
<http://urn.fi/URN:NBN:fi:ty-201901091039>

#### Bibliographical note

INT=tj,"Madhala, Prashanth"  
Research output: Chapter in Book/Report/Conference proceeding > Conference contribution > Scientific > peer-review

#### Social capital in hybrid governance - Case study in a global subcontracting process

#### 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: Mäenpää, S., Breite, R.  
Publication date: 2015

#### Host publication information

Title of host publication: Proceedings of the 24th Annual IPSERA Conference Preparing for new competitive challenges, March 29-April 1, Amsterdam, the Netherlands  
Publisher: IPSERA  
ISBN (Print): 978-90-823707-0-6  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Knowledge integration method development for multi-stakeholder innovation

#### 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: Mäenpää, S., Suominen, A., Breite, R.  
Publication date: 21 Jun 2016

#### Host publication information

Title of host publication: Proceedings of The XXVII ISPIM Conference 2016 Porto, Portugal - 19-22 June 2016 : Blending Tomorrow's Innovation Vintage  
ISBN (Electronic): 978-952-265-929-3  
URLs:  
[http://www.ispim.org/abstracts/The%20Proceedings%20of%20The%20XXVII%20ISPIM%20Conference%202016%20Porto,%20Portugal%20-%2019-22%20June%202016/maenpaa\\_sari.html](http://www.ispim.org/abstracts/The%20Proceedings%20of%20The%20XXVII%20ISPIM%20Conference%202016%20Porto,%20Portugal%20-%2019-22%20June%202016/maenpaa_sari.html)  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Personality's effect on peer assessment ability in case method context

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Industrial and Information Management, Research group: Cost Management Center, Research group: Business Data Research Group, Research group: Center for Research on Operations Projects and Services  
Contributors: Mahlamäki, T., Valkeinen, T., Myllärniemi, J., Hellsten, P., Repo, S.  
Number of pages: 5  
Pages: 6401-6405  
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 (Electronic): 978-84-697-3777-4

#### Publication series

Name: Edulearn proceedings  
ISSN (Print): 2340-1125  
ISSN (Electronic): 2340-1117  
DOIs:  
10.21125/edulearn.2017.2455  
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

### Voimallaitosten reaaliaikainen ympäristövaikutusten monitorointi

#### 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, Suomen ympäristökeskus SYKE - Finnish Environment Institute, IndMeas Oy, Helen Oy  
Contributors: Majanne, Y., Korpela, T., Judl, J., Koskela, S., Laukkanen, V., Häyrynen, A., Salminen, O.

Number of pages: 6  
Pages: 1-6  
Publication date: 2015

#### Host publication information

Title of host publication: Automaatio XXI seminaari  
Publisher: Suomen Automaatioseura  
Editor: Jämsä-Jounela, S.  
ISBN (Print): 978-952-5183-46-7

#### Publication series

Name: SAS julkaisusarja  
No.: 44  
ISSN (Print): 1455-6502  
URLs:

<http://xxi.automaatioseura.fi/>

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

#### Social capital characteristics in RD project networks

Network research has multiple approaches that offer knowledge related to multiple network types. This article identifies and discusses social capital characteristics in the context of government-funded RD project networks. Previous literature on this context has typically focused on collaboration between universities and firms while our interest is solely on interfirm relationships. Secondly, the previous literature on interfirm collaboration concerns typically other types of networks such as strategic alliances. We argue, that to understand the dynamics of inter firm collaboration in RD project networks, the research needs to be conducted in coherent environment. Data for this qualitative research was collected by interviewing 18 firm representatives who had experience on participating government-funded RD projects. We recognized social capital characteristics in RD projects and organized these findings under structural, cognitive and relational dimensions of social capital. Results indicate that project networks' social capital characteristics differ in many parts from strategic alliances and thus support our argument. The results can be exploited by project coordinators, innovation officers and project network members to facilitate the interfirm collaboration in RD project networks.

