2014 IEEE International Conference on Pervasive Computing and Communications

(PerCom 2014)

Budapest, Hungary
24-28 March 2014

Technical Program

K1: Keynote Lecture 1

Keynote 1: WInternet: From Net of Things to Internet of Things
Wei Zhao (University of Macau, P.R. China)
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S1: Session 1 - Context and Activity Recognition

Kintense: A Robust, Accurate, Real-Time and Evolving System for Detecting Aggressive Actions from Streaming 3D Skeleton Data
S. M. Shahriar Nirjon (University of Virginia, USA); Christopher Greenwood (University of Virginia, USA); Carlos Torres (University of Virginia, USA); Stefanie Zhou (University of Virginia, USA); John Stankovic (University of Virginia, USA); Hee Jung Yoon (DGIST, Korea); Ho-Kyeong Ra (DGIST, Korea); Can Basaran (DGIST, USA); Taejoon Park (Daegu Gyeongbuk Institute of Science and Technology, Korea); Sang Son (DGIST, Korea)
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Nonparametric Discovery of Human Routines from Sensor Data
Feng-Tso Sun (Carnegie Mellon University, USA); Yi-Ting Yeh (Stanford University, USA); Heng-Tze Cheng (Carnegie Mellon University, USA); Cynthia Kuo (Carnegie Mellon University, USA); Martin Griss (Carnegie Mellon University, USA)
pp. 11-19

Fixed-lag Particle Filter for Continuous Context Discovery Using Indian Buffet Process
Thuong C. Nguyen (Deakin University, Australia); Sunil Gupta (Deakin University, Australia); Svetha Venkatesh (Deakin University, Australia); Dinh Q. Phung (Deakin University, Australia)
pp. 20-28

S2: Session 2 - Energy

Using Rule Mining to Understand Appliance Energy Consumption Patterns
Sami Rollins (University of San Francisco, USA); Nilanjan Banerjee (University of Maryland, Baltimore County, USA)
pp. 29-37

SocketWatch: An Autonomous Appliance Monitoring System
Tanuja Ganu (IBM Research - India, India); Dwi Rahayu (Monash University, Australia); Deva P. Seetharam (IBM Research - India, India); Rajesh Kunnath (Radio Studio, India); Ashok Pon Kumar (IBM Research, India); Vijay Arya (IBM Research - India, India); Saiful A. Husain (Universiti Brunei Darussalam, Brunei Darussalam); Shivkumar Kalyanaraman (IBM Research - Australia, India)
pp. 38-43

Personalized Energy Auditor: Estimating Personal Electricity Usage
Seungwoo Lee (Yonsei University, Korea); Daye Ahn (Hongik University, Korea); Sukjun Lee (Yonsei University, Korea); Rhan Ha (Hongik University, Korea); Hojung Cha (Yonsei University, S. Korea, Korea)
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RCP: Reception (parallel to Demo/WiP)

K2: Keynote Lecture 2

Keynote 2: IoT on the Move: The Ultimate Driving Machine as the Ultimate Mobile Thing
Christoph Grote (BMW Group, Germany)
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S3: Session 3 - Best Papers

Multi-scale Conditional Random Fields for First-Person Activity Recognition
Kai Zhan (University of Sydney, Australia); Steven Faux (University of New South Wales, Australia); Fabio Ramos (University of Sydney, Australia)
pp. 51-59

Inferring Occupancy from Opportunistically Available Sensor Data
Longqi Yang (Zhejiang University, P.R. China); Kevin Ting (University of California, Los Angeles, USA); Mani B. Srivastava (University of California, Los Angeles, USA)
pp. 60-68

Pushing the Spatio-Temporal Resolution Limit of Urban Air Pollution Maps
David Hasenfratz (ETH Zurich, Switzerland); Olga Saukh (ETH Zurich, Switzerland); Christoph Walser (ETH Zurich, Switzerland); Christoph Hueglin (EMPA, Switzerland); Martin Fierz (FHNW, Switzerland); Lothar Thiele (Swiss Federal Institute of Technology Zurich (ETH Zurich), Switzerland)
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S4: Session 4 - Human Dynamics

From Proximity Sensing to Spatio-Temporal Social Graphs
Claudio Martella (VU University Amsterdam, Italy); Matthew Dobson (VU University Amsterdam, The Netherlands); Aart van Halteren (VU University Amsterdam, The Netherlands); Maarten van Steen (VU University Amsterdam, The Netherlands)
pp. 78-87

A Refined Limit on the Predictability of Human Mobility
Gavin Smith (The University of Nottingham, United Kingdom); Romain Wieser (Télécom ParisTech, France); James Goulding (University of Nottingham, United Kingdom); Duncan Barrack (The University of Nottingham, United Kingdom)
pp. 88-94

