Conference Registration

Majestic Foyer

Registration hours:
Sunday March 22: 3:00 pm to 5:00 pm
Monday March 23: from 7:30 am to 4:30 pm
Tuesday March 24: from 7:30 am to 4:00 pm
Wednesday March 25: from 8:30 am to 4:00 pm
Thursday March 26: from 8:30 am to 3:00 pm
Friday March 27: from 8:30 am to 11:00 am

Sponsors:
## Workshops at a Glance

### Monday, March 23: Pre-conference Workshops

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CoMoRea</strong>: Workshop on Context and Activity Modeling and Recognition</td>
<td>Majestic A</td>
</tr>
<tr>
<td><strong>IQ2S</strong>: Workshop on Information Quality and Quality of Service for Pervasive Computing</td>
<td>Majestic B</td>
</tr>
<tr>
<td><strong>MUCS</strong>: Workshop on Managing Ubiquitous Communications and Services</td>
<td>Majestic C</td>
</tr>
<tr>
<td><strong>PerCol</strong>: Workshop on Pervasive Collaboration and Social Networking</td>
<td>Majestic F</td>
</tr>
<tr>
<td><strong>PerEnergy</strong>: Workshop on Pervasive Energy Services</td>
<td>Majestic G</td>
</tr>
<tr>
<td><strong>SmartE</strong>: Workshop on Smart Environments: Closing the Loop</td>
<td>Majestic H</td>
</tr>
</tbody>
</table>

### Friday, March 27: Post-conference Workshops

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WristSense</strong>: Workshop on Sensing Systems and Applications Using Wrist Worn Smart Devices</td>
<td>Majestic A</td>
</tr>
<tr>
<td><strong>PerNEM</strong>: Workshop on Pervasive Networks for Emergency Management</td>
<td>Majestic B</td>
</tr>
<tr>
<td><strong>PerMoby</strong>: Workshop on the Impact of Human Mobility in Pervasive Systems and Applications</td>
<td>Majestic C</td>
</tr>
<tr>
<td><strong>CASPer</strong>: Workshop on Crowd Assisted Sensing Pervasive Systems and Communications</td>
<td>Majestic F</td>
</tr>
</tbody>
</table>
Monday, March 23, Pre-conference Workshops

Morning coffee break: 10:00 am – 10:30 am  Majestic Foyer
Afternoon coffee break: 3:00 pm – 3:30 pm  Majestic Foyer
Lunch: 12:00 pm – 1:30 pm  Majestic E

CoMoRea: Workshop on Context and Activity Modeling and Recognition
Location: Majestic A

Session 1 – Introduction and Keynote (9:00 am – 10:00 am)
Chair: Daniele Riboni (University of Milan, Italy), Matthias Wieland (Universität Stuttgart, Germany)

Context, Big Data, and Digital Prejudices
Daniela Nicklas (University of Bamberg, Germany)

Session 2 – Context-Awareness (10:30 am – 12:00 pm)
Chair: Matthias Wieland (Universität Stuttgart, Germany)

Graph Mining Indoor Tracking Data for Social Interaction Analysis
Mani Williams, Jane Burry, and Asha Rao (RMIT University, Australia)

Knowledge-assisted Location-adaptive Technique for Indoor-Outdoor Detection in ELearning
Sviatoslav Edelev, Sunaina N. Prasad, Hemanth Karnal, and Dieter Hogrefe (University of Goettingen, Germany)

Towards a Smarter System for Human Sensor Web
Habtom Tsega (University of Twente & ITC, The Netherlands), Rob Lemmens (University of Twente Faculty of Geo-Information Science and Earth Observation (ITC), The Netherlands, Menno-Jan Kraak (University of Twente, The Netherlands), and Juma Lungo (University of Dar-es-Salaam, Tanzania)

Session 3 – Situation-Recognition (1:30 pm – 3:00 pm)
Chair: Daniela Nicklas (University of Bamberg, Germany)

Evaluation of User Feedback in Smart Home for Situational Context Identification
Alaa Alhamoud and Pei Xu (Darmstadt University of Technology, Germany), Frank Englert (Technische Universität Darmstadt, Germany), Philipp Scholl (TU Darmstadt, Germany), The An Binh Nguyen, Doreen Böhnhstedt, and Ralf Steinmetz (Technische Universität Darmstadt, Germany)

SAMAF: Situation Aware Mobile Apps Framework
Feichen Shen and Yugyung Lee (University of Missouri Kansas City, USA)

Towards Situation-Aware Adaptive Workflows
Matthias Wieland, Holger Schwarz, Uwe Breitenbücher, and Frank Leymann (Universität Stuttgart, Germany)

Session 4 – Activity-Recognition (3:30 pm – 4:30 pm)
Chair: Daniele Riboni (University of Milan, Italy)

Advancing Android Activity Recognition Service with Markov Smoother
Mingyang Zhong and Jiahui Wen (University of Queensland, Australia), Peizhao Hu (Rochester Institute of Technology, USA), and Jadwiga Indulska (The University of Queensland, Australia)

Using Temporal Correlation and Time Series to Detect Missing Activity-Driven Sensor Events
Juan Ye and Graeme Stevenson (University of St Andrews, United Kingdom), and Simon Dobson (University of St. Andrews, United Kingdom)
Session 1 – Keynote (9:00 am – 10:00 am)
Chair: Sajal K. Das (Missouri University of Science and Technology, USA)

Middleware for Pervasive and Cyber-Physical Systems: Opportunities and Challenges
Gurdip Singh (NSF, USA)

Session 2 – Inference and monitoring (10:30 am – 12:00 pm)
Chair: Raghu Ganti (IBM T J Watson Research Center, USA)

Protocols for Efficient Inference Communication
   Carl Andersen and Prithwish Basu (Raytheon BBN Technologies, USA), and Basak Guler, Aylin Yener, and Ebrahim MolavianJazi (Pennsylvania State University, USA)