#### General information

Publication status: Published  
MoE publication type: A4 Article in a conference publication  
Organisations: Mechanical Engineering and Industrial Systems, Research area: Manufacturing and Automation  
Contributors: Majuri, M., Lanz, M.  
Publication date: 4 Oct 2018

#### Host publication information

Title of host publication: 2018 Portland International Conference on Management of Engineering and Technology (PICMET)

Publisher: IEEE

Article number: 8481775

ISBN (Electronic): 9781890843373

ASJC Scopus subject areas: Strategy and Management, Communication, Engineering (miscellaneous), Management of Technology and Innovation, Organizational Behavior and Human Resource Management, Computer Networks and Communications, Decision Sciences (miscellaneous)

DOIs:

10.23919/PICMET.2018.8481775

#### Bibliographical note

jufoid=9093

Source: Scopus

Source ID: 85056486979

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

#### STACK assignments in university mathematics education

Students' learning process can be assisted and diversified with the help of e-learning tools and virtual environments. In Tampere University of Technology, the aim is to utilize software that delivers assignments, checks students' answers and gives feedback to the students, in the mathematics courses. The software that has been used is called STACK, which can be integrated into Moodle. STACK assignments have been created as a part of the STEM education material bank Abacus.

Written feedback can be generated in STACK assignments as necessary. Feedback guides the students to identify their errors and revise them. It can also motivate the students to try again after giving a wrong answer.

This study concerns the use of STACK in TUT mathematics courses. Especially we are interested in

- how do the points gathered and the time of the last submission in STACK exercises correlate with the exam grades?
- when and for how long do the students solve the STACK assignments?
- how does the activity in STACK differ between honours and engineering mathematics students?

In STACK assignments, the students were able to give their answers in Moodle. For each lecture week, they had one week to solve and return the answers. All the student activity related to the STACK assignments was saved in the Moodle logs. Data was analysed with Matlab by the means of educational data mining.

We observed that the activity in STACK was the greatest near the deadline. We also found that, on average, the better the grade, the earlier the students gave their final answers in STACK. Additionally, the honours mathematics students made their submissions earlier: many of them considered STACK exercises as a good way to revise the subjects considered in the lectures, while engineering mathematics students mostly rehearsed with STACK near the deadline.

According to the survey polls, students found the STACK exercises as a nice and efficient way to rehearse and learn mathematics. Especially, the instant feedback was mostly appreciated. However, some of the students felt writing the answers with a computer unappealing, but generally this aspect was not considered a problem.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mathematics, Research group: MAT Positioning

Contributors: Mäkelä, A., Ali-Löytty, S., Humaloja, J., Joutsenlahti, J., Kauhanen, J., Kaarakka, T.

Number of pages: 14

Publication date: 2016

### Host publication information

Title of host publication: Proceedings of the 44th SEFI Conference, 12 - 15 September 2016, Tampere, Finland

Publisher: European Society for Engineering Education SEFI

ISBN (Print): 9782873520144

ASJC Scopus subject areas: Education

Keywords: STACK, web-assisted learning tools

URLs:

[http://www.sefi.be/conference-2016/papers/Mathematics\\_and\\_Engineering\\_Education/makela-stack-assignments-in-university-mathematics-education-73\\_a.pdf](http://www.sefi.be/conference-2016/papers/Mathematics_and_Engineering_Education/makela-stack-assignments-in-university-mathematics-education-73_a.pdf)

Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › 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., Rynnänen, T., Verho, J., Kreutzer, J., Leikkala, 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

#### **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

#### **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., Ort, 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

### **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

## 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

### Printed soft-electronics for remote body monitoring

Wearable electronics has emerged into the consumer markets over the past few years. Wrist worn and textile integrated devices are the most common apparatuses for unobtrusive monitoring in sports and wellness sectors. Disposable patches and bandages, however, represent the new era of wearable electronics. Soft and stretchable electronics is the enabling technology of this paradigm shift. It can conform to temporary transfer tattoo and deform with the skin without detachment or fracture. In this paper, we focus on screen-printed soft-electronics for remote body monitoring. We will present a fabrication process of a skin conformable electrode bandage designed for long-term outpatient electrocardiography (ECG) monitoring. The soft bandage is designed to be attached to the patient chest and miniaturized data collection device is connected to the bandage via Micro-USB connector. The fabricated bandage is tested in short exercise as well as continued long-term (72 hours) monitoring during normal daily activities. The attained quality of the measured ECG signals is fully satisfactory for rhythm-based cardiac analysis also during moderate-intensity exercise. After pre-processing, the signals could be used also for more profound morphological analysis of ECG wave shapes.

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Electronics and Communications Engineering, Faculty of Biomedical Sciences and Engineering

Contributors: Mäntysalo, M., Vuorinen, T., Jeyhani, V., Vehkaoja, A.

