2.4 GHz inkjet-printed RF energy harvester on bulk cardboard substrate

An experimental investigation on the inkjetprinted power harvester for 2.4GHz and review of RF characterization of substrate and printed conductors are presented in this paper. A one stage discrete rectifier based on a voltage doubler structure and a planar monopole antenna are fabricated on cardboard using inkjet printing. The performance of the whole system is examined by measuring the output voltage of the RF power harvester. By the utilization of the proposed idea, the fabrication of low-cost environmentally-friendly battery-less wireless modules is conceivable.

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), Aristotle University of Thessaloniki, School of Electrical and Computer Engineering, Georgia Institute of Technology, School of Electrical and Computer Engineering
Contributors: Khonsari, Z., Björninen, T., Tentzeris, M. M., Sydänheimo, L., Ukkonen, L.
Number of pages: 3
Pages: 153-155
Publication date: Jan 2015

Host publication information

Title of host publication: 2015 IEEE Radio and Wireless Symposium (RWS), 25-28 Jan. 2015, San Diego, CA
Publisher: IEEE
ISBN (Print): 978-1-4799-5507-7
ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Electrical and Electronic Engineering, Communication
Keywords: additive manufacturing, cardboard substrate, energy harvester, Inkjet printing, planar monopole
DOIs:
10.1109/RWS.2015.7129721
Source: Scopus
Source ID: 84937875886
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Advanced packet scheduling for efficient video support with limited channel feedback on MIMO LTE downlink

Next-generation mobile networks will provide users with high data rates, increased mobility and various services. The initial step made in LTE and LTE-A is adopting the OFDM(A) air interface and utilization of dynamic resource allocation techniques maximizing the cell throughput and coverage as part of enhanced radio resource management functionality. Moreover, the control of the network resource division among users is performed by packet scheduler and different scheduling strategies are applied according to traffic scenario. Typically, video traffic (real-time video streaming, mobile TV etc.) requires higher data rates and certain quality of service (QoS) constrains, i.e. packet size, arrival rate, head-of-line (HOL) packet delay, etc. In this article, we propose a flexible and fairness-oriented packet scheduling approach for real-time video delivery, built on advanced QoS-aware multiuser proportional fair (PF) scheduling principle. Special emphasis is put on practical feedback reporting schemes, including the effects of mobile measurements and estimation errors, reporting delays, and feedback quantization and compression. The performance of the overall scheduling and feedback reporting process is investigated in details in terms of cellular system capacity, resource allocation fairness and video traffic QoS guarantees. Experimental results reveal the bounds of real-time video traffic support on LTE downlink.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Department of Communications Engineering, Wireless Communications and Positioning (WICO), College of Engineering, Qatar University
Contributors: Nonchev, S., Valkama, M., Hamila, R.
Number of pages: 6
Pages: 766-771
Publication date: 2011

Host publication information

Title of host publication: 2011 IEEE GLOBECOM Workshops, GC Wkshps 2011
Article number: 6162557
ISBN (Print): 9781467300407
ASJC Scopus subject areas: Computer Networks and Communications, Communication
Keywords: cellular system performance, channel quality feedback, fairness, packet scheduling, proportional-fair, QoS, radio resource management
DOIs:
10.1109/GLOCOMW.2011.6162557

URLs:

http://www.scopus.com/inward/record.url?scp=84858374648&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84858374648
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

A post-mortem empirical investigation of the popularity and distribution of malware files in the contemporary web-facing internet

This short empirical paper investigates a snapshot of about two million files from a continuously updated big data collection maintained by F-Secure for security intelligence purposes. By further augmenting the snapshot with open data covering about a half of a million files, the paper examines two questions: (a) what is the shape of a probability distribution characterizing the relative share of malware files to all files distributed from web-facing Internet domains, and (b) what is the distribution shaping the popularity of malware files? A bimodal distribution is proposed as an answer to the former question, while a graph theoretical definition for the popularity concept indicates a long-tailed, extreme value distribution. With these two questions - and the answers thereto, the paper contributes to the attempts to understand large-scale characteristics of malware at the grand population level - at the level of the whole Internet.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research group: Software Engineering and Intelligent Systems, Pervasive Computing, Aalto University, University Ss. Cyril and Methodius, Turun Yliopisto/Turun Biomateriaalikeskus
Contributors: Ruohonen, J., Scepanovic, S., Hyrynsalmi, S., Mishkovski, I., Aura, T., Leppänen, V.
Number of pages: 4
Pages: 144-147
Publication date: 2 Mar 2017

Host publication information

Title of host publication: Proceedings - 2016 European Intelligence and Security Informatics Conference, EISIC 2016 : 7th European Intelligence and Security Informatics Conference, Uppsala; Sweden; 17 - 19 August 2016.
Publisher: IEEE
Editors: Brynielsson, J., Johansson , F.
ISBN (Electronic): 9781509028566
ASJC Scopus subject areas: Computer Networks and Communications, Information Systems, Safety Research, Communication, Safety, Risk, Reliability and Quality
Keywords: Malware, Security intelligence, Web crawling
Electronic versions:

PID4339001
DOIs:

10.1109/EISIC.2016.037
URLs:

http://urn.fi/URN:NBN:fi:tty-201712192403
Source: Scopus
Source ID: 85017225798
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Artificial backbone neuronal network for nano scale sensors

Communication between biological based nano scale devices is a crucial component of future applications in nanotechnology. This paper explores the creation of a backbone communication network for nano scale sensors using neurons. We investigate how neuron cell characteristics affect the performance of neuronal based network and highlight several key characteristics compared to conventional wire based networks. Finally, we investigate four network topologies through simulation.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Wireless Communications and Positioning (WICO), Waterford Institute of Technology, Trinity College Dublin, Chalmers University of Technology, Telecommunications Software and Systems Group (TSSG)
Contributors: Walsh, F., Boyle, N. T., Mardinoglu, A., Chiesa, A. D., Botvich, D., Prina-Mello, A., Balasubramaniam, S.
Number of pages: 6
Pages: 449-454
Publication date: 2011

Host publication information

Title of host publication: 2011 IEEE Conference on Computer Communications Workshops, INFOCOM WKSHPS 2011
Article number: 5928855
ISBN (Print): 9781457702488
ASJC Scopus subject areas: Computer Networks and Communications, Communication
DOIs:
10.1109/INFCOMW.2011.5928855
URLs:
http://www.scopus.com/inward/record.url?scp=79960590033&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 79960590033
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

At least nine ways to play: Approaching gamer mentalities

Do digital games and play mean the same things for different people? This article presents the results of a 3-year study in which we sought for new ways to approach digital games cultures and playing practices. First, the authors present the research process in brief and emphasize the importance of merging different kinds of methods and materials in the study of games cultures. Second, the authors introduce a gaming mentality heuristics that is not dedicated to a certain domain or genre of games, addressing light casual and light social gaming motivations as well as more dedicated ones in a joint framework. The analysis reveals that, in contrast to common belief, the majority of digital gaming takes place between "casual relaxing" and "committed entertaining," where the multiplicity of experiences, feelings, and understandings that people have about their playing and digital games is wide ranging. Digital gaming is thus found to be a multifaceted social and cultural phenomenon that can be understood, practiced, and used in various ways.

General information

Publication status: Published
MoE publication type: A2 Review article in a scientific journal
Organisations: Mathematical modelling with wide societal impact (MathImpact)
Contributors: Kallio, K. P., Mäyrä, F., Kaipainen, K.
Number of pages: 27
Pages: 327-353
Publication date: Jul 2011
Peer-reviewed: Yes

Publication information

Journal: GAMES AND CULTURE: A JOURNAL OF INTERACTIVE MEDIA
Volume: 6
Issue number: 4
ISSN (Print): 1555-4120
Ratings:
Scopus rating (2011): CiteScore 2.4 SJR 0.695 SNIP 1.438
Original language: English
ASJC Scopus subject areas: Cultural Studies, Communication, Anthropology, Arts and Humanities (miscellaneous), Applied Psychology, Human-Computer Interaction
Keywords: digital games, game research methodology, games cultures, heuristics, playing mentalities
DOIs:
10.1177/1555412010391089
URLs:
http://www.scopus.com/inward/record.url?scp=79959469332&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 79959469332
Research output: Contribution to journal › Review Article › Scientific › peer-review

Automatic word count estimation from daylong child-centered recordings in various language environments using language-independent syllabification of speech