Smart-Cuff: A Wearable Bio-Sensing Platform with Activity-Sensitive Information Quality Assessment for Monitoring Ankle Edema
   Ramin Fallahzadeh, Mahdi Pedram, and Ramyar Saeedi (Washington State University, USA), Bahman Sadeghi and Michael Ong (University of California Los Angeles A, USA), and Hassan Ghasemzadeh (Washington State University, USA)

Travel Time Estimation in Real-Time using Buses as Speed Probes
   Dimitrios Tomaras, Ioannis Boutsis, and Vana Kalogeraki (Athens University of Economics and Business, Greece)

Session 3 – Quality of Information (1:30 pm – 3:00 pm)
Chair: Raghu Ganti (IBM T J Watson Research Center, USA)

Quality of Information-aware Real-time Traffic Flow Analysis and Reporting
   Manisha Mukherjee and James H Edwards (Pennsylvania State University, USA), Heesung Kwon (US Army Research Laboratory, USA), and Tom La Porta (Pennsylvania State University, USA)

On Quality of Event Localization from Social Network Feeds
   Prasanna Giridhar and Tarek Abdelzaher (University of Illinois, Urbana Champaign, USA), and Jemin George and Lance Kaplan (Army Research Laboratory, USA)

Preserving QoI in Participatory Sensing by Tackling Location-Spoofing through Mobile WiFi Hotspots
   Francesco Restuccia (Missouri University of Science and Technology, USA), Andrea Saracino (Istituto di Informatica e Telematica, Italy), Sajal K. Das (Missouri University of Science and Technology, USA), and Fabio Martinelli (CNRIIT, Italy)
MUCS: Workshop on Managing Ubiquitous Communications and Services
Location: Majestic C

Session 1 – Managing Network Links and their Metrics (8:30 am – 10:00 am)
Chair: Nicholas Race (Lancaster University, United Kingdom)

RTOB: a TDMA-based MAC Protocol to Achieve High Reliability of One-hop Broadcast in VANET
Fei Han, Daisuke Miyamoto, and Yasushi Wakahara (University of Tokyo, Japan)

Modified TDMA-Based MAC Protocol for Vehicular Ad Hoc Networks
Tomotaka Kawakami and Koji Kamakura (Chiba Institute of Technology, Japan)

Improving Wireless LAN Throughput by Using Concurrent Transmissions From Multiple Access Points Based on Location of Mobile Hosts
Tatsuya Ito, Kodai Murakami, and Susumu Ishihara (Shizuoka University, Japan)

Session 2 – Managing Network Resources (10:30 am – 12:00 pm)
Chair: Jamie Payton (University of North Carolina at Charlotte, USA)

Dynamic Resource Provisioning Through Fog Micro Datacenter
Mohammad Aazam (Kyung Hee University & IEEE, Korea) and Eui Nam Huh (Kyung Hee University, Korea)

A Vehicle Clustering Algorithm for Information Propagation by Inter-Vehicle Communications
Naohiro Washio (Nara Institute of Science and Technology, Japan), Satoshi Matsuura (Tokyo Institute of Technology, Japan), Masatoshi Kakiuchi, Atsuo Inomata, and Kazutoshi Fujikawa (Nara Institute of Science and Technology, Japan)

Heterogeneous Access Network(s) Selection in Multi-Interface Radio Devices
Deepak Tosh and Shamik Sengupta (University of Nevada, Reno, USA)

Session 3 – Managing Applications: Toolkits and Reasoning (1:30 pm – 3:00 pm)
Chair: Christine Julien (University of Texas at Austin, USA)

The Mobile Hub Concept: Enabling Applications for the Internet of Mobile Things
Luis Ríos, Markus Endler, Igor Vasconcelos, Rafael Oliveira Vasconcelos, and Marcio Cunha (Pontifícia Universidade Católica do Rio de Janeiro, Brazil), and Francisco Silva (Universidade Federal do Maranhão, Brazil)

Temporal Reasoning on Twitter Streams Using Semantic Web Technologies
Meng Cui, Wei Tai, and Declan O’Sullivan (Trinity College Dublin, Ireland)

Tool Chain for Application Development with Name-Centric Services
Torsten Teubler (Lübeck University of Applied Sciences, Germany), Horst Hellbrück (University of Applied Sciences Lübeck & CoSA Center of Excellence, Germany)

Session 4 – Working Session (3:30 pm – 4:45 pm)
Chair: Sajal K. Das (Missouri University of Science and Technology, USA)
PerCol: Workshop on Pervasive Collaboration and Social Networking  
Location: Majestic F

Session 1 – Keynote (9:00 am – 10:00 am)
Chair: Markus Endler (Pontifícia Universidade Católica do Rio de Janeiro, Brazil)

Wireless Clinical Monitoring at Scale
Chenyang Lu (Washington University in St. Louis, USA)

Session 2 – Pervasive Collaboration (10:30 am – 12:00 pm)
Chair: Thomas Springer (Technische Universität Dresden, Germany)

A Spatio-temporal Network Model to Represent and Analyze LBSNs
Bruno Moreno and Valeria C. Times (Universidade Federal de Pernambuco, Brazil), and Stan Matwin (University of Ottawa, Canada)

A Collaborative TV-Internet Application Model to Enrich TV Viewing Experience in a Pervasive Way
Carlos Ferraz (Federal University of Pernambuco & Informatics Center, Brazil), Douglas Véras (UFPE, Brazil), and Jancleidsson Soares da Silva (CESAR, Brazil)

Coordinating Movement within Swarms of UAVs through Mobile Networks
Bruno Souza (Pontificia Universidade Católica do Rio De Janeiro & Laboratory of Advanced Collaboration, Brazil) and Markus Endler (Pontificia Universidade Católica do Rio de Janeiro, Brazil)

Session 3 – Participatory Sensing (1:30 pm – 3:00 pm)
Chair: Daniel Schuster (Technische Universität Dresden, Germany)

DisCoPar: Distributed Components for Participatory Campaigning
Jesse Zaman and Wolfgang De Meuter (Vrije Universiteit Brussel, Belgium)