Number of pages: 7

Publication date: Aug 2017

### Host publication information

Title of host publication: Hybrid Memory Devices and Printed Circuits 2017 : SPIE Organic Photonics + Electronics | 6-10 August 2017

Publisher: SPIE

### Publication series

Name: SPIE Conference Proceedings

Volume: 10366

ISSN (Print): 0277-786X

ISSN (Electronic): 1996-756X

Electronic versions:

Printed\_soft\_electronics\_for\_remote\_body\_monitoring

DOIs:

10.1117/12.2275606

URLs:

<http://urn.fi/URN:NBN:fi:tty-201801301174>

### Bibliographical note

jufoid=71479

### **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

### **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



### **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

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201803071332>

#### **Bibliographical note**

EXT="Vihonen, Juho"

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

### **Sisäympäristön laadun ja terveellisuuden arviointi energiaparannuskohteissa**

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: 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: Mari, T., Leivo, V., Pekkonen, M., Aaltonen, A., Kiviste, M., Haverinen-Shaughnessy, U.

Number of pages: 6

Pages: 13-18

Publication date: 16 Mar 2016

#### **Host publication information**

Title of host publication: Sisäilmastoseminaari 2016, Sisäilmayhdistys raportti 34

Publisher: SIY SISÄILMATIETO OY

ISBN (Print): 978-952-5236-44-6

URLs:

[http://sisailmayhdistys.omaverkkokauppa.fi/epages/sisailmayhdistys.sf/fi\\_FI/?ObjectPath=/Shops/2015081803/Products/S E16](http://sisailmayhdistys.omaverkkokauppa.fi/epages/sisailmayhdistys.sf/fi_FI/?ObjectPath=/Shops/2015081803/Products/S E16)

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

### **Profitability of different li-ion batteries as back-up power in LVDC distribution network**

This paper studies the profitability of different lithiumion batteries as back-up power in low voltage direct current (LVDC) network. Battery energy storage can prevent part of interruptions in LVDC network that happen due to failures in medium voltage (MV) network. In the present Finnish regulation model avoiding customer interruptions directly affects distribution network operator's profits by decreasing quality of supply deductions that are used in reasonable return calculations.

LVDC technology provides a cost-efficient alternative for replacing low-loaded MV branches of the electricity distribution network. Benefits of LVDC are large power transfer capacity with low voltage, cost saving potential and improvements to reliability and voltage quality [1]. Elenia Oy has had pilot implementations already many years with promising results [2]. The key finding of the paper is that using battery energy storages to avoid customer interruption cost can be financially feasible in many medium voltage branches when the interruption frequency per branch is taken into account and the battery size is optimised based on the power requirement of the branch.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

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

Contributors: Markkula, J., Vilppo, O., Järventausta, P., Hakala, T., Lähdeaho, T.

Publication date: 2016

#### **Host publication information**

Title of host publication: CIRED Workshop 2016

ISBN (Print): 978-1-78561-202-2

ASJC Scopus subject areas: Electrical and Electronic Engineering

DOIs:

10.1049/cp.2016.0787

URLs:

[http://www.cired.net/publications/workshop2016/pdfs/CIRED2016\\_0253\\_final.pdf](http://www.cired.net/publications/workshop2016/pdfs/CIRED2016_0253_final.pdf)

Source: Scopus

Source ID: 85007564317

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

### **The Company Democracy Model for the Development of Intellectual Human Capitalism for Shared Value**

#### **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: Markopoulos, E., Vanharanta, H.

Number of pages: 8

Pages: 603-610

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.2015.07.277

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

### **The World Innovation Stock Exchange- shared value for individuals, business and society**

#### **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: Markopoulos, E., Vanharanta, H.

Number of pages: 8

Pages: 595-602

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.2015.07.275

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

### 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

### **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/>

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

### **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=tta,"Sukanen, Ilmari"

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

### **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

#### **Project control toward lifecycle value at the front end of delivery projects**

The lifecycle value of delivery projects is defined in the early phases of the project, and it implies benefits both for the supplier and the customer. Companies increasingly expect value beyond tangible technologies, for example through project-related services. This study develops new knowledge on creating lifecycle value in delivery projects and how lifecycle value creation is controlled in the early phases of the project. An embedded case study with two delivery cases in an engineering firm is conducted, to map the means of controlling the creation of lifecycle value. The results demonstrate that suppliers promote and control lifecycle value particularly through sales argumentation, relationship management, and contracting processes. We contribute by identifying and categorizing the relevant dimensions of project control used for promoting lifecycle value at the front end of delivery projects. This pilot study will pave way toward a broader multiple-case study covering different companies and delivery project types.