A Regression-based Radar-Mote System for People Counting
Jin He (The Ohio State University, USA); Anish Arora (The Ohio State University, USA)
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PD1: Ph.D. Forum on Pervasive Comp. and Comm. - Teaser Madness

PD2: Ph.D. Forum on Pervasive Comp. and Comm. - Poster Session

PNL: Panel Session - PerCom 2014 Panel

Infrastructure vs. Mobile Sensing -The Evolving Landscape

There has been a surge of enthusiasm around the paradigm of participatory urban sensing, which views a citizen-centric distributed and mobile sensing substrate as one of the most promising ways to gather various types of urban information, such as environmental parameters & pollution levels, traffic congestion, popularity of events at various public spaces, etc. In parallel, there have also been significant recent deployments, perhaps less heralded, of infrastructure or ambient sensors, especially in public spaces, such as malls, airports and stadiums. The panel seeks to understand the limits of each of these individual sensing paradigms observed in practice, due to challenges such as resource limitations, privacy, user interfaces and data quality. It will also discuss how the combined capabilities of participatory and infrastructure sensing can be effectively harnessed, for novel urban computing applications.

BQ: Conference Banquet

S5: Session 5 - Sensing and Applications

Missing Sensor Value Estimation Method for Participatory Sensing Environment
Hisashi Kurasawa (NTT, Japan); Hiroshi Sato (NTT, Japan); Atsushi Yamamoto (NTT, Japan); Hitoshi Kawasaki (NTT, Japan); Motonori Nakamura (NTT, Japan); Yohei Fujii (NTT, Japan); Hajime Matsumura (NTT, Japan)
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Capacity Of Pervasive Camera Based Communication Under Perspective Distortion
Ashwin Ashok (WINLAB/Rutgers University & WINLAB, USA); Shubham Jain (WINLAB/Rutgers University, USA); Marco Gruteser (WINLAB / Rutgers University, USA); Narayan Mandayam (WINLAB, Rutgers University, USA); Wenjia Yuan (Rutgers, The State University of New Jersey, USA); Kristin Dana (Rutgers University, USA)
pp. 112-120

Unleashing The Wild Card for Mobile Payment
Mastooreh Salajegheh (University of Virginia, USA); Bodhi Priyantha (Microsoft Research, USA); Jie Liu (Microsoft Research, USA)
pp. 121-129

S6: Session 6 - Indoor Localization

Analysis Methods for Extracting Knowledge from Large-Scale WiFi Monitoring to Inform Building Facility Planning
Antonio J. Ruiz-Ruiz (University of Murcia, Spain); Henrik Blunck (Aarhus University, Denmark); Thor Prentow (Aarhus University, Denmark); Allan Stisen (Aarhus University, Denmark); Mikkel Baun Kjærgaard (Aarhus University, Denmark)
pp. 130-138

MapGENIE: Grammar-enhanced Indoor Map Construction from Crowd-sourced Data
Damian Philipp (University of Stuttgart, Germany); Patrick Baier (University of Stuttgart, Germany); Christoph Dibak (University of Stuttgart, Germany); Frank Dürr (University of Stuttgart, Germany); Kurt Rothermel (University of Stuttgart, Germany); Susanne Becker (University of Stuttgart, Germany); Michael Peter (University of Stuttgart, Germany); Dieter Fritsch (University of Stuttgart, Germany)
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The Telepathic Phone: Frictionless Activity Recognition from WiFi-RSSI
Stephan Sigg (National Institute of Informatics, Germany); Ulf Blanke (ETH Zürich, Switzerland); Gerhard Tröster (Wearable Computing Lab ETH Zürich, Switzerland)
pp. 148-155

Incremental Wi-Fi Scanning for Energy-Efficient Localization
Niels Brouwers (Delft University of Technology, The Netherlands); Marco Zuniga (Delft University of Technology, The Netherlands); Koen Langendoen (Delft University of Technology, The Netherlands)
pp. 156-162

S7: Session 7 - Security

Comparing and Fusing Different Sensor Modalities for Relay Attack Resistance in Zero-Interaction Authentication
Hien Thi Thu Truong (University of Helsinki, Finland); Xiang Gao (University of Helsinki, Finland); Babins Shrestha (University of Alabama at Bimingham, USA); Nitesh Saxena (University of Alabama at Birmingham, USA); N. Asokan (Aalto University & University of Helsinki, Finland); Petteri Nurmi (Helsinki Institute for Information Technology HIIT, Finland)
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S8: Session 8 - Privacy

THM: PerCom 2014 Town Hall Meeting