Insights from a M-Participation Prototype in the Wild
Sarah Thiel (Telecommunications Research Centre Vienna, Austria), and Ulrich Lehner, Theresa Stürmer, and Janina Gospodarek (Telecommunications Research Center Vienna, Austria)

A Design of Contract-oriented Sensor Application Platform
Takuma Oide, Toru Abe, and Takuo Suganuma (Tohoku University, Japan)

Session 4 – Elderly Care (3:30 pm – 4:00 pm)
Chair: Markus Endler (Pontifícia Universidade Católica do Rio de Janeiro, Brazil)

Social Hue: A Subtle Awareness System for Connecting the Elderly and their Caregivers
Kadian Davis, Jun Hu, and Loe Feijs (Eindhoven University of Technology, The Netherlands), and Evans Boateng Owusu (Independent Researcher, The Netherlands)
PerEnergy: Workshop on Pervasive Energy Services
Location: Majestic G

Session 1 – Welcome and Keynote (8:30 am – 9:20 am)
Chair: Delphine Christin (University of Bonn and Fraunhofer FKIE, Germany)

Green Building Energy Analytics: Challenges and Opportunities
Nirmalya Roy (University of Maryland Baltimore County, USA)

Session 2 – Disaggregation and load monitoring (9:20 am – 10:00 am)
Chair: Nirmalya Roy (University of Maryland Baltimore County, USA)

Autonomous Load Disaggregation Approach Based on Active Power Measurements
Dominik Egarter and Wilfried Elmenreich (University of Klagenfurt, Austria)

L1-norm Minimization Based Algorithm for Non-Intrusive Load Monitoring
XuanChien Le (IRISA, INRIA, University of Rennes 1, France), Baptiste Vrigneau (University of Rennes 1 & INRIA/IRISA CAIRN, France), and Olivier Sentieys (University of Rennes 1, IRIA/IRISA, France)

Session 3 – Pervasive energy services (10:30 am – 12:00 pm)
Chair: Frank Dürr (University of Stuttgart, Germany)

Contextual Insights into Home Energy Relationships
Germaine Irwin, Nilanjan Banerjee, and Amy Hurst (University of Maryland, Baltimore County, USA) and Sami Rollins (University of San Francisco, USA)

Enabling Consumer Behavior Modification through Real Time Energy Pricing
Xing Yan, Dustin Wright, Sunil Kumar, Gordon Lee, and Yusuf Ozturk (San Diego State University, USA)

An Intervention Study on Automated Lighting Control to Save Energy in Open Space Offices
Luis I Lopera Gonzalez (University of Passau, Germany), Ulf Großekathöfer (Holst Centre & Imec, The Netherlands), and Oliver Amft (University of Passau, Germany)

User Interaction Event Detection in the Context of Appliance Monitoring
Antonio Ridi (University of Applied Sciences Western Switzerland Fribourg, Switzerland), Christophe Gisler (University of Applied Sciences of Western Switzerland & University of Fribourg, Switzerland), and Jean Hennebert (University of Fribourg, Switzerland)
**SmartE: Workshop on Smart Environments: Closing the Loop**  
**Location: Majestic H**

### Session 1 – Opening Remarks and Keynote (8:45 am – 10:00 am)
Chair: **Larry Holder** (Washington State University, USA)

**Clinical Translation: Smart Technologies for Health Assessment and Intervention**  
Maureen Schmitter-Edgecombe (Washington State University, USA)

### Session 2 – Smart Homes (10:30 am – 12:00 pm)
Chair: **Larry Holder** (Washington State University, USA)

- **A Holistic Smart Home Demonstrator for Anomaly Detection and Response**  
  Jens Lundström, Wagner Ourique de Morais, and Martin Cooney (Halmstad University, Sweden)

- **Smart Home Simulation using Avatar Control and Probabilistic Sampling**  
  Jens Lundström (Halmstad University, Sweden), Jonathan Synnott (Ulster University, United Kingdom),  
  Eric Järpe (Halmstad University, Sweden), and Chris Nugent (University of Ulster, United Kingdom)

- **From Lab to Life: Finegrained Behavior Monitoring in the Elderly’s Home**  
  Daniele Riboni, Claudio Bettini, Gabriele Civitarese, and Zaffar Haider Janjua (University of Milan,  
  Italy), and Viola Bulgari (Saint John of God Clinical Research Center, Brescia, Italy)

### Session 3 – Sensors (1:30 pm – 3:00 pm)
Chair: **Larry Holder** (Washington State University, USA)

- **Non-Invasive Detection of Medication Adherence using a Digital Smart Necklace**  
  Haik Kalantarian, Nabil Alshurafa, Tuan Le, and Majid Sarrafzadeh (University of California, Los Angeles, USA, USA)

- **A Method for Recognizing Living Activities in Homes using Positioning Sensor and Power Meters**  
  Kenki Ueda, Morihiko Tamai, and Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

- **A Concept for a C2X-based Crossroad Assistant**  
  Daniel Burgstahler and Matthias Pelzer (Technische Universität Darmstadt, Germany), Andreas Lotz  
  (Continental Automotive GmbH, Germany), Fabian Knapp (Technische Universität Darmstadt, Germany),  
  Hongjun Pu (Continental Automotive GmbH, Germany), Tobias Rueckelt and Ralf Steinmetz (Technische Universität Darmstadt, Germany)

### Session 4 – Keynote (3:30 pm – 4:30 pm)
Chair: **Larry Holder** (Washington State University, USA)

**Smart Health Vital Signs from the Smart Home**  
Marjorie Skubic (University of Missouri, USA)
Tuesday, March 24

Conference Opening (8:15 am – 8:30 am)
Majestic D
Chairs: Jadwiga Indulska (University of Queensland, Australia), Ali Hurson and Sajal K. Das (Missouri University of Science and Technology, USA), Diane J. Cook (Washington State University, USA)

Keynote (8:30 am – 9:45 am)
Majestic D
Chair: Diane J. Cook (Washington State University, USA)

Socially Assistive Robotics: Personalized Machines that (Provide) Care
Maja Mataric (University of Southern California, USA)