#### **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., Vuorinen, L.

Number of pages: 21

Publication date: Aug 2015

#### **Host publication information**

Title of host publication: 23rd Nordic Academy of Management Conference : NFF 2015

Publisher: Nordic Academy of Management

Keywords: delivery project, lifecycle value, project control, front end

URLs:

<https://conference.cbs.dk/index.php/NFF2015/NFF2015/schedConf/presentations>

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

#### **Service orientation and innovation in the strategies of manufacturing SMEs**

Manufacturing SMEs have an important role in the supply chains of larger firms. When large firms servitize their business, also SMEs may need to consider their strategies concerning services. Limited research attention has been directed at servitization as a strategic choice of SMEs and its different manifestations in service orientation and innovation. The aim of the paper is to increase understanding on the role of services in the strategies of manufacturing SMEs. The focus is on service orientation and innovation, and identification of differences between component manufacturers and equipment manufacturers. A qualitative, exploratory research strategy is employed in the context of nineteen technology-intensive manufacturing SMEs. The findings from SME managers' interviews show that equipment manufacturers have a stronger service orientation than component manufacturers in terms of share of services, orientation to process-centric services, and service variety. The majority of respondents have experiences with in-house service development primarily, and customer-centric service development took place only in a few companies. Furthermore, companies featured services in their strategies either minimally, reactively or proactively. Equipment manufacturers were more likely to take the proactive approach whereas component manufacturers were more reactive or fully avoided services. This paper offers valuable

knowledge about the ways in which technology-intensive SMEs feature service orientation and innovation into their strategies. Besides changes in offerings, capabilities and value networks, servitization can drive changes in the business scope and innovation processes of the manufacturing SMEs.

#### **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., Väliäho, V.

Number of pages: 17

Publication date: Jun 2016

#### **Host publication information**

Title of host publication: 23rd Innovation and Product Development Management Conference (IPDMC) : 12-14 June, 2016, Glasgow, U.K.

Publisher: EIASM

Electronic versions:

160403\_IPDMC\_ServiceOrientation

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708211693>

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

#### **Requirements from industrial internet for innovations in advanced industrial services**

Manufacturing firms are experimenting with the possibilities of the Industrial Internet, while at the same time adding services and service-related business models to their offerings. Previous research is not, yet, clear on how these simultaneous transformations are handled, particularly when firms being to offer more advanced industrial services. The objective in this study is to identify the key expectations and requirements that an industrial system manufacturer faces, when adopting Industrial Internet and innovating advanced industrial services for its business customers. A single case study was carried out in a manufacturing firm offering complex industrial systems and related services to business customers. Seventeen interviews and three workshops were carried out, to collect data. The results show that the manufacturing firms need novel segmentation criteria, to map their customer base and its prospects for advanced services. Four systemic requirements are identified, for the manufacturing firm to benefit from the Industrial Internet in advanced industrial services. As Industrial Internet can enable advanced services that are highly systemic in nature, service innovations require that the business ecosystem is engaged in the development work together with the manufacturing firm.

### 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., Laurila, F.

Number of pages: 16

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

### Bibliographical note

INT=tjt,"Laurila, Fanni"

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

### Lifecycle-oriented framing of value at the front end of infrastructure projects

Infrastructure projects are expected to deliver value to their stakeholders long after their completion. Project value is multi-dimensional and subjective and evolves over the project lifecycle. The framing of the expected value by stakeholders is central to the public debate about proposed infrastructure projects and influences the financing decisions, however this framing is inadequately understood. The objective is to develop new knowledge on the ways in which stakeholders frame project lifecycle value at the front end of infrastructure projects. We compare two transport infrastructure projects in a qualitative, document-based study, map their dimensions of value at the project front end, and identify their approaches to lifecycle-oriented framing of value. The results reveal the dominance of financial, social and comparative value in the project front end, and identify four core themes in the lifecycle-oriented framing of value, including uncertainties, timing of cost and benefit realization, project relations, and external sponsorship.

### 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, University of Technology Sydney (UTS)

Contributors: Martinsuo, M., Vuorinen, L., Killen, C., Laiti, M.

Number of pages: 36

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

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

### 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 Operations Projects and Services, 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://urn.fi/URN:NBN:fi:tty-201908272032>

URLs:

<http://www.euramonline.org/submissions-guidelines-2019/author-s-guidelines.html>

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

## Valtion tukemien homekorjaushankkeiden arviointi (HKPro 2)

### 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, Research area: Structural Engineering

Contributors: Marttila, T., Suonketo, J., Kero, P., Annila, P., Pentti, M.