Automatic word count estimation (WCE) from audio recordings can be used to quantify the amount of verbal communication in a recording environment. One key application of WCE is to measure language input heard by infants and toddlers in their natural environments, as captured by daylong recordings from microphones worn by the infants. Although WCE is nearly trivial for high-quality signals in high-resource languages, daylong recordings are substantially more challenging due to the unconstrained acoustic environments and the presence of near- and far-field speech. Moreover, many use cases of interest involve languages for which reliable ASR systems or even well-defined lexicons are not available. A good WCE system should also perform similarly for low- and high-resource languages in order to enable unbiased comparisons across different cultures and environments. Unfortunately, the current state-of-the-art solution, the LENA system, is based on proprietary software and has only been optimized for American English, limiting its applicability. In this paper, we build on existing work on WCE and present the steps we have taken towards a freely available system for WCE that can be adapted to different languages or dialects with a limited amount of orthographically transcribed

speech data. Our system is based on language-independent syllabification of speech, followed by a language-dependent mapping from syllable counts (and a number of other acoustic features) to the corresponding word count estimates. We evaluate our system on samples from daylong infant recordings from six different corpora consisting of several languages and socioeconomic environments, all manually annotated with the same protocol to allow direct comparison. We compare a number of alternative techniques for the two key components in our system: speech activity detection and automatic syllabification of speech. As a result, we show that our system can reach relatively consistent WCE accuracy across multiple corpora and languages (with some limitations). In addition, the system outperforms LENA on three of the four corpora consisting of different varieties of English. We also demonstrate how an automatic neural network-based syllabifier, when trained on multiple languages, generalizes well to novel languages beyond the training data, outperforming two previously proposed unsupervised syllabifiers as a feature extractor for WCE.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Computing Sciences, Aalto University, Laboratoire de Sciences Cognitives et Psycholinguistique, Carnegie Mellon University, University of Manitoba, Max Planck Institute for Psycholinguistics, CONICET, Duke University
Contributors: Räsänen, O., Seshadri, S., Karadayi, J., Riebling, E., Bunce, J., Cristia, A., Metze, F., Casillas, M., Rosemberg, C., Bergelson, E., Soderstrom, M.
Number of pages: 18
Pages: 63-80
Publication date: 1 Oct 2019
Peer-reviewed: Yes

Publication information
Journal: Speech Communication
Volume: 113
ISSN (Print): 0167-6393
Ratings:

Scopus rating (2019): CiteScore 4.2 SJR 0.554 SNIP 1.297
Original language: English
ASJC Scopus subject areas: Software, Modelling and Simulation, Communication, Language and Linguistics, Linguistics and Language, Computer Vision and Pattern Recognition, Computer Science Applications
Keywords: Automatic syllabification, Daylong recordings, Language acquisition, Noise robustness, Word count estimation
Electronic versions:

1-s2.0-S0167639318304205-main
DOIs:

10.1016/j.specom.2019.08.005
URLs:

http://urn.fi/URN:NBN:fi:tuni-201909173346
Source: Scopus
Source ID: 85070952723
Research output: Contribution to journal › Article › Scientific › peer-review

Chip-to-package wireless power transfer and its application to mm-Wave antennas and monolithic radiometric receivers
A chip-to-package wireless power transfer concept is applied to MMIC and antennas on LCP substrate is presented. Electromagnetic simulations show the feasibility of the proposed approach. As a benchmarking topology at the working frequency of 35.4 GHz, an Archimedean spiral antenna matched to a heterogeneous transformer, which couples the power received by the antenna to the chip, has been simulated. Transistor level circuit simulations are also proposed for the LNA and the detector, which together will constitute the system-on-chip (SoC) radiometer to be integrated in the LCP-SoP.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Sensing Systems for Wireless Medicine (MediSense), University of Perugia, Georgia Institute of Technology
Contributors: Aluigi, L., Thai, T. T., Tentzeris, M. M., Roselli, L., Alimenti, F.
Number of pages: 3
Pages: 202-204
Publication date: 2013

Host publication information
Title of host publication: RSW 2013 - 2013 IEEE Radio and Wireless Symposium - RWW 2013
Article number: 6486688
ISBN (Print): 9781467329309

ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Electrical and Electronic Engineering, Communication
Keywords: Electromagnetic coupling, flexible electronics, heterogeneous integration, imaging, LNA, mm-wave, SoC, SoP
DOIs:

10.1109/RWS.2013.6486688
URLs:

http://www.scopus.com/inward/record.url?scp=84876750099&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84876750099
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Critical Playable Cities

This chapter outlines a specific framework for the creation of critical playable cities. This framework combines three different concepts: DIY urbanism, critical design and urban gamification which are seen as complementary to each other. Cities are complex systems. Various actors often explicitly or implicitly harmonize or collide to shape the landscape of a city and its future. In the past decades, there has been an increased interest in activating citizens as vital actors in shaping urban life. This has taken place through various practical works and research around the paradigms of Playable Cities, DIY Urbanism and Gamification amongst other paradigms. Urban gamification—that is, using play and playfulness to alter our perception of and interactions with city spaces—is specifically emerging as one of the main strategies to activate citizens. Urban gamification alone, however, risks to be disconnected from the urban fabric and its communities. In this chapter we argue that combining it with the grassroot approach of DIY urbanism and the thought-provoking techniques of critical design creates a unique, multi-dimensional approach to designing urban experiences. This chapter, then, aims to explore how play can be used by citizens as a mean for critical reflection and practical re-appropriation of public urban spaces.

General information

Publication status: Published
MoE publication type: A3 Part of a book or another research book
Organisations: Computing Sciences, Information Systems Sciences, Hanken School of Economics, Finland, Gamification Group, University of Tampere, Finland
Contributors: Hassan, L., Thibault, M.
Number of pages: 14
Pages: 71-85
Publication date: 2019

Host publication information

Title of host publication: Making Smart Cities More Playable
Publisher: Springer Nature
Editor: Nijholt, A.
ISBN (Print): 978-981-13-9764-6
ISBN (Electronic): 978-981-13-9765-3

Publication series

Name: Gaming Media and Social Effects
ISSN (Print): 2197-9685
ISSN (Electronic): 2197-9693
ASJC Scopus subject areas: Urban Studies, Communication, Social Sciences(all)
Keywords: Critical playable cities, DIY urbanism, Critical design, Ludicisation, Urban gamification
DOIs:

10.1007/978-981-13-9765-3_4

Bibliographical note

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INT=comp,"Hassan, Lobna"
Research output: Chapter in Book/Report/Conference proceeding › Chapter › Scientific › peer-review

Cultural influence on online community use: A cross-cultural study on online exercise diary users of three nationalities

This study investigates the influence of culture on the use of a website intended for tracking exercise activities. The data was collected using an online survey with 258 respondents from three national backgrounds: Germany, the USA and Spain. In the analysis, the focus was on determining whether users' cultural background impacts their use and perception of the site, especially as concerns social networking and the sharing of content. The Spanish were most interested in social networking, collaboration and sharing content with others, whereas the German participants were the least interested in these activities. The applicability of Hofstede's cultural theory in the explanation of differences between

national cultures in online community use is discussed.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Department of Pervasive Computing, University of Tampere
Contributors: Malinen, S., Nurkka, P.
Number of pages: 17
Pages: 153-169
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: International Journal of Web Based Communities
Volume: 11
Issue number: 2
ISSN (Print): 1477-8394
Ratings:

Scopus rating (2015): CiteScore 1.4 SJR 0.268 SNIP 0.406
Original language: English
ASJC Scopus subject areas: Computer Networks and Communications, Software, Education, Communication
Keywords: Cross-cultural research, Health and wellness applications, Online communities, SNSs, Social network sites
DOIs:

10.1504/IJWBC.2015.068539
URLs:

http://www.scopus.com/inward/record.url?scp=84927129737&partnerID=8YFLogxK (Link to publication in Scopus)

Bibliographical note
EXT="Malinen, Sanna"
Source: Scopus
Source ID: 84927129737
Research output: Contribution to journal › Article › Scientific › peer-review

Cybersecurity Attacks and Defences for Unmanned Smart Ships
By 2020, unmanned ships such as remotely controlled boats and autonomous vessels would become operational, marking a technological revolution for the maritime industry. Such ships are expected to serve needs ranging from coastal ferries to open sea cargo handling. In this paper we detail the security vulnerabilities of such unmanned ships. The attack surface as well as motivations for attack attempts also are discussed to provide a perspective of how and why attacks are undertaken. Finally defence strategies are proposed as countermeasures.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research area: Information security, Computing Sciences, Ericsson, F-Secure
Contributors: Silverajan, B., Ocak, M., Nagel, B.
Number of pages: 6
Pages: 15-20
Publication date: 1 Jul 2018

Host publication information
Title of host publication: Proceedings - IEEE 2018 International Congress on Cybermatics : 2018 IEEE Conferences on Internet of Things, Green Computing and Communications, Cyber, Physical and Social Computing, Smart Data, Blockchain, Computer and Information Technology, iThings/GreenCom/CPSCom/SmartData/Blockchain/CIT 2018
Publisher: IEEE
ISBN (Electronic): 9781538679753
ASJC Scopus subject areas: Business, Management and Accounting (miscellaneous), Artificial Intelligence, Computer Networks and Communications, Computer Science Applications, Hardware and Architecture, Information Systems and Management, Health Informatics, Communication
Keywords: Autonomous vehicles, IoT, Security, Smart Ships
DOIs:

10.1109/Cybermatics_2018.2018.00037
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Data, ‘dusha’, and the Internet of Skills music: would a connected Art Glove help to preserve heritage better?