Coffee/Tea Break (9:45 am – 10:10 am)
Majestic Foyer

Session 1 – Sensor Data Mining (10:10 am – 11:40 am)
Majestic D
Chair: Christian Becker (Universität Mannheim, Germany)

Mining relations and physical grouping of building-embedded sensors and actuators (best paper candidate)
Luis I Lopera Gonzalez and Oliver Amft (University of Passau, Germany)

Placer++: Semantic Place Labels Beyond the Visit
John C. Krumm, Dany Rouhana, and Ming-Wei Chang (Microsoft Research, USA)

Fault Detection for Binary Sensors in Smart Home Environments
Juan Ye, Graeme Stevenson, and Simon Dobson (University of St. Andrews, United Kingdom)

Online Unsupervised State Recognition in Sensor Data
Julien Eberle, Tri Kurniawan Wijaya, and Karl Aberer (EPFL, Switzerland)

Lunch (11:40 am – 1:15 pm)
Majestic E

Session 2 – Energy Analytics (1:15 pm – 2:35 pm)
Majestic D
Chair: Liviu Iftode (Rutgers University, USA)

Ella Peltonen and Eemil Lagerspetz (University of Helsinki, Finland), Petteri Nurmi (Helsinki Institute for Information Technology HIIT, Finland), and Sasu Tarkoma (University of Helsinki, Finland)

DOSE: Detecting User-Driven Operating States of Electronic Devices from a Single Sensing Point
Ke-Yu Chen and Sidhant Gupta (University of Washington, USA), Eric Larson (Southern Methodist University, USA), and Shwetak N. Patel (University of Washington, USA)

CrowdTasker: Maximizing Coverage Quality in Piggyback Crowdsensing under Budget Constraint
Haoyi Xiong (Institut Mines Télécom, SudParis, France), Daqing Zhang (Institut Télécom, Télécom SudParis, France), Guanling Chen (University of Massachusetts Lowell, USA), Leye Wang (Institut Mines Télécom, SudParis, France), and Vincent Gauthier (Institut TELECOM, Telecom SudParis, SAMOVAR UMR, France)

Acoustic Based Appliance State Identifications for Fine Grained Energy Analytics
Nilavra Pathak, Md Abdullah Al Hafiz Khan, and Nirmalya Roy (University of Maryland Baltimore County, USA)

Coffee/Tea Break (2:35 pm – 3:00 pm)
Majestic Foyer
Session 3 – Activity Sensing (3:00 pm – 3:45 pm)  
Majestic D

Chair: Gergely Zaruba (University of Texas at Arlington, USA)

Joint Segmentation and Activity Discovery using Semantic and Temporal Priors  
Julia Seiter (Wearable Computing Lab ETH Zurich, Switzerland), Wei-Chen Chiu and Mario Fritz (Max Planck Institute for Informatics, Saarbrücken, Germany), Oliver Amft (University of Passau, Germany), and Gerhard Tröster (Wearable Computing Lab ETH Zürich, Switzerland)

Pervasive Self-powered Human Activity Recognition without the Accelerometer  
Sara Khalifa, Mahbub Hassan and Aruna Seneviratne (University of New South Wales, Australia)

Using Infrastructure-provided Context Filters for Efficient Fine-grained Activity Sensing  
Vigneshwaran Subbaraju, Sougata Sen, and Archan Misra (Singapore Management University, Singapore), Satyadip Chakraborti (IIT Kharagpur, Singapore), and Rajesh K Balan (Singapore Management University, Singapore)

Demo and Work-in-Progress “Teaser Madness” (3:45 pm – 4:00 pm)  
Majestic Foyer

Chairs:  
Sriram Chellappan and Sahra Sedigh Sarvestani (Missouri University of Science and Technology, USA), and Daniele Puccinelli (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

Demo Session (4:00 pm – 6:00 pm) (parallel)  
Majestic F and G

Chair: Sriram Chellappan (Missouri University of Science and Technology, USA)

A Proximity-Based Aerial Survivor Locator based on Connectionless Broadcast  
Arata Miyamoto (Toshiba Corporation, Japan), Daniel J. Dubois (Imperial College London, United Kingdom), Yosuke Bando and Konosuke Watanabe (Toshiba Corporation, Japan), and V. Michael Bove, Jr. (MIT, USA)

A Video-Based Metropolitan Positioning System with Centimeter-Grade Localization for VANETs  
LienLien-Wu Chen and Yu-Fan Ho (Feng Chia University, Taiwan), and Chia-Chen Chang and Yu-Chee Tseng (National Chiao-Tung University, Taiwan)

Use the Force, Luke - Implementation of RF-based gesture interaction on an Android phone  
Christoph Rauterberg (Georg-August-University of Goettingen, Germany), Stephan Sigg (National Institute of Informatics, Germany), and Xiaoming Fu (University of Goettingen, Germany)

Activity Recognition and Human Energy Expenditure Estimation with a Smartphone  
Bozidara Cvetkovic, Vito Janko, and Mitja Lustrek (Jožef Stefan Institute, Slovenia)

Disseminate: A Demonstration of Device-to-Device Media Distribution  
Venkat Srinivasan, Tomasz Kalbarczyk, and Christine Julien (University of Texas at Austin, USA)

Demonstration of the FABER System for Fine-grained Recognition of Abnormal Behaviors  
Gabriele Civitarese, Zaffar Haider Janjua, Daniele Riboni, and Claudio Bettini (University of Milan, Italy)

MoodChat: Using Context-Awareness to Connect Likeminded Co-Located Individuals  
Tomas Diaz (Universidad de Chile, Chile) and Christine Julien (University of Texas at Austin, USA)

Teaching Pervasive Computing with an integrated environment  
Philippe Lalanda (Grenoble University, France), Julie McCann (Imperial College London, United Kingdom), and Catherine Hamon (Orange, France)

A Microphone Sensor based System for Green Building Applications  
Md Abdullah Al Hafiz Khan, Sheung Lu, Nirmalya Roy, and Nilavra Pathak (University of Maryland Baltimore County, USA)
Managing your privacy in Mobile Applications with Mockingbird
Alan Ferrari, Daniele Puccinelli, and Silvia Giordano (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