Number of pages: 6

Pages: 101-106

Publication date: 11 Mar 2015

### Host publication information

Title of host publication: Sisäilmastoseminaari 2015 SIY Raportti 33, Messukeskus, Helsinki 11.3.2015 :

Sisäilmastoseminaari

Volume: Sisäilmayhdistys raportti 33

Place of publication: Juva

Editors: Säteri, J., Ahola, M.

ISBN (Print): 978-952-5236-43-9

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

## Onnistumistekijät valtion tukemissa homekorjaushankkeissa

Kosteus- ja homevaurioiden sekä muiden sisäilmaongelmien korjaaminen on haastavaa. Monet kuntien korjaushankkeet ovat epäonnistuneet poistamaan käyttäjien kokemat sisäilmaongelmat. Usein syynä on, että korjaukset eivät ole riittävän kokonaisvaltaisia tai laadunvarmistus on puutteellista. Yleinen syy suppeisiin korjauksiin ja puutteelliseen laadunvarmistukseen on, että hankkeen suunnittelua ei ole tehty riittävän perusteellisesti. Puutteellinen suunnittelu johtuu usein riittämättömistä kuntotutkimuksista tai siitä, etteivät niissä tehdyt havainnot saati puutteet ole olleet korjaussuunnittelijan tiedossa. Tyypillisesti kuntotutkimusten puuttumiseen, tiedon hukkumiseen ja puutteelliseen hankevalmisteluun on syynä tilaajan osaamattomuus tai joissakin tapauksissa myös poliittinen ja taloudellinen päätöksenteko, johon tässä artikkelissa ei kuitenkaan perehdytä. Väärin valittu toteutustapa, kosteusteknisiä riskejä sisältävä suunnitteluratkaisu, vakavat tietokatkokset, isot yllätykset purku-/korjausvaiheessa, rakentamisvirheet tai huoltotehtävien laiminlyönti tulevat kunnalle huomattavasti kalliimmiksi, kuin perusteellinen kuntotutkimus, huolellinen toteutustapojen vertailu, suunnitelmien ulkopuolinen tarkastus, toteutuksen laadunvarmistus, aktiivinen valvonta ja suunnitelmallinen kiinteistönpito.

### 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: Marttila, T., Suonketo, J., Kero, P., Annila, P.

Number of pages: 6

Pages: 253-258



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

Volume: 4

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto, rakennustekniikan laitos, rakennetekniikka

Editors: Vinha, J., Ruuska, T.

Article number: 152

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

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

### 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., Annila, 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

### Securing the flow of information in renovation projects: Sustainable synergies from buildings to the urban scale

Continuous flow of information is a paramount importance for the success of a renovation project. This has been a clear statement in several researches, clearances, publications and press releases in Finland. Tampere University of Technology (TUT) studied Finnish state supported mold renovations in three independent researches between 2010 and 2016. First one brought out that the observations made in the condition investigation weren't always taken into account in the implementation of the renovation. Next two researches focused to study the additional state grant processes, where the external review procedures were helping the flow of information. However, the processes still had some shortcomings and therefore the research team developed a form based method that property owners and builders can utilize for a successful removal of the indoor air problems. This paper describes the outlines of the form as well as the principles and methods for securing the flow of information from condition investigations to the renovation design and quality assurance of the building project. Project planning and monitoring measurements are also taken into account in the method.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Civil Engineering, Research area: Structural Engineering

Contributors: Marttila, T., Annila, P., Suonketo, J., Kero, P., Pentti, M.

Number of pages: 6

Pages: 228-233

Publication date: 2017

Peer-reviewed: Yes

### Publication information

Journal: PROCEEDIA ENVIRONMENTAL SCIENCES

Volume: 38

ISSN (Print): 1878-0296

Original language: English

Keywords: Moisture damage, Indoor air quality (IAQ), Condition investigation, Renovation design

DOIs:

10.1016/j.proenv.2017.03.109

Source: RIS

Source ID: urn:1E04A8F47620BCE57737681F0930D8DB

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

### 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  $\eta$  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  $\eta = 44\%$ . 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., Vatnik, 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

### 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:tty-201705191417>

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

Research output: Contribution to journal > Article > Professional

### 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 Engr 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:tty-201712082313>

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

### 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-10Co<sub>4</sub>Cr) and chromium carbide (Cr<sub>3</sub>C<sub>2</sub>-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-10Co<sub>4</sub>Cr coatings sprayed with HVOF when compared to HVOF sprayed coatings. In addition, Cr<sub>3</sub>C<sub>2</sub>-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

### 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-weight 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

### Suunnittelutyökalu putkiristikoiden mitoitukseen ja optimointiin

#### 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, SUBNIC Oy, Ruukki Construction Oy

Contributors: Mela, K., Alinikula, M., Tiainen, T., Heinisuo, M., Sorsa, I.