The authors developed a unique the Internet of Skills device ‘the Art Glove’ for piano artists augmented with a significant number of different types of sensors allowing tracking and tracing movement of every single finger phalange, finger and wrist as a whole. Then the measurements are transferred wirelessly to the Internet and stored in a cloud in a digital form. ‘The Art Glove’ helps to save and preserve the greatest pianists’ heritage, and to teach beginners. But is saving a soul, ‘dusha’, an important part of artistic performance, in the Internet of Skills? What then is the identity of an artist connected with an Art Glove? Implementation of the Internet of Skills in music and other creative sectors poses significant ethical questions.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, St. Petersburg State University, Plekhanov Russian University of Economics
Contributors: Koucheryavy, Y., Kirichek, R., Yastrebova, A., Shilina, M.
Number of pages: 5
Pages: 263-267
Publication date: 2017
Peer-reviewed: Yes
Early online date: 1 Nov 2017

Publication information

Journal: Russian Journal of Communication
Volume: 9
Issue number: 3
ISSN (Print): 1940-9419
Ratings:

Scopus rating (2017): CiteScore 0.3 SJR 0.117 SNIP 0.114
Original language: English
ASJC Scopus subject areas: Communication, Political Science and International Relations
Keywords: heritage, muse, Russian music schools, technique, The Internet of Skills
DOIs:

10.1080/19409419.2017.1376535
Source: Scopus
Source ID: 85032826846
Research output: Contribution to journal › Article › Scientific › peer-review

Designing interactive systems for work engagement

General information

Publication status: Published
MoE publication type: B1 Article in a scientific magazine
Organisations: Pervasive Computing, School of Arts, Aalto University, Copenhagen Business School, University of Leicester
Contributors: Roto, V., Clemmensen, T., Väätäjä, H., Law, E. L. C.
Number of pages: 5
Pages: 135-139
Publication date: 2018
Peer-reviewed: No

Publication information

Journal: Human Technology
Volume: 14
Issue number: 2
ISSN (Print): 1795-6889
Ratings:

Scopus rating (2018): CiteScore 1.1 SJR 0.151 SNIP 1.314
Original language: English
ASJC Scopus subject areas: Social Psychology, Communication, Human-Computer Interaction
Electronic versions:

Roto_Clemmensen_Väätäjä_Law_GEIntroduction
DOIs:

10.17011/ht/urn.201808103814
URLs:

http://urn.fi/URN:NBN:fi:tty-201901101051

Bibliographical note
EXT="Roto, Virpi"
Source: Scopus
Source ID: 85058931876
Research output: Contribution to journal › Editorial › Scientific

Digital athletics in analogue stadiums: Comparing gratifications for engagement between live attendance and online esports spectating
Purpose: Esports (electronic sports) are watched by hundreds of millions of people every year and many esports have overtaken large traditional sports in spectator numbers. The purpose of this paper is to investigate spectating differences between online spectating of esports and live attendance of esports events. This is done in order to further understand attendance behaviour for a cultural phenomenon that is primarily mediated through internet technologies, and to be able to predict behavioural patterns. Design/methodology/approach: This study employs the Motivation Scale for Sports Consumption to investigate the gratifications spectators derive from esports, both from attending tournaments physically and spectating online, in order to explore which factors may explain the esports spectating behaviour. The authors investigate how these gratifications lead into continued spectatorship online and offline, as well as the likelihood of recommending esports to others. The authors employ two data sets, one collected from online spectators (n=888), the other from live attendees (n=221). Findings: The results indicate that online spectators rate drama, acquisition of knowledge, appreciation of skill, novelty, aesthetics and enjoyment of aggression higher than live attendees. Correspondingly, social interaction and physical attractiveness were rated higher by live attendees. Vicarious achievement and physical attractiveness positively predicted intention to attend live sports events while vicarious achievement and novelty positively predicted future online consumption of esports. Finally, vicarious achievement and novelty positively predicted recommending esports to others. Originality/value: During the past years, esports has emerged as a new form of culture and entertainment, that is unique in comparison to other forms of entertainment, as it is almost fully reliant on computer-human interaction and the internet. This study offers one of the first attempts to compare online spectating and live attendance, in order to better understand the phenomenon and the consumers involved. As the growth of esports is predicted to continue in the coming years, further understanding of this phenomenon is pivotal for multiple stakeholder groups.

General information
Publication status: E-pub ahead of print
MoE publication type: A1 Journal article-refereed
Organisations: Computing Sciences, Gamification Group
Contributors: Sjöblom, M., Macey, J., Hamari, J.
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: INTERNET RESEARCH
ISSN (Print): 1066-2243
Ratings:

Scopus rating (2019): CiteScore 7.9 SJR 1.607 SNIP 2.213
Original language: English
ASJC Scopus subject areas: Communication, Sociology and Political Science, Economics and Econometrics
Keywords: Digital culture, Esports, Online games, Spectating, Sports consumption, Uses and gratifications
DOIs:

10.1108/INTR-07-2018-0304
Source: Scopus
Source ID: 85077534637
Research output: Contribution to journal › Article › Scientific › peer-review

Digital Games Research: A Survey Study on an Emerging Field and Its Prevalent Debates
Digital games have become a popular form of media entertainment. However, it remains unclear whether a canon of accepted knowledge and research practices has emerged that may define an independent field of research. This study is a collaborative effort to analyze the outlines of digital games research (DGR) through a survey among the membership of 3 institutionalized structures focusing on the study of digital games (International Communication Association Game Studies Interest Group, European Communication Research and Education Association Temporary Working Group DGR, and Digital Games Research Association). The study reveals relatively homogeneous viewpoints among games researchers, even regarding controversial aspects of digital games. It mirrors the mainstream scholarly views on contentious issues of a recently emerged field within communication studies.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Mathematical modelling with wide societal impact (MathImpact), University of Münster, Universiteit Gent, University Hohenheim, Ruhr-Universität Bochum, Virginia Tech, Concordia University - Engineering and Computer Science
Contributors: Quandt, T., Van Looy, J., Vogelgesang, J., Elson, M., Ivory, J. D., Consalvo, M., Mäyrä, F.
Number of pages: 22
Pages: 975-996
Publication date: 1 Dec 2015
Peer-reviewed: Yes

Publication information
Journal: JOURNAL OF COMMUNICATION
Volume: 65
Issue number: 6
ISSN (Print): 0021-9916
Ratings:

Scopus rating (2015): CiteScore 7.3 SJR 3.756 SNIP 3.272
Original language: English
ASJC Scopus subject areas: Language and Linguistics, Communication, Linguistics and Language
Keywords: Digital Games Research, DiGRA, Disciplinary Development, ECREA, ICA, Science of Knowledge, Survey
DOIs:

10.1111/jcom.12182
URLs:

http://www.scopus.com/inward/record.url?scp=84958880073&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84958880073
Research output: Contribution to journal › Article › Scientific › peer-review

Digital storytelling promoting twenty-first century skills and student engagement
This article presents results on how students became engaged and motivated when using digital storytelling in knowledge creation in Finland, Greece and California. The theoretical framework is based on sociocultural theories. Learning is seen as a result of dialogical interactions between people, substances and artefacts. This approach has been used in the creation of the Global Sharing Pedagogy (GSP) model for the empirical study of student levels of engagement in learning twenty-first century skills. This model presents a set of conceptual mediators for student-driven knowledge creation, collaboration, networking and digital literacy. Data from 319 students were collected using follow-up questionnaires after the digital storytelling project. Descriptive statistical methods, correlations, analysis of variance and regression analysis were used. The mediators of the GSP model strongly predicted student motivation and enthusiasm as well as their learning outcomes. The digital storytelling project, using the technological platform Mobile Video Experience (MoViE), was very successful in teaching twenty-first century skills.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Pori Department, University of Helsinki
Contributors: Niemi, H., Multisilta, J.
Pages: 451-468
Publication date: 2016
Peer-reviewed: Yes

Publication information
Journal: Technology, Pedagogy and Education
Volume: 25
Issue number: 4
ISSN (Print): 1475-939X
Ratings:

Scopus rating (2016): CiteScore 2.4 SJR 0.906 SNIP 1.557
Original language: English
ASJC Scopus subject areas: Education, Communication, Computer Science Applications, Information Systems
Keywords: engagement, learning, motivation, twenty-first century skills
DOIs:

10.1080/1475939X.2015.1074610
URLs:

http://www.scopus.com/inward/record.url?scp=84939476760&partnerID=8YFLogxK (Link to publication in Scopus)

Source: Scopus
Source ID: 84939476760
Research output: Contribution to journal › Article › Scientific › peer-review

Disentangling the factors driving electronic word-of-mouth use through a configurational approach

Purpose: The purpose of this paper is to show how different combinations of the subdimensions of electronic word-of-mouth (eWOM) information quality (consisting of its accuracy, completeness, relevance, timeliness, and sidedness) may affect consumers' eWOM use behavior from a configurational approach. Design/methodology/approach: Based on a synthesis of past literature, five precursors of eWOM use were considered. A fuzzy-set qualitative comparative analysis (fsQCA) was employed to understand the configurations that lead to travel-related eWOM use. The study was conducted with 311 consumers from an online travel service company. Findings: Findings identified six solutions that explain eWOM use. EWOM accuracy, completeness, and sidedness are found to be core conditions reinforcing consumers' use of eWOM in combination with different peripheral conditions, including the subdimensions of eWOM information quality and the traits of the consumers (such as social media use time and gender). Practical implications: Factors related to eWOM information quality and traits of the consumers, when considered in combination, predict eWOM use behavior in particular sets of conditions. Originality/value: This work enriches the eWOM literature by providing an in-depth understanding of eWOM use from a configuration perspective. Configuration analysis serves as a better tool for explaining the complex relationships among variables than a regression analysis approach does. Additionally, in response to the need to move beyond multiple regression analysis to algorithmic approaches, this study shifts the emphasis from a symmetric paradigm to an asymmetric perspective for data analysis focused on eWOM use.