CrumblR: Enabling Proxemic Services through Opportunistic Location Sharing
Geert Vanderhulst (Alcatel-Lucent Bell Labs, Belgium), Marzieh Dashti (Bell Labs, Alcatel-Lucent, Ireland), Afra Mashhadi (Bell Laboratories, Ireland), and Fahim Kawsar (Bell Labs, Belgium)

Extending Semantic Sensor Networks with QueryML
Keyi Zhang and Alan Marchiori (Bucknell University, USA)

Processing Pre-Existing Connect-the-Dots Puzzles for Educational Repurposing Applications
Shelby Kilgore (North Carolina Agricultural and Technical State University, USA) and Corey Graves (North Carolina A&T State University, USA)

Geographical Proximity Based Target-Group Formation Algorithm for D2D Advertisement Dissemination
Kim Junseon and Howon Lee (Hankyong National University, Korea)

Stoppage Pattern Analysis of Public Bus GPSTRaces in Developing Regions
Ratna Mandal, Nitin Agarwal, Subrata Nandi, Projan Das, Aniket Anvit, Sunandini Sanyal, and Sujoy Saha (National Institute of Technology, India)

Challenges in Designing Testbed for Evaluating Delay-Tolerant Hybrid Networks
Partha Sarathi Paul, Sujoy Saha, Subrata Nandi, Kingshuk De, Saikat Kumar Dey (National Institute of Technology Durgapur, India)

Towards a Practical Indoor Location Matching System using 4G LTE PHY Layer Information
Nithyananthan Poosamani and Injong Rhee (North Carolina State University, USA)

Automated transportation emission calculation using smartphones
Kalyanaraman Shankari, Mogeng Yin, David Culler, and Randy H. Katz (University of California at Berkeley, USA)

Work-in-Progress Poster Session (4:00 pm – 6:00 pm) (parallel) Majestic Foyer
Chair: Sahra Sedigh Sarvestani (Missouri University of Science and Technology, USA) and Daniele Puccinelli (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

Reproducible Deployment of Pervasive Applications
Ozan Gunalp (Grenoble University, France), Clément Escoffier (Grenoble University &amp; Dynamis-Technologies, France), and Philippe Lalanda (Grenoble University, France)

Monitoring Co-Movement of Smart Objects using Accelerometer Data
Luis Rios and Markus Endler (Pontificia Universidade Católica do Rio de Janeiro, Brazil), and Francisco Silva (Universidade Federal do Maranhão, Brazil)

WearableHUB: An Open Pervasive Wearable Data Fusion Platform for Personal Health Management
Yiqiang Chen (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China), Wen Gao (ICT, P.R. China), and Shuangquan Wang and Shuai Jiao (Institute of Computing Technology, Chinese Academy of Sciences, P.R. China)

Power Aware Core Scheduling in Multicore Smartphones
Shaosong Li and Shivakant Mishra (University of Colorado, USA)

Inviz: Low-power Personalized Gesture Recognition Using Wearable Textile Capacitive Sensor Arrays
Gurashish Singh, Ryan Robucci, Chintan Patel, and Nilanjan Banerjee (University of Maryland, Baltimore County, USA)

Reception (parallel with Demo/WiP) (4:00 pm – 6:00 pm) Majestic Foyer
### Wednesday, March 25

#### Keynote (8:30 am – 9:45 am)  
Chair: **Archan Misra** (Singapore Management University, Singapore)

**Watson and the Era of Cognitive Computing**  
Guruduth S Banavar (IBM Research, India)

#### Coffee/Tea Break (9:45 am – 10:10 am)  
**Majestic Foyer**

#### Session 4 – Mobile Assistance (10:10 am – 11:40 am)  
Chair: **John C. Krumm** (Microsoft Research, USA)

**Attelia: Reducing User’s Cognitive Load due to Interruptive Notifications on Smart Phones** (best paper candidate)
  Tadashi Okoshi, Hiroki Nozaki and Jin Nakazawa (Keio University, Japan), Anind Dey (Carnegie Mellon University, USA), and Hideyuki Tokuda (Keio University, Japan)

**We Help You Watch Your Steps: An Unobtrusive Alertness System for Pedestrian Mobile Phone Users**
  Jiaqi Wen, Jiannong Cao, and Xuefeng Liu (The Hong Kong Polytechnic University, Hong Kong)

**When to Type, Talk, or Swype: Characterizing Energy Consumption of Mobile Input Modalities**
  Fangzhou Jiang (NICTA, Australia), Eisa Zarepour, Mahbub Hassan, and Aruna Seneviratne (University of New South Wales, Australia), and Prasant Mohapatra (University of California, Davis, USA)

**Beyond Location Check-ins: Exploring Physical and Soft Sensing to Augment Social Check-in Apps**
  Kiran K. Rachuri (Samsung Research America, USA), Theus Hossmann (ETH Zurich, Switzerland), Cecilia Mascolo and Sean Holden (University of Cambridge, United Kingdom)

#### Lunch (11:40 am – 1:15 pm)  
**Majestic E**

#### Session 5 – Pervasive Health (1:15 pm – 2:35 pm)  
Chair: **Christine Julien** (University of Texas at Austin, USA)

**WiBreathe: Estimating Respiration Rate Using Wireless Signals in Natural Settings in the Home** (best paper candidate)
  Ruth Ravichandran, Elliot Saba, Ke-Yu Chen, Mayank Goel, Sidhant Gupta, and Shwetak N. Patel (University of Washington, USA)

**Multiple Model Recognition for Near-Realistic Exergaming**
  Bobak Mortazavi, Mohammad Pourhomayoun, Suneil Nyamathi, Brandon Wu, Sunghoon Lee, and Majid Sarrafzadeh (University of California Los Angeles, USA)

**Fine-grained Recognition of Abnormal Behaviors for Early Detection of Mild Cognitive Impairment**
  Daniele Riboni, Claudio Bettini, Gabriele Civitarese, and Zaffar Haider Janjua (University of Milan, Italy), and Rim Helaoui (Philips Research, The Netherlands)