Number of pages: 6

Pages: 136-141

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

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

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

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

### Novel Method For Online Stereo Self-Calibration

#### 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

Contributors: Melin, J., Ritala, R.

Publication date: 2015

#### Host publication information

Title of host publication: XXI IMEKO World Congress "Measurements In Research and Industry"

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

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

#### 1.55- $\mu\text{m}$ 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- $\mu\text{m}$  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- $\mu\text{m}$  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

Volume: 10901

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: 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

### **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

Publisher: Academic Conferences and Publishing International Limited

ISBN (Print): 978-1-911218-48-7

ISBN (Electronic): 978-1-911218-49-4

URLs:

<http://www.academic-conferences.org/conferences/eckm/future-past-conferences/>

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

## Real-Time Impedance-Based Stability Assessment of Grid Converter Interactions

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Automation and Hydraulic Engineering, Research area: Dynamic Systems, Research area: Measurement Technology and Process Control, Research area: Measurement Technology and Process Control, Electrical Energy Engineering, Aalborg University

Contributors: Messo, T., Luhtala, R., Roinila, T., Yang, D., Wang, X., Blaabjerg, F.

Number of pages: 8

Publication date: 2017

### Host publication information

Title of host publication: IEEE Workshop on Control and Modeling for Power Electronics

ISBN (Electronic): 978-1-5090-5326-1

Electronic versions:

COMPEL\_2017\_final\_version

DOIs:

10.1109/COMPEL.2017.8013384

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: Accepted/In press

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.

Publication date: 1 Feb 2019

Peer-reviewed: Yes

### Publication information

Journal: IEEJ JOURNAL OF INDUSTRY APPLICATIONS

Volume: 8

Issue number: 3

Article number: 3

ISSN (Print): 2187-1094

Original language: English

DOIs:

10.23919/IPEC.2018.8507573

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

## Vaihdetta isommalle: Pyöräilyn potentiaalin hyödyntäminen

### General information

Publication status: Published

MoE publication type: D4 Published development or research report or study

Organisations: Department of Information Management and Logistics

Contributors: Metsäpuro, P., Vaismaa, K., Karhula, K., Luukkonen, T., Mäntynen, J., Rantala, T.

Number of pages: 145

Publication date: 2014

### Publication information

Place of publication: Tampere

Publisher: Tampereen teknillinen yliopisto. Liikenteen tutkimuskeskus Verne.

ISBN (Print): 978-952-15-3243-6

ISBN (Electronic): 978-952-15-3244-3

Original language: Finnish

URLs:

[http://www.tut.fi/verne/wp-content/uploads/Vaihdetta\\_isommalle\\_-\\_Pyorailyn\\_potentiaalin\\_hyodyntaminen.pdf](http://www.tut.fi/verne/wp-content/uploads/Vaihdetta_isommalle_-_Pyorailyn_potentiaalin_hyodyntaminen.pdf)

Research output: Book/Report › Commissioned report › Professional

### **Photometric stereo system for detailed analysis of material surfaces**

This paper describes a photometric stereo system for the measurement of surface topography. The system provides versatile experimental possibilities due to movable multicolor LEDs, movable camera, and a traveling (xy-)table for the sample. We introduce our measurement setup and present analysis of its performance. Our topography maps correlate well with the contact profilometry reference map, and reveal different details of the surfaces depending on the illumination wavelength and pixel size.

#### **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 area: Microsystems

Contributors: Mettänen, M., Melin, J., Ihalainen, H.

Number of pages: 6

Publication date: 2015

#### **Host publication information**

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

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

Electronic versions:

Mettanen\_IMEKO\_2015\_preprint

URLs:

<http://urn.fi/URN:NBN:fi:tty-201705121384>

<https://www.imeko.org/publications/wc-2015/IMEKO-WC-2015-TC2-022.pdf>

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

### **The role of base substrate on barrier and convertability properties of Water based barrier coated (WBBC) paper and paperboard**

Water based barrier coatings (WBBC) have been studied intensively during the past years in order to replace the traditional barrier materials such as polyethylene (PE), fluorochemicals and waxes. One of the largest challenges for these WBBC's has been a high risk for pinholes originating from the base substrate leading into discontinuity in the dispersion layer and poorer barrier properties. By increasing the coat weight, the amount of pinholes can be reduced but this may lead into economical and quality issues, thus optimization is needed. In this study, the role of base material in dispersion coverage and resulting barrier properties was investigated by characterizing different base materials. The barrier properties analyzed were grease and oil resistance and water and water vapour barrier, also convertability properties were examined. The results showed that base substrate plays a key role when WBBC's are used. If the structure of the base paper is very open or very rough, gaining good barrier properties is difficult and the amount of pinholes increases which affects most significantly grease resistance. With very porous and rough base material best possible barrier properties at



certain total coat weight were reached by double coating and by using pigments with high aspect ratio.

#### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Materials Science, Research group: Paper Converting and Packaging, CH-Polymers Oy

Contributors: Miettinen, P., Ahokas, M., Engström, T., Heinonen, J., Auvinen, S.

Number of pages: 13

Pages: 220-232

Publication date: 2017

#### Host publication information

Title of host publication: Paper Conference and Trade Show, PaperCon 2017 : Renew, Rethink, Redefine the Future, Minneapolis, Minnesota, USA, 23-26 April 2017

Volume: 1

Publisher: TAPPI Press

ISBN (Electronic): 9781510847286

ASJC Scopus subject areas: Forestry, Plant Science, Industrial and Manufacturing Engineering

URLs:

<http://toc.proceedings.com/36006webtoc.pdf>

Source: Scopus

Source ID: 85041534325

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

#### NB-IoT for D2D-enhanced content uploading with social trustworthiness in 5G systems

Future fifth-generation (5G) cellular systems are set to give a strong boost to the large-scale deployment of Internet of things (IoT). In the view of a future converged 5G-IoT infrastructure, cellular IoT solutions such as narrowband IoT (NB-IoT) and device-to-device (D2D) communications are key technologies for supporting IoT scenarios and applications. However, some open issues still need careful investigation. An example is the risk of threats to privacy and security when IoT mobile services rely on D2D communications. To guarantee efficient and secure connections to IoT services involving exchange of sensitive data, reputation-based mechanisms to identify and avoid malicious devices are fast gaining ground. In order to tackle the presence of malicious nodes in the network, this paper introduces reliability and reputation notions to model the level of trust among devices engaged in an opportunistic hop-by-hop D2D-based content uploading scheme. To this end, social awareness of devices is considered as a means to enhance the identification of trustworthy nodes. A performance evaluation study shows that the negative effects due to malicious nodes can be drastically reduced by adopting the proposed solution. The performance metrics that proved to benefit from the proposed solution are data loss, energy consumption, and content uploading time.

#### General information

Publication status: Published

MoE publication type: A1 Journal article-refereed

Organisations: Electronics and Communications Engineering, Università degli Studi di Reggio Calabria, Peoples' Friendship University of Russia

Contributors: Militano, L., Orsino, A., Araniti, G., Iera, A.

Publication date: 8 Jul 2017

Peer-reviewed: Yes

#### Publication information

Journal: Future Internet

Volume: 9

Issue number: 3

Article number: 31

ISSN (Print): 1999-5903

Ratings:

Scopus rating (2017): CiteScore 1.25 SJR 0.219 SNIP 0.906

Original language: English

ASJC Scopus subject areas: Computer Networks and Communications

Keywords: 5G systems, D2D communications, Internet of things, NB-IoT, Trustworthiness

Electronic versions:

NB-IoT for D2D-Enhanced Content Uploading with Social Trustworthiness in 5G Systems

DOIs:

10.3390/fi9030031

URLs:

<http://urn.fi/URN:NBN:fi:tyy-201708041652>

### **Bibliographical note**

INT=elt,"Orsino, Antonino"

Source: Scopus

Source ID: 85022204929

Research output: Contribution to journal › Article › 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

### **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

### **Profile extraction and deep autoencoder feature extraction for elevator fault detection**

In this paper, we propose a new algorithm for data extraction from time series signal data, and furthermore automatic calculation of highly informative deep features to be used in fault detection. In data extraction elevator start and stop events are extracted from sensor data, and a generic deep autoencoder model is also developed for automated feature extraction from the extracted profiles. After this, extracted deep features are classified with random forest algorithm for fault detection. Sensor data are labelled as healthy and faulty based on the maintenance actions recorded. The remaining healthy data are used for validation of the model to prove its efficacy in terms of avoiding false positives. We have achieved 100% accuracy in fault detection along with avoiding false positives based on new extracted deep features, which outperforms results using existing features. Existing features are also classified with random forest to compare results. Our developed algorithm provides better results due to the new deep features extracted from the dataset compared to existing features. This research will help various predictive maintenance systems to detect false alarms, which will in turn reduce unnecessary visits of service technicians to installation sites.