General information

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MoE publication type: A1 Journal article-refereed
Organisations: Information and Knowledge Management, Central China Normal University, Aalto University
Contributors: Wang, P., Li, H., Liu, Y.
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Peer-reviewed: Yes

Publication information

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ASJC Scopus subject areas: Communication, Sociology and Political Science, Economics and Econometrics
Keywords: Configuration analysis, eWOM use, FsQCA, Fuzzy-set qualitative comparative analysis
DOIs:
10.1108/INTR-01-2019-0031
Source: Scopus
Source ID: 85084927161
Research output: Contribution to journal › Article › Scientific › peer-review

Distant speech separation using predicted time-frequency masks from spatial features

Speech separation algorithms are faced with a difficult task of producing high degree of separation without containing unwanted artifacts. The time-frequency (T-F) masking technique applies a real-valued (or binary) mask on top of the signal's spectrum to filter out unwanted components. The practical difficulty lies in the mask estimation. Often, using efficient masks engineered for separation performance leads to presence of unwanted musical noise artifacts in the separated signal. This lowers the perceptual quality and intelligibility of the output. Microphone arrays have been long studied for processing of distant speech. This work uses a feed-forward neural network for mapping microphone array's spatial features into a T-F mask. Wiener filter is used as a desired mask for training the neural network using speech examples in simulated setting. The T-F masks predicted by the neural network are combined to obtain an enhanced separation mask that exploits the information regarding interference between all sources. The final mask is applied to the delay-and-sum beamformer (DSB) output. The algorithm's objective separation capability in conjunction with the separated speech intelligibility is tested with recorded speech from distant talkers in two rooms from two distances. The results show improvement in instrumental measure for intelligibility and frequency-weighted SNR over complex-valued non-negative matrix factorization (CNMF) source separation approach, spatial sound source separation, and conventional beamforming methods such as the DSB and minimum variance distortionless response (MVDR).

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Department of Signal Processing, Research group: Audio research group

Contributors: Pertilä, P., Nikunen, J.
Number of pages: 10
Pages: 97-106
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: Speech Communication
Volume: 68
ISSN (Print): 0167-6393
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Scopus rating (2015): CiteScore 4.1 SJR 0.49 SNIP 1.612
Original language: English
ASJC Scopus subject areas: Modelling and Simulation, Computer Science Applications, Computer Vision and Pattern Recognition, Software, Communication, Linguistics and Language, Language and Linguistics
Keywords: Beamforming, Microphone arrays, Neural networks, Speech separation, Time-frequency masking
DOIs:

10.1016/j.specom.2015.01.006
Source: Scopus
Source ID: 84923277715
Research output: Contribution to journal › Article › Scientific › peer-review

Error analysis of NOMA-based user cooperation with SWIPT
The present contribution analyzes the performance of non-orthogonal multiple access (NOMA)-based user cooperation with simultaneous wireless information and power transfer (SWIPT). In particular, we consider a two-user NOMA-based cooperative SWIPT scenario, in which the near user acts as a SWIPT-enabled relay that assists the farthest user. In this context, we derive analytic expressions for the pairwise error probability (PEP) of both users assuming the both amplify-and-forward (AF) and decode-and-forward (DF) relay protocols. The derived expressions are expressed in closed-form and have a tractable algebraic representation which renders them convenient to handle both analytically and numerically. In addition to this, we derive a simple asymptotic closed-form expression for the PEP in the high signal-to-noise ratio (SNR) regime which provide useful insights on the impact of the involved parameters on the overall system performance. Capitalizing on this, we subsequently quantify the maximum achievable diversity order of both users. It is shown that numerical and simulation results corroborate the derived analytic expressions. Furthermore, the offered results provide interesting insights into the error rate performance of each user, which are expected to be useful in future designs and deployments of NOMA based SWIPT systems.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research group: Wireless Communications and Positioning, Electrical Engineering, Taiyuan University of Science and Technology, Khalifa University, University of Surrey, Center on Cyber-Physical Systems, Simon Fraser University
Contributors: Li, S., Bariah, L., Muhaidat, S., Sofotasios, P., Liang, J., Wang, A.
Number of pages: 7
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Publication date: 1 May 2019

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ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Hardware and Architecture, Health Informatics, Instrumentation, Transportation, Communication
Keywords: NOMA, Wireless Power Transfer
DOIs:

10.1109/DCOSS.2019.00098
Source: Scopus
Source ID: 85071915507
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

eSports, skins and loot boxes: Participants, practices and problematic behaviour associated with emergent forms of gambling
Twenty years since the Internet transformed gambling products and services, the convergence of online games and gambling has initiated a new means of consuming Internet-based media. Gambling specifically connected to eSports is a

significant development, not only offering a new avenue for existing gambling products to be inserted into gaming media but also affording several novel experiences (e.g. skins and loot boxes). This study assesses participation rates and demographic characteristics of eSports spectators who gamble via an international online survey (N = 582). The sample highlighted the prevalence of young, often under-age, males in eSports-related gambling activities. Participation in gambling, and gambling-like activities, was found to be 67%, with rates of problematic and potentially problematic gambling in the sample being 50.34%. Finally, increased gambling is associated with increased spectating of eSports. Although the results are not generalisable to the wider population, they suggest a need for increased attention, from academia and regulators, regarding newly emergent gambling behaviours in contemporary digital culture.

General information
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MoE publication type: A1 Journal article-refereed
Organisations: Pervasive Computing
Contributors: Macey, J., Hamari, J.
Pages: 20-41
Publication date: Jan 2019
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Volume: 21
Issue number: 1
ISSN (Print): 1461-4448
Ratings:

Scopus rating (2019): CiteScore 8.8 SJR 2.964 SNIP 3.187
Original language: English
ASJC Scopus subject areas: Communication, Sociology and Political Science
Keywords: eSports, free-to-play, gambling, gamification, loot boxes, problem gambling, skins gambling, video games
DOIs:

10.1177/1461444818786216
URLs:

http://urn.fi/URN:NBN:fi:tuni-201902051168

Bibliographical note
DUPL=44133672
Source: Scopus
Source ID: 85049969806
Research output: Contribution to journal › Article › Scientific › peer-review

Fame and fortune, or just fun? A study on why people create content on video platforms
Purpose: The purpose of this paper is to examine the motivations behind online video content creation on services such as YouTube and Twitch. These activities, performed by private individuals online, have become increasingly monetized and professionalised through the accessible tools provided by video sharing services, which has presented a noteworthy manifestation of the increasing merger of the work and leisure within digital environments and the emergence of a hybrid form of work and play, playbour. Design/methodology/approach: The data for the study were collected using an online survey of 377 video content creators and it was analysed via structural equation modelling. Findings: The findings of the study indicate that although the practice of video content creation is becoming more commercialised and professionalised, the extrinsic motivations, often associated with work (e.g. income, prestige), remain less significant drivers for content creation than intrinsic motivations (e.g. enjoyment, socialisation), which are associated with leisure activities. Originality/value: This study offers insight into how the authors have begun to reorganise the position in the new digital labour culture, where monotonous tasks are increasingly automated, allowing room for intrinsically driven playful labour to develop within the leisure activities.

General information
Publication status: E-pub ahead of print
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Organisations: Computing Sciences, Turun yliopisto
Contributors: Törhönen, M., Sjöblom, M., Hassan, L., Hamari, J.
Publication date: 31 Jul 2019
Peer-reviewed: Yes

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Journal: INTERNET RESEARCH
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Ratings:

Scopus rating (2019): CiteScore 7.9 SJR 1.607 SNIP 2.213
Original language: English
ASJC Scopus subject areas: Communication, Sociology and Political Science, Economics and Econometrics
Keywords: Motivation, Playbour, Prosumer, Streaming, Twitch, YouTube
Electronic versions:

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DOIs:

10.1108/INTR-06-2018-0270
URLs:

http://urn.fi/URN:NBN:fi:tuni-201909273529

Bibliographical note
INT=comp,"Hassan, Lobna"
Source: Scopus
Source ID: 85071565101
Research output: Contribution to journal › Article › Scientific › peer-review

Guerrilla Memory: Street Art and Play Engraving the Memory of Martyrs in Urban Spaces
This paper introduces the concept of guerrilla memory as a strategy for transmitting historical memory that: 1) makes use of unconventional communication techniques, 2) moves the space/time dedicated to the memory in everyday life and 3) focuses on a humanized take on the events, often embodied by one or more martyrs. The paper, after introducing this concept, offers background on the semiotic studies of urban spaces and memory, thereby delimiting a framework of analysis. This framework is then applied to several case studies: three dealing with street art (the murals dedicated to Giusepper Prono by Zerocalcare, the Stolpertein by the German artist Gunter Demning and the Memorial Bridge situated in Rijeka, Croatia) and three with games and play (the digital game September 12, the historical re–enactment of a Nazi raid in Venaria and the larp Ultimo Covo). The conclusions focus on how these systems offer several enticing and novel tools for the transmission of memory.