**Smart Table Surface: A Novel Approach to Pervasive Dining Monitoring**
  Bo Zhou, Jingyuan Cheng, and Mathias Sundholm (German Research Center for Artificial Intelligence, Germany), Attila Reiss (University of Passau, Germany), Wu Huang (German Research Center for Artificial Intelligence, Germany), Oliver Amft (University of Passau, Germany), and Paul Lukowicz (DFKI and University of Kaiserslautern, Germany)

#### Coffee/Tea Break (2:35 pm – 2:50 pm)  
**Majestic Foyer**
Ph.D. Forum: “Teaser Madness” (2:50 pm – 3:00 pm)  
Majestic F  
Chairs: Sriram Chellappan (Missouri University of Science and Technology, USA), Delphine Christin (University of Bonn & Fraunhofer FKIE, Germany)  

Ph.D. Forum Poster session (3:00 pm – 4:00 pm)  
Majestic F  
Chairs: Sriram Chellappan (Missouri University of Science and Technology, USA), Delphine Christin (University of Bonn & Fraunhofer FKIE, Germany)  

Extending the Lifetime of Wireless Sensor Networks from the Perspective of Sensor Scheduling and Wireless Communication  
Qian Zhao (University of Hyogo, Japan)  

Towards large-scale Pervasive Smart Camera Networks  
Jennifer Simonjan (Alpen-Adria-Universität Klagenfurt, Austria)  

Proposal for Managing Sensor Selection Through The Integration of Trust for Indoor Tracking Systems  
Ryan Rybarczyk (IUPUI, USA)  

Bringing Context Awareness to IoT-Based Wireless Sensor Networks  
Shashank Gaur (CISTER Research Institute and ISEP, Polytechnic Institute of Porto, Portugal)  

Localization and Ambient Assisted Living: methodologies, tools and technologies  
Marco Santic (Università dell’Aquila, Italy)  

Protecting Users’ Privacy in Healthcare Cloud Computing with AB-TTP  
Raed Salih (Western Michigan University, USA)  

Opportunities and Challenges in Multi-Modal Sensing for Regular Lifestyle Tracking  
Sougata Sen (Singapore Management University, Singapore)  

A Secure Isolation of Software Activities in Tiny Scale Systems  
Oliver Stecklina (IHP GmbH, Germany)  

Iterative Data Analysis for Sensing Applications  
Ella Peltonen (University of Helsinki, Finland)  

A Pervasive Framework for Real-Time Activity Patterns of Mobile Users  
Feichen Shen (University of Missouri - Kansas City, USA)  

A Context-Aware Ontology for Personalized Learning: Pervasive Computing for Educational Technology  
Tyler Morrow (Missouri University of Science and Technology, USA)  

Enabling Resilience in the Internet of Things  
Kyle E Benson (University of California, Irvine, USA)  

Session 6 – Pervasive Transportation (4:00 pm – 4:55 pm)  
Majestic D  
Chair: Claudio Bettini (University of Milan, Italy)  

LaneQuest: An Accurate and Energy-Efficient Lane Detection System  
Heba Aly (Alexandria University, Egypt), Anas Basalamah (University of Minnesota & Umm Al-Qura University, USA), Moustafa Youssef (Egypt-Japan University of Science and Technology (EJUST), USA)  

FINE: Frequency-divided Instantaneous Neighbors Estimation System in Vehicular Networks  
Linghe Kong (McGill University & Shanghai Jiao Tong University, Canada), Xi Chen and Xue Liu (McGill University, Canada), and Lei Rao (General Motors Research Lab, USA)  

DoppelDriver: Counterfactual Actual Travel Times for Alternative Routes  
Daehan Kwak, Daeyoung Kim, Ruilin Liu, Badri Nath, and Liviu Iftode (Rutgers University, USA)  

Conference Banquet (6:00 pm – 9:00 pm)  
Crystal Ballroom
Thursday, March 26

Keynote (8:30 am – 9:45 am)  Majestic D
Chair: Sajal K. Das (Missouri University of Science and Technology, USA)

An Expanding and Expansive View of Computing, and the Special Role of Pervasive Computing
Jim Kurose (University of Massachusetts at Amherst, USA)

Coffee/Tea Break (9:45 am – 10:10 am)  Majestic Foyer

Panel (10:00 am – 11:45 am)  Majestic D
Chairs: Jiannong Cao (Hong Kong Polytechnic Univ, Hong Kong) and Chenyang Lu (Washington University in St. Louis, USA)

Cyber-Physical Systems and Pervasive Computing: Overlap or Divergent?
David Corman (National Science Foundation, USA), Christine Julien (University of Texas at Austin, USA), and Lui Sha (University of Illinois at Urbana-Champaign, USA)

Lunch (11:45 am – 1:15 pm)  Majestic E

Session 7 – Sensing and Applications (1:15 pm – 2:45 pm)  Majestic D
Chair: Gregor Schiele (University of Duisburg-Essen, Germany)

Sensor Use and Usefulness: Trade-Offs for Data-Driven Authentication on Mobile Devices
Nicholas Micallef (Glasgow Caledonian University, United Kingdom), Hilmi Gunes Kayacik (FICO, United Kingdom), Mike Just (Heriot-Watt University, United Kingdom), Lynne Baillie (Glasgow Caledonian University & ITT Research Group, United Kingdom), and David Aspinall (University of Edinburgh, United Kingdom)

Inviz: Low-power Personalized Gesture Recognition using Wearable Textile Capacitive Sensor Arrays
Gurashish Singh, Alexander Nelson, Ryan, Robucci, Chintan Patel, and Nilanjan Banerjee (University of Maryland, Baltimore County, USA)

Understanding the Unobservable Population in Call Detail Records through Analysis of Mobile Phone User Calling Behavior: A Case Study of Greater Dhaka in Bangladesh
Ayumi Arai (University of Tokyo, Japan), Apichon Witayangkurn (Asian Institute of Technology, Thailand), Teerayut Horanont (Srinindhorn International Institute of Technology, Thammasat University, Thailand), and Xiaowei Shao and Ryosuke Shibasaki (University of Tokyo, Japan)