#### **General information**

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Automation Technology and Mechanical Engineering, Research group: Innovative Hydraulic Automation

Contributors: Mishra, K., Krogerus, T., Huhtala, K.

Number of pages: 8

Pages: 313-320

Publication date: 28 Jul 2019

#### **Host publication information**

Title of host publication: 16th International Conference on Signal Processing and Multimedia Applications : SIGMAP 2019, 26-28 July, 2019, Prague, Czech Republic

Volume: 16

Place of publication: Prague, Czech Republic

Publisher: SCITEPRESS

Editor: Callegari, C.

Edition: 2019

ISBN (Print): 978-989-758-378-0

ISBN (Electronic): 978-989-758-378-0

ASJC Scopus subject areas: Computer Science(all)

DOIs:

10.5220/0007802003130320

URLs:

<https://www.scitepress.org/ProceedingsDetails.aspx?ID=0N9+1/B4ih0=&t=1>

<http://www.wikicfp.com/cfp/servlet/event.showcfp?eventid=82467&copyownerid=45217>

<http://www.sigmap.icete.org/?y=2019>

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

### **Tuning extrinsic noise effects on a small genetic circuit**

Measurements at the single cell level showed that monoclonal Escherichia coli cells differ widely in the numbers of components affecting gene expression dynamics. Using a stochastic model of a 2-genes symmetric toggle switch with realistic multi-step promoter initiation kinetics and empirically validated parameter values, we investigate the role of transcription initiation kinetics on the degree with which cell-to-cell variability in cellular components generates cell-to-cell diversity in switch dynamics. We find that while the mean switching frequency is determined by the promoter kinetics, the cell to cell diversity of this frequency depends both on promoter kinetics and diversity in RNA polymerase numbers. At a microscale level, the main regulator of the cell to cell variability in protein numbers (of both genes in ON and OFF states) is the promoters kinetics, not the diversity in RNA polymerase numbers. We conclude that the promoters kinetics is a critical regulator of the toggle switch dynamics and that can be used as a regulatable filter of extrinsic noise.

#### **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

Contributors: Mohamed Bahrudeen, M., S. Ribeiro, A.

Publication date: 4 Sep 2017

#### **Host publication information**

Title of host publication: Proceedings of ECAL 2017 : 14th European Conference on Artificial Life

Publisher: Massachusetts Institute of Technology

ISBN (Electronic): 978-0-262-34633-7

Electronic versions:

Tuning extrinsic noise effects on small genetic circuit

DOIs:

10.7551/ecal\_a\_075

URLs:

<http://urn.fi/URN:NBN:fi:tty-201711232256>

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

## Wood compression model for radial compression of earlywood and latewood

### General information

Publication status: Published

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

Organisations: Department of Mechanical Engineering and Industrial Systems, Research group: Kokeellinen virtaustekniikka, Research area: Applied Mechanics, Department of Automation Science and Engineering, Research area: Dynamic Systems, Research area: Measurement Technology and Process Control

Contributors: Moilanen, C., Björkqvist, T., Saarenrinne, P.

Number of pages: 6

Pages: 261-266

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

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=ase,0.5

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

## Modelling and Simulation of Radial Spruce Compression to Optimize Energy Efficiency in Mechanical Pulping

### General information

Publication status: Published

MoE publication type: A4 Article in a conference publication

Organisations: Department of Mechanical Engineering and Industrial Systems, Department of Automation Science and Engineering, Research area: Dynamic Systems, Research area: Measurement Technology and Process Control

Contributors: Moilanen, C., Björkqvist, T., Ovaska, M., Koivisto, J., Miksic, A., Engberg, B., Salminen, L., Saarenrinne, P., Alava, M.

Number of pages: 18

Pages: 53-70

Publication date: 26 Sep 2016

### Host publication information

Title of host publication: 2016 International Mechanical Pulping (IMPC) Conference Proceedings, Monday, September 26 - Wednesday, September 28, Jacksonville, Florida, USA

Place of publication: USA

Publisher: TAPPI

Article number: 1.3

ISBN (Print): 978-1-59510-250-7

ISBN (Electronic): 978-1-59510-250-7

Electronic versions:

Modelling and simulation of radial spruce compression

URLs:

<http://urn.fi/URN:NBN:fi:tty-201708281835>

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