General information
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MoE publication type: A1 Journal article-refereed
Organisations: Computing Sciences
Contributors: Thibault, M., Opromolla, A.
Number of pages: 25
Pages: 457-482
Publication date: 2018
Peer-reviewed: Yes

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Journal: Lexia
ISSN (Print): 1720-5298
Ratings:

Scopus rating (2018): CiteScore 0.2 SJR 0.102 SNIP 0.11
Original language: English
ASJC Scopus subject areas: Language and Linguistics, Urban Studies, Communication
Keywords: Urban Semiotics, Semiotics of Memory, Street Art, Urban Games, Martyrs
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Opromolla & Thibault (2018) Guerrilla Memory. Embargo ended: 1/07/19
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10.4399/978882552784121

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

Human-robot interactive learning architecture using ontologies and symbol manipulation

Robotic systems developed for support can provide assistance in various ways. However, regardless of the service provided, the quality of user interaction is key to adoption by the general public. Simple communication difficulties, such as terminological differences, can make or break the acceptance of robots. In this work we take into account these difficulties in communication between a human and a robot. We propose a system that allows to handle unknown concepts through symbol manipulation based on natural language interactions. In addition, ontologies are used as a convenient way to store the knowledge and reason about it. To demonstrate the use of our system, two scenarios are described and tested with a Care-O-Bot 4. The experiments show that confusions and difficulties in communication can effectively be resolved through symbol manipulation.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Automation Technology and Mechanical Engineering, Aalto University
Contributors: Angleraud, A., Houbre, Q., Kyrki, V., Pieters, R.
Number of pages: 6
Pages: 384-389
Publication date: 6 Nov 2018

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Publisher: IEEE
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ISBN (Electronic): 9781538679807

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Name: IEEE RO-MAN
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ISSN (Electronic): 1944-9437
ASJC Scopus subject areas: Human-Computer Interaction, Cognitive Neuroscience, Communication, Artificial Intelligence
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URLs:

http://urn.fi/URN:NBN:fi:tuni-201912136859

Bibliographical note

jufoid=72047
Source: Scopus
Source ID: 85058077478
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Linearization of BJTs with logarithmic predistortion

This paper proposes a novel linearization technique for bipolar junction transistors (BJT) and their derivatives, e.g., heterojunction BJTs. Since the non-linearity of BJTs is exponential by nature, analog predistortion caused by a logarithmic amplifier should linearize the response completely, in theory. This paper reports that, in practice, cascading a logarithmic amplifier in front of a simple one-transistor BJT amplifier boosted its output third-order inter-modulation intercept point (OIP3) by 10 dB. The proposed linearization scheme is extremely simple and it is inherently broadbanded. To the best of our knowledge, this idea has not been reported previously.

General information

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MoE publication type: A4 Article in a conference publication
Organisations: Electrical Engineering
Contributors: Lunden, O., Paldanius, T.
Publication date: 14 May 2019

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ISSN (Electronic): 2164-2974
ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Electrical and Electronic Engineering, Communication
Keywords: Analogue predistortion, Linearization techniques, Log amplifier, Logarithmic amplifier, Nonlinearity, Power amplifer
Electronic versions:
manuscript 1570495472
DOIs:
10.1109/RWS.2019.8714520
URLs:
http://urn.fi/URN:NBN:fi:tuni-201910224000

Bibliographical note

jufoid=57478
Source: Scopus
Source ID: 85068700610
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Low-complexity sequential information and energy reception

This contribution evaluates and optimizes the performance of simultaneous wireless information and power transfer (SWIPT) with an integrated energy and information receiver, which is characterized by low complexity and energy cost. To this end, a tractable expression for the achievable rate is derived, which is subsequently used to quantify the achievable harvested energy-rate region for the considered time-switching (TS) protocol. Sequential reception of energy and information can be implemented with the aid of TS, which also reduces complexity whilst it is useful in applications that the receiver does not have to be continuously active. In this context, the joint harvested energy-rate outage probability is also defined and minimized for a point-to-point and multicasting system, determining the optimal TS factor. Finally, respective computer simulations corroborate the effectiveness of the proposed framework, whilst interesting insights are developed which are expected to be useful in the design and effective operation of TS wireless power systems.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research group: Wireless Communications and Positioning, Electrical Engineering, Aristotle University of Thessaloniki, Intracom S. A. Telecom Solutions, Khalifa University
Contributors: Tegos, S. A., Diamantoulakis, P. D., Pappi, K., Sofotasios, P. C., Muhaidat, S., Karagiannidis, G. K.
Number of pages: 5
Pages: 635-639
Publication date: Aug 2019

Host publication information

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Publisher: VDE Verlag GmbH
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ASJC Scopus subject areas: Computer Networks and Communications, Electrical and Electronic Engineering, Communication
DOIs:
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Source ID: 85074630959
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Mobility aware eMBMS management in urban 5G-oriented systems

The demand for video services in mobile networks is rapidly increasing. In fact, is expected that video transmissions will account for more than 69% of mobile data traffic by 2018[1]. Along these lines, the challenging requirements of such multimedia applications and, at the same time, the centralized organization typical of current cellular technologies motivate the investigation of enhanced advanced driver assistance systems (ADAS) for supporting the driver experience in terms of safety driving comfort. In this context, in this paper we focus our attention of a new realistic scenario, in which all users

share video contents from the surrounding environment with the aim to create a global 3D video content useful for ADAS systems. Once that such video content is created, we assume that the LTE eNodeB may come in help for making it available through streaming transmissions towards all vehicles in that area with the use of Multimedia Broadcast Multicast Services (MBMS). Obtained results, show that multicast transmissions based on subgrouping techniques are able to overcome the legacy solutions where conservative and opportunistic schemes are used.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Electronics and Communications Engineering, Dept. of Electrical and Electronic Engineering, Universita degli Studi di Reggio Calabria, Peoples' Friendship University of Russia
Contributors: Desogus, C., Fadda, M., Murroni, M., Araniti, G., Orsino, A.
Publication date: 19 Jul 2017

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ASJC Scopus subject areas: Computer Graphics and Computer-Aided Design, Computer Networks and Communications, Computer Science Applications, Human-Computer Interaction, Electrical and Electronic Engineering, Media Technology, Communication
Keywords: LTE, MBMS, Multicast Grouping, V2X, Video Streaming
DOIs:

10.1109/BMSB.2017.7986140

Bibliographical note
jufoid=72046
INT=ELT, "Orsino, A."
Source: Scopus
Source ID: 85027268444
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Multipacket reception MAC schemes for the RFID EPC Gen2 protocol
Maximizing the Radio Frequency IDentification (RFID) performance is one of the main challenges for a wide variety of applications, where the overall throughput can be significantly affected by undesired Tag-Tag collision events. The UHF EPC Class-1 Generation-2 (Gen2) protocol only specifies algorithms to avoid the collisions but makes no provision for their resolution. In this paper, performance enhancement of the RFID EPC Gen2 protocol exploiting Tag collision recovery is demonstrated, for the first time, in real time with measurements. Two simple and effective approaches to handle successful Tag acknowledgments of recovered collided packets are proposed and implemented on a software-defined Reader and programmable Tags. The overall throughput per time slot is increased by 72% over the standard Gen2 MAC scheme. The validity of such result is confirmed by the good agreement with simulations reported in the literature.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Sensing Systems for Wireless Medicine (MediSense), Università del Salento, Georgia Institute of Technology
Contributors: De Donno, D., Tarricone, L., Lakafosis, V., Tentzeris, M. M.
Number of pages: 5
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Publication date: 2012

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Article number: 6328380
ISBN (Print): 9781467307604
ASJC Scopus subject areas: Computer Networks and Communications, Electrical and Electronic Engineering, Communication
Keywords: collision recovery, EPC Gen2 procotol, multipacket reception, RFID, tag collision, throughput
DOIs:

10.1109/ISWCS.2012.6328380
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http://www.scopus.com/inward/record.url?scp=84871328463&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus

Source ID: 84871328463
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Novel D2D-based relaying method for multicast services over 3GPP LTE-A systems

The fast proliferation of 'smart' devices with enhanced capabilities and, at the same time, new multimedia streaming services (i.e., providing high-resolution video and audio content) push the network operator to handle a tremendous increase in the traffic load that is difficult to cope with the current wireless/cellular infrastructures. For that reason, in this paper we consider a novel method based on multi-hop Device-to-Device (D2D) communications, where direct links are established among User Equipments (UEs) in proximity within a Long Term Evolution-Advanced (LTE-A)-based network. The aim of the proposed mechanism is to improve the multimedia multicast sessions and transmissions in terms of throughput and mean download time per user by delivering ubiquitous and reliable connectivity to the larger number of UEs. Our system-level analysis highlights that via proximity-based transmissions among the users, it is possible to provide multimedia content with higher data rates and lower delays w.r.t. The legacy cellular solutions.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Electronics and Communications Engineering, University Mediterranea of Reggio
Contributors: Araniti, G., Orsino, A., Militano, L., Putrino, G., Andreev, S., Koucheryavy, Y., Iera, A.
Publication date: 19 Jul 2017