Targeted Vaccination Based on a Wireless Sensor System
Xiao Sun, Zongqing Lu, Xiaomei, Marcel Salathe, and Guohong Cao (The Pennsylvania State University, USA)

Coffee/Tea Break (2:45 pm – 3:00 pm)  Majestic Foyer
### Session 8 – Security (3:00 pm – 3:55 pm)

Chair: **Ali Hurson** (Missouri University of Science and Technology, USA)

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curbing Mobile Malware Based on User-Transparent Hand Movements</td>
<td>Babins Shrestha, Manar Mohamed, Anders Borg, and Nitesh Saxena (University of Alabama at Birmingham, USA), and Sandeep Tamrakar (Aalto University, Germany)</td>
</tr>
<tr>
<td>Measurement-driven Mobile Data Traffic Modeling in a Large Metropolitan Area</td>
<td>Eduardo M. R. Oliveira (Ecole Polytechnique, France), Aline Carneiro Viana (INRIA, France), Naveen Kolar Purushothama (INRIA Saclay, India), and Carlos Sarraute (Grandata Labs, Argentina)</td>
</tr>
<tr>
<td>Covert Channel Attacks in Pervasive Computing</td>
<td>Nilufer Tuptuk and Stephen Hailes (University College London, United Kingdom)</td>
</tr>
</tbody>
</table>

### Town Hall Meeting (4:00 pm – 5:00 pm)

Chairs: **Jadwiga Indulska** (The University of Queensland, Australia)
Friday, March 27, Post-conference Workshops

Morning coffee break: 10:00 am – 10:30 am   Majestic Foyer
Afternoon coffee break: 3:00 pm – 3:30 pm   Majestic Foyer
Lunch: 12:00 pm – 1:30 pm   Majestic E

WristSense: Workshop on Sensing Systems and Applications Using Wrist Worn Smart Devices
Location: Majestic A

Session 1 – Keynote (9:00 am – 10:00 am)
Chair: Kiran K. Rachuri (Samsung Research America, USA)

The “E Pluribus Unum” Agenda for Wearables
Archan Misra (Singapore Management University, Singapore)

Session 2 – Gesture Recognition (10:30 am – 12:00 pm)
Chair: Christos Efstratiou (University of Kent, United Kingdom)

Recognizing Social Gestures with a Wrist-Worn SmartBand
Jonathan S Knighten, Stephen McMillan, Tori Chambers, and Jamie Payton (University of North Carolina at Charlotte, USA)

MotionAuth: Motion-based Authentication for Wrist Worn Smart Devices
Junshuang Yang, Yanyan Li, and Mengjun Xie (University of Arkansas at Little Rock, USA)

Gesture Control By Wrist Surface Electromyography
Abhishek Nagar and Xu Zhu (Samsung, USA)

Session 3 – UX and Systems (1:30 pm – 3:00 pm)
Chair: Abhishek Mukherji (Samsung Research America & Worcester Polytechnic Institute, USA)

Design Recommendations to Improve the User Interaction with Wrist Worn Devices
Byron Lowens, Vivian Motti, and Kelly Caine (Clemson University, USA)

Power Optimization for Wearable Devices
Haik Kalantarian, Nabi Alshurafa, Mohammad Pourhomayoun, and Majid Sarrafzadeh (University of California, Los Angeles, USA, USA)

A Remote Conversation Support System for Deaf-mute Persons based on Bimanual Gestures Recognition using Finger-worn Devices
Kengo Kuroki (University of AIZU, USA), Yiming Zhou, Zixue Cheng, and Zixian Lu (University of Aizu, Japan), Yinhui Zhou (University of AIZU, USA), and Lei Jing (University of Aizu, Japan)

Session 4 – Activity-Recognition (3:30 pm – 4:30 pm)
Chair: Kiran K. Rachuri (Samsung Research America, USA)

Gait, Wrist and Sensors: Detecting Freezing of Gait in Parkinson’s Disease from Wrist Movement
Sinziana Mazilu (Swiss Federal Institute of Technology, Switzerland), Ulf Blanke (ETH Zürich, Switzerland), and Gerhard Tröster (Wearable Computing Lab ETH Zürich, Switzerland)

The Case for Smartwatchbased Diet Monitoring
Sougata Sen, Vigneshwaran Subbaraju, Archan Misra, Rajesh K Balan, and Youngki Lee (Singapore Management University, Singapore)

Towards Detection of Bad Habits by Fusing Smartphone and Smartwatch Sensors
Muhammad Shoaiab and Stephan Bosch (University of Twente, The Netherlands), Ozlem Durmaz Incel (Galatasaray University, Turkey), and Hans Scholten and Paul Havinga (University of Twente, The Netherlands)

Detecting Self-harming Activities with Wearable Devices
Levi Malott, Pratool Bharti, Nicholas Hilbert, Ganesh Gopalakrishna, and Sriram Chellappan (Missouri University of Science and Technology, USA)
**PerNEM: Workshop on Pervasive Networks for Emergency Management**

**Location:** Majestic B

**Session 1 – Algorithms for Emergency Systems and Networks (I) (9:00 am – 10:00 am)**

Chair: **Gokce Gorbil** (Imperial College, London, UK)

**Cloud Enabled Emergency Navigation Using Faster-than-real-time Simulation**
Huibo Bi and Erol Gelenbe (Imperial College London, United Kingdom)

**Communication Coverage Awareness for Self-aligning Wireless Communication in Disaster Operations**
Thomas Pfeiffenberger, Peter Dorfinger, and Ferdinand von Tüllenburg (Salzburg Research Forschungsgesellschaft m. b. H., Austria)

**Session 2 – Algorithms for Emergency Systems and Networks (I) (10:30 am – 12:00 pm)**

Chair: **Keiichi Yasumoto** (Nara Institute of Science and Technology, JAPAN)

**Routing Diverse Crowds in Emergency with Dynamic Grouping**
Olumide Akinwande and Huibo Bi (Imperial College London, United Kingdom)

