



UBICOMM 2017

The Eleventh International Conference on Mobile Ubiquitous Computing,
Systems, Services and Technologies

November 12 - 16, 2017

Barcelona, Spain

UBICOMM 2017 Editors

Timothy Arndt, Cleveland State University, USA

Evgeny Pyshkin, University of Aizu, Japan

Martin Ruskowski, German Research Center for Artificial Intelligence

(DFKI), Germany Martin.Ruskowski@dfki.de

Aliane Loureiro Krassmann, Federal Institute Farroupilha – Federal

University of Rio Grande do Sul, Brazil

Hiroaki Higaki, Tokyo Denki University, Japan

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (4239) by International Academy, Research, and Industry Association (IARIA)
Please refer to the Copyright Information page.

Printed by Curran Associates, Inc. (4239)

International Academy, Research, and Industry Association (IARIA)
412 Derby Way
Wilmington, DE 19810

Phone: (408) 893-6407
Fax: (408) 527-6351

petre@iaria.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

Performance Assessment of Time-Threshold Based Scheme over Soft Frequency Reuse (SFR) Scheme <i>Idil Candan</i>	1
Analysis of the Usefulness of Mobile Eyetracker for the Recognition of Physical Activities <i>Peter Hevesi, Jamie Ward, Orkhan Amiraslanov, Gerald Pirkl, and Paul Lukowicz</i>	5
Beware: Mobile and Web Application to Prevent Crimes against the Patrimony, Life, Body and Health <i>Alexa Tataje, Marco Florian, and David Mauricio</i>	11
Using Hidden Markov Models and Rule-based Sensor Mediation on Wearable eHealth Devices <i>Gilles Irene Fernand Neyens and Denis Zampunieris</i>	19
Using Image Recognition for Testing Hand-drawn Graphic User Interfaces <i>Maxim Mozgovoy and Evgeny Pyshkin</i>	25
On Providing Healthy Routes: A Case for Fine-Grained Pollution Measurements Using Mobile Sensing <i>Srinivas Devarakonda, Ruilin Liu, and Badri Nath</i>	29
Hybrid Client/Server Rendering with Automatic Proxy Model Generation <i>Jens Olav Nygaard and Jon Mikkelsen Hjelmervik</i>	37
'SER Analysis of Adaptive Threshold Based Relay Selection with 2-Bits Feedback for Type-2 Relays <i>Sung Sik Nam, Byungju Lim, Mohamed-Slim Alouini, and Young-Chai Ko</i>	41
A Reward System for Collaborative Care of Elderly based on Distributed Ledger Technologies <i>Emilien Bai and Kare Synnes</i>	46
Planning for Ubiquitous Learning in PLAN <i>Timothy Arndt</i>	56
A Tool Rental Service Scenario - IoT technologies enabling a circular economy business model <i>Johanna Kallio, Maria Antikainen, and Outi Kettunen</i>	60
Towards an Architecture to Multimodal Tools for e-Learning Environments <i>Andre da Silva, Fernanda Freire, and Flavia Arantes</i>	66
Implementation Example with Ultra-Small PCs for Human Tracking System based on Mobile Agent Technologies <i>Masaru Shiozuka, Tappei Yotsumoto, Kenichi Takahashi, Takao Kawamura, and Kazunori Sugahara</i>	73
Indoor Source Localization Using 2D Multi-Sensor Based Spatial Spectrum Fusion Algorithm	79

Taha Bouras, Di He, Wenxian Yu, and Yi Zhang

Probabilistic CCRN: Reliability Analysis of Ubiquitous Computing Scenarios Using Probabilistic Model Checking <i>Reona Minoda, Masakazu Ishihata, and Shin-ichi Minato</i>	85
Using Brain-Computer Interface and Internet of Things to Improve Healthcare for Wheelchair Users <i>Ariel Teles, Mauricio Cagy, Francisco Silva, Markus Endler, Victor Bastos, and Silmar Teixeira</i>	92
Enhancing the Affective Sensitivity of Location Based Services Using Situation-Person-Dependent Semantic Similarity <i>Antonios Karatzoglou and Michael Beigl</i>	95
TPM Framework: a Comprehensive Kit for Exploring Applications with Textile Pressure Mapping Matrix <i>Bo Zhou, Jingyuan Cheng, Ankur Mawandia, Yujiang He, Zhixin Huang, Mathias Sundholm, Muhammet Yildirim, Heber Cruz, and Paul Lukowicz</i>	101
Estimation of Relative Offset and Drift for Synchronization of Local Clocks in Wireless Sensor Networks <i>Ayako Arao and Hiroaki Higaki</i>	108
A Quantitative Study on Live Virtual Machines Migration in Virtualized Computing Environment <i>Marcela Tassyany Galdino Santos, Edlane de Oliveira Gusmao Alves, and Anderson Fabiano Batista Ferreira da Costa</i>	115
Management of Forest Fires Using IoT Devices <i>Josue Toledo-Castro, Ivan Santos-Gonzalez, Candelaria Hernandez-Goya, and Pino Caballero-Gil</i>	121
ASUT : Advanced Software Update for Things <i>Juhyun Choi, Changue Jung, Ikjun Yeom, and Younghoon Kim</i>	127
Towards Remote Control of Mobile Robots to Help Dependent People <i>Yvon Autret, Jean Vareille, David Espes, Valerie Marc, and Philippe Le Parc</i>	129
MQTT-based Translation System for IoT Interoperability in oneM2M Architecture <i>Jiwoo Park, Geonwoo Kim, and Kwangsue Chung</i>	137
High-performance Wireless Sensor Node Design for Water Pipeline Monitoring <i>Fatma Karray, Mohamed Wassim Jmal, and Mohamed Abid</i>	141
An Extensible Edge Computing Architecture: Definition, Requirements and Enablers <i>Volkan Gezer, Jumyung Um, and Martin Ruskowski</i>	148
GeSCo: Introducing an Edge Layer Between Cloud MES and Shop-Floor in Decentralized Manufacturing	153

Badarinath Katti, Michael Schweitzer, and Christiane Plociennik

Combining Edge Computing and Blockchains for Flexibility and Performance in Industrial Automation 159
Mauro Isaja, John Soldatos, and Volkan Gezer

Implementation of Interactive E-learning System Based on Virtual Reality 165
SeungJoon Kwon and HyungKeun Jee

Heads Up Displays (HUD) as a Tool to Contextualize the User in 3D Virtual Worlds 169
Aliane Loureiro Krassmann, Felipe Becker Nunes, Tito Armando Rossi Filho, Liane Margarida Rockenbach Tarouco, and Magda Bercht