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ASJC Scopus subject areas: Computer Graphics and Computer-Aided Design, Computer Networks and Communications, Computer Science Applications, Human-Computer Interaction, Electrical and Electronic Engineering, Media Technology, Communication
Keywords: 5G, D2D, LTE, MBMS, Multicast services, Networking and QoS, Performance evaluation
DOIs:

10.1109/BMSB.2017.7986137

Bibliographical note

jufoid=72046
INT=elt,"Orsino, A."
Source: Scopus
Source ID: 85027253110
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

OFDM radar with LTE waveform: Processing and performance

Nokia Mobile Networks, Ulm, Germany This paper addresses the processing principles and performance of OFDM based radar, with particular focus on the LTE mobile network base-stations and the use of the LTE downlink transmit waveform for radar/sensing purposes. We specifically address the problem stemming from the unused subcarriers, within the transmit signal passband, and their impact on the frequency domain radar processing. We also formulate and adopt a computationally efficient interpolation approach to mitigate the effects of such empty subcarriers in the radar processing. We evaluate the target range and velocity estimation performance through computer simulations, and show that high-quality target detection can be achieved, with LTE waveform, when combined with the interpolation approach. Impacts of the different LTE carrier bandwidths and number of transmitted LTE sub-frames are also evaluated, together with aggregating up to 5 individual 20 MHz LTE carriers.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Electrical Engineering, Research group: Wireless Communications and Positioning, Nokia Mobile Networks
Contributors: Barneto, C. B., Anttila, L., Fleischer, M., Valkama, M.
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RWW_2019_OFDM_Radar_FINAL_PAPER
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URLs:
http://urn.fi/URN:NBN:fi:tuni-202001151295

Bibliographical note

jufoid=57478
Source: Scopus
Source ID: 85068660156
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Optimal subgroup configuration for multicast services over 5G-satellite systems

The fast spreading of new multimedia services and applications is pushing telco operator to identify candidate technologies for handling the increasing traffic load expected in the coming years. Along this line, satellite communications integrated with terrestrial systems is gaining momentum as a possible solution to overcome the aforementioned challanges. In this paper, we analize a multicast subgroup configuration problem for providing multimedia services over 5G satellite systems. In particular, an optimization problem is considered in order to maximize the aggregate data rate (ADR) with an execution time that is sensibly smaller compared to other solutions available in literature. Obtanied results, demonstrated as the proposed approach, hereafter named as Optimal Multicast Subgroup Configuration (OMSC), is able to overcome the limitation of sub-optimal subgrouping solutions by providing higher performance and, at the same time, low complexity operations.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Electronics and Communications Engineering, Universita degli Studi di Reggio Calabria, Peoples' Friendship University of Russia
Contributors: Orsino, A., Araniti, G., Scopelliti, P., Gudkova, I. A., Samouylov, K. E., Iera, A.
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ASJC Scopus subject areas: Computer Graphics and Computer-Aided Design, Computer Networks and Communications, Computer Science Applications, Human-Computer Interaction, Electrical and Electronic Engineering, Media Technology, Communication
Keywords: 5G-Satellite, Multicast, Networking and QoS, Performance Evaluation, Satellite-LTE
DOIs:
10.1109/BMSB.2017.7986134

Bibliographical note

jufoid=72046
INT=elt,"Orsino, A."
Source: Scopus
Source ID: 85027270587
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

PAPR reduction and digital predistortion for non-contiguous waveforms with well-localized spectrum

One important direction in advanced communication waveform studies for future wireless communications is improved spectrum localization, i.e., minimization of the power leakage outside very narrow guardbands around the useful signal band. This helps to improve the spectrum efficiency and facilitates asynchronous frequency-division multiple access with small overhead. These are central targets, e.g., in the 5G mobile system development. Various multicarrier and single-carrier waveforms with effective spectrum localization are available, including filter bank based waveforms and filtered OFDM, but their spectral characteristics have so far been investigated mostly in the digital processing domain. For practical implementation, it is necessary to study the effects of transmitter power amplifier (PA) nonlinearities on the

spectrum localization of these waveforms. In this context, power amplifier linearization and peak-to-average power ratio (PAPR) reduction methods have a crucial role in the design of energy efficient and cost-effective transmitters. This paper focuses on these issues, by combining a generic low-complexity PAPR reduction method based on peak windowing with linearized PA based on digital predistortion (DPD). It is demonstrated that the combined DPD and PAPR reduction allows the transmitter to significantly improve the spectrum localization without sacrificing the inband waveform quality, while operating very close to the PA saturation level, thus achieving high power efficiency as well. The results are generally applicable to all spectrally localized waveforms.

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
Contributors: Abdelaziz, M., Anttila, L., Renfors, M., Valkama, M.
Number of pages: 5
Pages: 581-585
Publication date: 19 Oct 2016

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ASJC Scopus subject areas: Computer Networks and Communications, Electrical and Electronic Engineering, Communication
DOIs:

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Source: Scopus
Source ID: 84994360850
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Physical layer security for dual-hop SWIPT-enabled CR networks
We investigate the physical layer security of a relayassisted underlay cognitive radio network with simultaneous wireless information and power transfer (SWIPT). To this end, we consider a secondary network comprising a secondary source S, one secondary user (SU) relay R, one SU destination D, one primary user (PU) transmitter, and one PU receiver. In addition, we consider an eavesdropper E which can overhear both communications of the S→R and R→D links whereas power constraints are imposed on the secondary network in order to maintain a tolerable interference level at the primary network. Under these constraints, we derive a closed-form expression for the secrecy outage probability assuming uncorrelated Rayleigh fading channels. Numerical and simulation results are presented to corroborate the corresponding analysis. It is shown that the harvested energy, energy conversion efficiency, and maximum tolerable interference level imposed on the primary receiver impact considerably the overall system's security.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research group: Wireless Communications and Positioning, Electrical Engineering, ENSIAS-Mohammed V University in Rabat, Khalifa University, Universidade Federal do Ceara, Moulay Ismail University in Meknes, Aristotle University of Thessaloniki
Contributors: Bouabdellah, M., El Bouanani, F., Sofotasios, P. C., Da Costa, D. B., Mezher, K., Benazza, H., Muhaidat, S. , Karagiannidis, G. K.
Number of pages: 6
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Publication date: Aug 2019

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Volume: 2019-August
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ASJC Scopus subject areas: Computer Networks and Communications, Electrical and Electronic Engineering, Communication
DOIs:

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Source: Scopus
Source ID: 85074649595
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Planar monopole antennas on substrates fabricated through an additive manufacturing process
This paper introduces a new method for creating a flexible antenna using additive manufacturing for the construction of the substrate. Two substrates were created using a 3D multi-material polymer printer. These substrates were composed using different ratios of the two materials supported by the printer. Planar monopole antennas with a bevel were placed on top of these substrates to form flexible antennas. This paper demonstrates a quick way to create antennas that can be used on non-rigid structures.

General information
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MoE publication type: A1 Journal article-refereed
Organisations: Sensing Systems for Wireless Medicine (MediSense), Georgia Institute of Technology, School of Electrical and Computer Engineering, George Woodruff School of Mechanical Engineering, Georgia Institute of Technology
Contributors: Saintsing, C. D., Yu, K., Qi, H. J., Tentzeris, M.
Number of pages: 3
Pages: 159-161
Publication date: 19 Jun 2015
Peer-reviewed: Yes

Publication information
Journal: IEEE Radio and Wireless Symposium, RWS
Volume: 2015-June
Issue number: June
Article number: 7129744
Original language: English
ASJC Scopus subject areas: Computer Networks and Communications, Computer Science Applications, Electrical and Electronic Engineering, Communication
Keywords: 3D Printing, Additive Manufacturing, Broadband Antennas, Flexible Antennas
DOIs:
10.1109/RWS.2015.7129744
URLs:
http://www.scopus.com/inward/record.url?scp=84937963448&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84937963448
Research output: Contribution to journal › Article › Scientific › peer-review

Progress and applications of VECSELs: The most versatile laser platform
Vertical-external-cavity surface-emitting lasers (VECSELs), also referred as semiconductor disk lasers (SDLs), have emerged at the frontier between solid-state and semiconductor laser technologies. Therefore, these high-brightness light sources draw important advantages from both semiconductor and solid-state lasers: the simplicity to engineer the emission properties of semiconductors is combined with the functionality of solid-state lasers owing to the use of external cavity architectures. This combination has enabled obtaining outstanding results in terms of wavelength coverage (from visible to mid-IR), high-power (100W-level), single-frequency operation, efficient intracavity frequency conversion, and ultra-short pulse generation (down to sub-picosecond range with GHz repetition rate). Moreover, the low-cost of broad-area diodes used to pump the VECSELs and the broad-band pump absorption, have made the optically-pumped-VECSELs practical and cost effective.