**Towards Emergency Networks Security with Per-Flow Queue Rate Management**
Maurizio Casoni, Carlo Augusto Grazia, Martin Klapez, and Natale Patriciello (University of Modena and Reggio Emilia, Italy)

**Emergency Support System with Directional Extensions**
Andras Kokuti (Budapest University of Technology and Economics, Hungary)

**Session 3 – Emergency Support Systems (1:30 pm – 3:00 pm)**

Chair: **Erol Gelenbe** (Imperial College, London, UK)

**No Way Out: Emergency Evacuation With No Internet Access**
Gokce Gorbil (Imperial College London, United Kingdom)

**RecureShare – Internet-less Application Distribution Mechanism for Internet-less Emergency Communication Systems**
Seigi Matsumoto (Nara Institute of Science and Technology, Japan), Yutaka Arakawa (Nara Institute of Science and Technology & NAIST, Japan), Edgar Marko Trono and Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

**E-HAMC: Leveraging Fog Computing for Emergency Alert Service**
Mohammad Aazam and Eui Nam Huh (Kyung Hee University, Korea)

**Session 4 – Emergency Communications and Networks (3:30 pm – 5:15 pm)**

Chair: **Thomas Pfeiffenberger** (Advanced Networking Center, Salzburg, Austria)

**Hybrid Communication Architecture for Emergency Response - An Implementation in Firefighter’s Use Case**
The An Binh Nguyen, Frank Englert, Simon Farr, Christian Gottron, Doreen Böhnstedt, and Ralf Steinmetz (Technische Universität Darmstadt, Germany)

**A Multimedia Delivery System for Delay-/Disruption-Tolerant Networks**
Christian Raffelsberger and Hermann Hellwagner (Klagenfurt University, Austria)

**Disaster Management Communication Networks: Challenges and Architecture Design**
Kamran Ali, Huan X Nguyen, QuocTuan Vien, and Purav Shah (Middlesex University, United Kingdom)
## Session 1 – Keynote (9:00 am – 10:00 am)

Chair: **Petteri Nurmi** (Helsinki Institute for Information Technology HIIT, Finland)

**Tracking Your Every Move - Today and Tomorrow**  
Jakob Eriksson (University of Illinois at Chicago, USA)

## Session 2 – Systems (10:30 am – 12:00 pm)

Chair: **Hassan Ghasemzadeh** (Washington State University, USA)

**PEMAR: A Pervasive Middleware for Activity Recognition with Smart Phones**  
Prakash Vaka, Feichen Shen, Mayanka Chandrashekar, and Yuyung Lee (University of Missouri Kansas City, USA)

**A Case Study on Minimum Energy Operation for Dynamic Time Warping Signal Processing in Wearable Computers**  
Javad Birjandtalab, Qingxue Zhang, and Roozbeh Jafari (University of Texas at Dallas, USA)

**Detecting Energy Leaks in Android App with POEM**  
Alan Ferrari, Dario Gallucci, Daniele Puccinelli, and Silvia Giordano (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

## Session 3 – Activity Monitoring (1:30 pm – 3:00 pm)

Chair: **Anne M Denton** (North Dakota State University, USA)

**A Novel Estimation Method of Road Condition for Pedestrian Navigation**  
Takumi Satoh, Akihito Hiromori, Hirozumi Yamaguchi, and Teruo Higashino (Osaka University, Japan)

**Investigation of Gait Characteristics in Glaucoma Patients with a Shoe-Integrated Sensing System**  
Yuchao Ma (Washington State University, USA), Sharon Henry, Alex Kierlancyk, Majid Sarrafzadeh, Joseph Caprioli, and Kouros NouriMahdavi (University of California, Los Angeles, USA), Hassan Ghasemzadeh (Washington State University, USA), and Navid Amini (University of California, Los Angeles, USA)

**AgriAcT: Agricultural Activity Training using Multimedia and Wearable Sensing**  
Somya Sharma (Innovation Labs, Tata Consultancy Services, Mumbai, India), Bhushan Gurmukhdas Jagyasi (TCS Innovation Labs Mumbai & Indian Institute of Technology Bombay, India), Jabal Raval (TCS Innovation Labs, Tata Consultancy Services Ltd., India), and Prashant Patil (VESIT & Tata Consultancy Services, India)

## Session 4 – Patterns, Dynamics, and Data (3:30 pm – 6:00 pm)

Chair: **Daniele Puccinelli** (University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland)

**Tracking Vehicle Trajectories by Local Dynamic Time Warping of Mobile Phone Signal Strengths and its Potential in Travel-time Estimation**  
Charith Chitraranjan (North Dakota State University & University of Moratuwa, USA), Amal Perera (University of Moratuwa, Sri Lanka), and Anne M Denton (North Dakota State University, USA)

**Analysis of a Fast LZ-Based Entropy Estimator for Mobility Data**  
Alicia Rodriguez-Carrion (University Carlos III of Madrid & Missouri University of Science & Technology, Spain), Carlos GarciaRubio and Celeste Campo (University Carlos III of Madrid, Spain), and Sajal K. Das (Missouri University of Science and Technology, USA)

**Mobile Usage Patterns and Privacy Implications**  
Michael Mitchell, Ratnesh Patidar, Manik Saini, Parteek Singh, and An-I Andy Wang (Florida State University, USA), and Peter Reiher (UCLA, USA)

**Dynamics of Social-aware Pervasive Networks**  
Waldir Moreira and Paulo Mendes (COPELABS, University Lusofona, Portugal)

**Next Place Prediction by Understanding Mobility Patterns**  
Manoranjan Dash, Kee Kiat Koo, Joao Paulo Bartolo Gomes, and Shonali Priyadarsini Krishnaswamy (Institute for Infocomm Research, A*Star, Singapore), Daniel Rugeles (Nanyang Technological University, Singapore), and Amy ShiNash (Singapore Telecom Limited, Singapore)
What are essential ingredients for a killer crowdsensing application?

Mike Just (Glasgow Caledonian University), Paulo Mendes (Universidade Lusófona) & [TBC]