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: Guina, M.
Publication date: 21 Oct 2015

Host publication information
Title of host publication: 2015 1st URSI Atlantic Radio Science Conference, URSI AT-RASC 2015
Publisher: Institute of Electrical and Electronics Engineers Inc.
Article number: 7303031
ISBN (Electronic): 9789090086286

ASJC Scopus subject areas: Communication, Computer Networks and Communications
DOIs:
10.1109/URSI-AT-RASC.2015.7303031
URLs:
http://www.scopus.com/inward/record.url?scp=84959487167&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84959487167
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Quo vadis, humanity? Ethics on the last mile toward cybernetic organism

Motivated by the recent decisive progress in the field of the Internet of Bio-Nano Things (IoBNT), and fueled by the growing social importance of emerging services and applications built on top of it, this paper seeks to understand consequences of seamless integration of out-of-body and inside-the-body nanoscale devices with a human, that is, creation of augmented human. Absence of regulatory and legal principles designed to protect humans and the environment from negative impact and non-rational use of new technologies threatens the natural human essence. In this paper, we analyze what IoBNT potentially brings to humanity, analyze some fragments of a post-human future, and think about possible issues an augmented human may experience in his/her mental life.

General information

Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Electronics and Communications Engineering, Research group: Emerging Technologies for Nano-Bio-Info-Cogno, National Research University Higher School of Economics, St. Petersburg State University, Military Medical Academy, Saint Petersburg
Contributors: Koucheryavy, Y., Kirichek, R., Glushakov, R., Pirmagomedov, R.
Number of pages: 7
Pages: 287-293
Publication date: 2 Sep 2017
Peer-reviewed: Yes

Publication information

Journal: Russian Journal of Communication
Volume: 9
Issue number: 3
ISSN (Print): 1940-9419
Ratings:
Scopus rating (2017): CiteScore 0.3 SJR 0.117 SNIP 0.114
Original language: English
ASJC Scopus subject areas: Communication, Political Science and International Relations
Keywords: homo hybridus, hybrid reality, nanonetwork, the complex organism, The Internet of Bio-Nano Things
DOIs:
10.1080/19409419.2017.1376561
Source: Scopus
Source ID: 85041133599
Research output: Contribution to journal › Article › Scientific › peer-review

Review of technologies for low-cost integrated sensors

This paper discusses the evolution towards integrated RFID-enabled wireless sensor network infrastructure using UHF and microwave frequencies. Inkjet-printed technology on flexible paper substrates and the integration (assembly) of sensors, wireless modules, discrete components and power sources is proposed as a solution for low-cost, light-weight, and environmental friendly method for RFID-enabled sensors and Wireless Sensor Nodes (WSN). Three examples are given to demonstrate the usability of such method: UHF RFID-enabled temperature sensor, Zigbee wireless module for location finding and sensing applications, and finally an RF- Certificate of Authenticity (RF-COA) for anti-counterfeiting applications.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Sensing Systems for Wireless Medicine (MediSense), Georgia Institute of Technology, Frederick University Cyprus
Contributors: Rida, A., Lakafosis, V., Vyas, R., Tentzeris, M. M., Nikolaou, S.
Number of pages: 8
Pages: 513-520
Publication date: 2011

Host publication information

Title of host publication: 2011 IEEE International Conference on RFID-Technologies and Applications, RFID-TA 2011
Article number: 6068593
ISBN (Print): 9781457700279
ASJC Scopus subject areas: Electrical and Electronic Engineering, Communication
Keywords: antenna, inkjet printing, paper substrate, RF-COA, sensor, ultra-high frequency (UHF), wireless
DOIs:

10.1109/RFID-TA.2011.6068593
URLs:

http://www.scopus.com/inward/record.url?scp=82155182172&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 82155182172
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Secure Firmware Updates for IoT: A Survey

The evolution of the Internet to an ubiquitous computing environment where massive amounts of devices will be connected. Sharing, receiving and acting upon data has brought in a problem of security. There are as many firmware and software update procedures as there are manufacturers. Therefore it would be good if a common solution could be found. We looked for suitable mechanisms in the past three years, to be used in Internet of Things networks as well as an up and coming research and standardization work. Our findings show that there indeed are good options for firmware update mechanisms that use state-of-The-Art technologies to deliver updates in a secure manner. While not all the mechanisms were specifically targeting deployment scenarios found in the Internet of Things, we still believe the concept of such update mechanism is suitable also for IoT use and thus can be adapted trivially to IoT networks and devices. We also propose a generic four-element model for secure firmware updates.

General information

Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Research area: Information security, Computing Sciences
Contributors: Kolehmainen, A.
Number of pages: 6
Pages: 112-117
Publication date: 1 Jul 2018

Host publication information

Title of host publication: Proceedings - IEEE 2018 International Congress on Cybermatics : 2018 IEEE Conferences on Internet of Things, Green Computing and Communications, Cyber, Physical and Social Computing, Smart Data, Blockchain, Computer and Information Technology, iThings/GreenCom/CPSCom/SmartData/Blockchain/CIT 2018
Publisher: IEEE
ISBN (Electronic): 9781538679753
ASJC Scopus subject areas: Business, Management and Accounting (miscellaneous), Artificial Intelligence, Computer Networks and Communications, Computer Science Applications, Hardware and Architecture, Information Systems and Management, Health Informatics, Communication
Keywords: Firmware updates, IoT, Lifecycle Management
DOIs:

10.1109/Cybermatics_2018.2018.00051
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

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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

Special Issue on Designing Interactive Systems for Work Engagement

General information
Publication status: Published
MoE publication type: C2 Edited books
Organisations: Pervasive Computing, School of Arts, Aalto University, Copenhagen Business School, University of Leicester
Contributors: Roto, V. (ed.), Clemmensen, T. (ed.), Väätäjä, H. (ed.), Law, E. L. C. (ed.)
Number of pages: 5
Pages: 135–257
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Human Technology
Volume: 14
Issue number: 2
ISSN (Print): 1795-6889
Ratings:

Scopus rating (2018): CiteScore 1.1 SJR 0.151 SNIP 1.314
Original language: English
ASJC Scopus subject areas: Social Psychology, Communication, Human-Computer Interaction
URLs:

http://humantechnology.jyu.fi/archive/vol-14/issue-2

Bibliographical note
EXT="Roto, Virpi"
Research output: Contribution to journal › Special issue › Scientific › peer-review

The effect of small-scale mobility on terahertz band communications
The use of massive antenna arrays for creating extremely directive antenna radiation patterns is considered vital for overcoming high path loss and atmospheric absorption of terahertz links. However, high directivity also results in frequent misalignment of beams due to small-scale/micro-mobility of user equipment (UE), such as shakes and rotations, leading to the spontaneous degradation of SNR level and waste of communications time for the beam searching procedure. In this paper, we make the initial steps to investigate the behavior of terahertz band link characteristics subject to the small-scale mobility of UE. We show that the optimal antenna directivity angle leading to the highest, on average, capacity heavily depends on the micro-mobility pattern of the UE. Further investigations in this area will contribute to the design of robust and high-performance communication systems in the terahertz band.

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, State University of New York
Contributors: Petrov, V., Moltchanov, D., Koucheryavy, Y., Jornet, J. M.
Number of pages: 2
Publication date: 5 Sep 2018

Host publication information
Title of host publication: Proceedings of the 5th ACM International Conference on Nanoscale Computing and Communication, NANOCOM 2018
Publisher: ACM
ISBN (Electronic): 9781450357111
ASJC Scopus subject areas: Computer Networks and Communications, Computational Theory and Mathematics, Communication
Keywords: Beam steering, Capacity, Micro-mobility, Terahertz communications
DOIs:

10.1145/3233188.3242902
Source: Scopus
Source ID: 85055788498
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Transparency of intentions decreases privacy concerns in ubiquitous surveillance
An online experiment (n=1,897) was carried out to understand how data disclosure practices in ubiquitous surveillance affect users' privacy concerns. Information about the identity and intentions of a data collector was manipulated in hypothetical surveillance scenarios. Privacy concerns were found to differ across the scenarios and moderated by knowledge about the collector's identity and intentions. Knowledge about intentions exhibited a stronger effect. When no information about intentions was disclosed, the respondents postulated negative intentions. A positive effect was found for disclosing neutral intentions of an organization or unknown data collector, but not for a private data collector. The findings underline the importance of disclosing intentions of data use to users in an easily understandable manner.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Mathematical modelling with wide societal impact (MathImpact), Cluster of Excellence on Multimodal Computing and Interaction, Saarland University, Aalto University, Helsinki Institute for Information Technology HIIT, Department of Information and Service Economy
Contributors: Oulasvirta, A., Suomalainen, T., Hamari, J., Lampinen, A., Karvonen, K.
Publication date: 2014
Peer-reviewed: Yes

Publication information
Journal: CYBERPSYCHOLOGY BEHAVIOR AND SOCIAL NETWORKING
Volume: 17
Issue number: 10
ISSN (Print): 2152-2715
Ratings:

Scopus rating (2014): CiteScore 5.7 SJR 1.712 SNIP 1.795
Original language: English
ASJC Scopus subject areas: Human-Computer Interaction, Applied Psychology, Communication, Computer Science Applications, Social Psychology, Medicine(all)
DOIs:

10.1089/cyber.2013.0585
URLs:

http://www.scopus.com/inward/record.url?scp=84907285570&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84907285570
Research output: Contribution to journal › Article › Scientific › peer-review

Utilising EEG signals for modulating neural molecular communications
A major challenge in neuronal molecular communications lies in modulating signals through the neuronal network of the cortex that will minimize interference with the natural signalling. In this paper, we propose the use of Electroencephalogram (EEG) signals as a sensing mechanism to determine spiking interval gaps that can be used to stimulate artificial data transfer in the cortical microcolumn.

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, Waterford Institute of Technology, Trinity College Dublin
Contributors: Adonias, G. L., Barros, M. T., Doyle, L., Balasubramaniam, S.
Number of pages: 2
Publication date: 5 Sep 2018

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Title of host publication: Proceedings of the 5th ACM International Conference on Nanoscale Computing and Communication, NANOCOM 2018
Publisher: Association for Computing Machinery, Inc
ISBN (Electronic): 9781450357111
ASJC Scopus subject areas: Computer Networks and Communications, Computational Theory and Mathematics, Communication
Keywords: EEG, Information Theory, Molecular Communication, Nanonetworks, Optogenetics
DOIs:

10.1145/3233188.3236333
Source: Scopus
Source ID: 85055842413
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

Value Emergence in the Usage of Mobile News Alerts
Mobile news alerts have become an important means for news organizations to develop their relationship with growing mobile audiences. Yet, there is a lack of knowledge about the way audiences experience mobile news alerts and how newsrooms should measure the success of news alerts. This article presents an ethnographic study of the consumption of mobile news alerts. For analyzing the consumption, a value creation approach is introduced as an alternative model that does not address audiences solely as citizens that need information for public good, nor as market-driven entities. Instead, the focus is on understanding audiences as individual customers who create the value of news alerts while using the news services. Furthermore, this article reflects the results of a study of the alert sending practices of a regional newspaper. The findings indicate that while news media still tend to think of customers as a unified group of “readers,” the receivers of news alerts treat their mobile screens as an individual sphere whose information flow should match their personal context and needs. This article brings forth the need among news media for a broader understanding of the consumption of news alerts including developing co-creation activities with customers.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Information and Knowledge Management, Tampere Uni. of Applied Sci.
Contributors: Mäkelä, L., Boedeker, M., Helander, N.
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: Digital Journalism
ISSN (Print): 2167-0811
Ratings:

Scopus rating (2019): CiteScore 7.2 SJR 2.686 SNIP 2.439
Original language: English
ASJC Scopus subject areas: Communication
Keywords: Mobile ethnography, mobile journalism, mobile news, news alert, news consumption, push notification, value creation
DOIs:

10.1080/21670811.2019.1654899
Source: Scopus
Source ID: 85071030478
Research output: Contribution to journal › Article › Scientific › peer-review

Virtualizing power cords by wireless power transmission and energy harvesting
In this paper, we introduce two different approaches for the virtualization of power cords for electrical devices. The first approach is a new concept for routing electric power by wireless transfer on two-dimensional surfaces, such as floors and walls. Unlike any other existing wireless power transfer scheme, this method can deliver electric power over a wide range with minimal loss. We realize this method using multi-hop displacement of a magnetic antenna array. Each array element can be selectively resonated with adjacent elements to deliver power without physical contact. The second approach utilizes far-field RF energy harvesting. Using an efficient voltage multiplier and adaptive software-based control, it is

possible to operate low-power wireless sensors continuously.

General information
Publication status: Published
MoE publication type: A4 Article in a conference publication
Organisations: Sensing Systems for Wireless Medicine (MediSense), University of Tokyo, Georgia Institute of Technology
Contributors: Kawahara, Y., Wei, W., Narusue, Y., Shigeta, R., Asami, T., Tentzeris, M.
Number of pages: 3
Pages: 37-39
Publication date: 2013

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Title of host publication: RSW 2013 - 2013 IEEE Radio and Wireless Symposium - RWW 2013
Article number: 6486633
ISBN (Print): 9781467329309
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Keywords: RF energy harvesting, Wireless power transmission
DOIs:

10.1109/RWS.2013.6486633
URLs:

http://www.scopus.com/inward/record.url?scp=84876754120&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84876754120
Research output: Chapter in Book/Report/Conference proceeding › Conference contribution › Scientific › peer-review

What is eSports and why do people watch it?
Purpose: The purpose of this paper is to investigate why do people spectate eSports on the internet. The authors define eSports (electronic sports) as “a form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the eSports system are mediated by human-computer interfaces.” In more practical terms, eSports refer to competitive video gaming (broadcasted on the internet). Design/methodology/approach: The study employs the motivations scale for sports consumption which is one of the most widely applied measurement instruments for sports consumption in general. The questionnaire was designed and pre-tested before distributing to target respondents (n=888). The reliability and validity of the instrument both met the commonly accepted guidelines. The model was assessed first by examining its measurement model and then the structural model. Findings: The results indicate that escapism, acquiring knowledge about the games being played, novelty and eSports athlete aggressiveness were found to positively predict eSport spectating frequency. Originality/value: During recent years, eSports (electronic sports) and video game streaming have become rapidly growing forms of new media in the internet driven by the growing provenance of (online) games and online broadcasting technologies. Today, hundreds of millions of people spectate eSports. The present investigation presents a large study on gratification-related determinants of why people spectate eSports on the internet. Moreover, the study proposes a definition for eSports and further discusses how eSports can be seen as a form of sports.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Research group: TUT Game Lab, Pervasive Computing, Human-Centered Technology (IHTE), Gamification Group, Turun Yliopisto/Turun Biomateriaalikeskus
Contributors: Hamari, J., Sjöblom, M.
Number of pages: 22
Pages: 211-232
Publication date: 2017
Peer-reviewed: Yes

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Journal: INTERNET RESEARCH
Volume: 27
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ISSN (Print): 1066-2243
Ratings:

Scopus rating (2017): CiteScore 5.9 SJR 1.645 SNIP 2.092
Original language: English
ASJC Scopus subject areas: Communication, Sociology and Political Science, Economics and Econometrics
Keywords: eSports, Games, Media consumption, Online video, Streaming, Uses and gratifications
DOIs:

10.1108/IntR-04-2016-0085
Source: Scopus
Source ID: 85016010828
Research output: Contribution to journal › Article › Scientific › peer-review

What predicts esports betting? A study on consumption of video games, esports, gambling and demographic factors
The parallel media related to sports, gaming and gambling are expanding, exemplified by the emergence of esports and game-related gambling (e.g. loot boxes, esports betting). The increasing convergence of these phenomena means it is essential to understand how they interact. Given the expanding consumer base of esports, it is important to know how individuals' backgrounds and consumption of game media may lead to esports betting. This study employs survey data (N = 1368) to investigate how demographics, alongside consumption of video games, esports and gambling can predict esports betting activity. Results reveal that both spectating esports and participation in general forms of gambling are associated with increased esports betting, no direct association was observed between the consumption of video games and esports betting. Findings suggest that while games may act as a vehicle for gambling content, highlighting the convergence of gaming and gambling, there is no intrinsic aspect which directly encourages gambling behaviours.

General information
Publication status: E-pub ahead of print
MoE publication type: A1 Journal article-refereed
Organisations: Computing Sciences, University of Nevada, Las Vegas, University of California, Los Angeles, University of Turku
Contributors: Macey, J., Abarbanel, B., Hamari, J.
Publication date: 2020
Peer-reviewed: Yes

Publication information
Journal: New Media and Society
ISSN (Print): 1461-4448
Original language: English
ASJC Scopus subject areas: Communication, Sociology and Political Science
Keywords: Betting, consumption, convergence, digital media, esports, gambling, gaming, MSSC, video games
DOIs:
10.1177/1461444820908510
Source: Scopus
Source ID: 85081570832
Research output: Contribution to journal › Article › Scientific › peer-review

Young mobile users: Radical and individual - Not
The use of mobile phones by youth has stirred a plethora of research in different fields. Literature has analyzed in length the changes and adoption patterns related to the evolving telecommunications industry. This body of knowledge often makes assumptions on the changes in consumer profiles and the value of different features. In this study we take an longitudinal approach by analysing the results of 1 928 responses to an online questionnaire conducted in Finland to students of a university in the Spring 2012 and on against the reanalysis of the responses of the Finnish students of upper secondary schools in the Spring 2001 and study on undergraduate students in 2006-2007. The results indicate that the youth and young adults of Finland, often argued to be an advanced country for mobile services, are surprisingly conservative towards new mobile devices and services. The changes in technology and service offering in a decade, has had a limited impact in attitudes and feature valuation, which sets significant implications to increasing adoption and usage.

General information
Publication status: Published
MoE publication type: A1 Journal article-refereed
Organisations: Managing digital industrial transformation (mDIT), VTT Technical Research Centre of Finland, University of Turku
Contributors: Suominen, A., Hyrynsalmi, S., Knuutila, T.
Number of pages: 16
Pages: 266-281
Publication date: May 2014
Peer-reviewed: Yes

Publication information
Journal: Telematics and Informatics
Volume: 31
Issue number: 2

ISSN (Print): 0736-5853
Ratings:
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Original language: English
ASJC Scopus subject areas: Communication, Computer Networks and Communications, Electrical and Electronic Engineering, Law
Keywords: Finland, Mobile phone, Smart phones, Young users
DOIs:
10.1016/j.tele.2013.08.003
URLs:
http://www.scopus.com/inward/record.url?scp=84889091402&partnerID=8YFLogxK (Link to publication in Scopus)
Source: Scopus
Source ID: 84889091402
Research output: Contribution to journal › Article › Scientific › peer-review