Welcome Message from the General Chairs

On behalf of the Steering and Organization committees, we are delighted to welcome you to IEEE PerCom 2019: The Seventeenth International Conference on Pervasive Computing and Communications. PerCom is an annual conference providing a forum for researchers and practitioners to exchange new achievements and discuss future developments in pervasive computing and communication research and technologies. Following the success of previous conferences, PerCom 2019 is being held in Kyoto, Japan. PerCom 2019 offers a rich program to its audience over five days. In addition to the main conference research paper track, PerCom2019 includes keynote speeches on robotics and future pervasive communications, a "new" industry paper track, demos, workshops, a Ph.D forum, and a panel on impact of privacy regulations on pervasive systems.

The excellent program is a result of the collective efforts of many people and organizations. First, special thanks go to Gregor Schiele, the Program Chair and his team of Vice Chairs (Philippe Lalanda, Lama Nachman and Hirozumi Yamaguchi) and Program Committee members who have done an outstanding job in carrying out the paper review tasks. Second, we are deeply grateful to Paul Havinga - Industry Session Chair, Nabil Alshurafa - Industry Sponsorship Chair and Industry Track TPCs who worked very hard by reviewing and selecting high quality papers in a short period for successfully organizing the industry track for the first time in PerCom history. Third, we would like to express our appreciation of the contributions of the Workshop Chairs, Takahiro Hara, Delphine Reinhardt and Nirmalya Roy. We also thank the important work of the PhD forum chairs, Jin Nakazawa and Vana Kalogeraki, the Work-In-Progress Chairs, Takuya Maekawa and Peizhao Hu, the Demo Chairs, Susumu Ishihara and Salil Kanhere, and the panel chair, Claudio Bettini. We are delighted to have Kevin Fall and Hiroshi Ishiguro as the keynote speakers. Claudio Bettini is moderating a very exciting panel. Our special thanks go to Mohan Kumar - the steering committee chair, Jadwiga Indulska for managing the EDAS system, Tadashi Okoshi, Hassan Ghasemzadeh and Stefano Braghin - the publicity chairs, Arie Kobayashi and Hiroki Ishizuka - the finance chairs, and Hirohiko Suwa - registration chair. The Publication Chairs Damith Ranasinghe and Matthäus Wander outstandingly handled the difficult task of the PerCom proceedings preparation. Thanks are also due to Takuya Yoshihiro, Kazuya Murao and Daisuke Kotani, the Local Organisation Co-Chairs. Last but not least, we would like to thank Kei Hiroi, the conference website chair, for maintaining the web site.

Behrooz Shirazi and Keiichi Yasumoto - PerCom 2019 General Co-Chairs
PerCom 2019 Organization

General Co-chairs
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*Kazuya Murao, Ritsumeikan University, Japan
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Urs Hengartner, University of Waterloo, Canada
Peizhao Hu, Rochester Institute of Technology, USA
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David Irwin, University of Massachusetts, Amherst, USA
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Salil Kanhere, UNSW Sydney, Australia
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Tateisi Science and Technology Foundation
The Telecommunication Advancement Foundation
### Monday, March 11 Pre-conference Workshops

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<thead>
<tr>
<th>Workshop</th>
<th>Room</th>
<th>Time</th>
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<tbody>
<tr>
<td>ARDUOS'19</td>
<td>Rm 665</td>
<td>9:00-16:45</td>
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<tr>
<td>Rm 501</td>
<td>9:00-17:30</td>
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<tr>
<td>BIRD'19</td>
<td>Rm 665</td>
<td>9:00-16:45</td>
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<tr>
<td>CASPer'19</td>
<td>Rm 665</td>
<td>9:00-16:45</td>
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<tr>
<td>CoMoRea'19</td>
<td>Rm 509B</td>
<td>8:00-12:00</td>
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<tr>
<td>025'S19</td>
<td>Rm 665</td>
<td>9:00-17:30</td>
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<tr>
<td>MUSICAL'S19</td>
<td>Rm 555</td>
<td>8:50-14:40</td>
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<tr>
<td>PerAwareCity '19</td>
<td>Rm 662</td>
<td>9:00-17:30</td>
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<tr>
<td>PerCrowd'19</td>
<td>Rm 554</td>
<td>8:45-18:00</td>
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<tr>
<td>PerIoT'19</td>
<td>Rm 663</td>
<td>8:45-16:50</td>
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<tr>
<td>PerLS'19</td>
<td>Rm 552</td>
<td>11:30-16:30</td>
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<tr>
<td>PerVehicle'19</td>
<td>Rm 501</td>
<td>9:00-17:00</td>
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<tr>
<td>WristSense '19</td>
<td>Rm 664</td>
<td>9:00-17:00</td>
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</tbody>
</table>

### Tuesday, March 12

**Conference Opening**
- Room A: 8:30 am – 8:45 am
  - Keynote Lecture
- Room A: 8:45 am – 9:45 am
  - Lunch
  - K1. Networked Robot Swarms—Ready or Not? Kevin Fall (ACM, USA)

**Session 1: Pervasive Sensing and Data Collection**
- Room A: 9:00 am – 11:50 am
  - PhD Forum "Teaser Madness"

**Session 2: Trust, Security, Privacy**
- Room A: 1:30 pm – 3:30 pm
  - WIP and Demo "Teaser Madness"

**Parallel Receptions and Parallel Sessions**
- Work-in-Progress Poster Session, Demo Session, PhD Forum Poster Session
- New Hall: 6:00 pm – 8:00 pm

### Wednesday, March 13

**Keynote Lecture**
- Room A: 8:45 am – 9:45 am
  - K2. Studies on Interactive Robots Hiroshi Ishiguro (Osaka University, Japan)

**Session 4: Best Paper Candidates**
- Room A: 10:15 am – 11:45 am
  - 10:15 am – 11:45 am

**Session 5: Activity Recognition & Machine Learning**
- Room A: 1:15 pm – 3:15 pm

**Industry Session**
- Room A: 3:45 pm – 5:45 pm

**Conference Banquet**
- Grand Prince Hotel Kyoto "Prince Hall" 6:30 pm – 9:00 pm

### Thursday, March 14

**Panel**
- Room A: 8:45 am – 9:45 am

**Session 6: Localisation and Context Detection**
- Room A: 10:10 am – 12:10 pm

**Session 7: Edge Computing and Offloading**
- Room A: 1:20 pm – 3:20 pm

**Session 8: Pervasive and Augmented User Interfaces**
- Room A: 3:45 pm – 5:45 pm

**Town Hall Meeting**
- Room A: 5:45 pm – 6:45 pm

### Friday, March 15 Post-conference Workshops

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Room</th>
<th>Time</th>
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<tbody>
<tr>
<td>EmotionAware '19</td>
<td>Rm 509</td>
<td>9:25-15:00</td>
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<tr>
<td>PerDial'19</td>
<td>Rm 664</td>
<td>8:40-12:00</td>
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<tr>
<td>PerIoT'19</td>
<td>Rm 551</td>
<td>8:50-17:00</td>
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<tr>
<td>PerHealth'19</td>
<td>Rm 552</td>
<td>8:45-12:00</td>
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<tr>
<td>SmartEdge '19</td>
<td>Rm 509A</td>
<td>8:45-17:00</td>
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<tr>
<td>SPT-IoT'19</td>
<td>Rm 554</td>
<td>9:00-17:00</td>
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<tr>
<td>UNagi'19</td>
<td>Rm 555</td>
<td>9:00-15:00</td>
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</table>
General Information

1. Registration
The registration desk to be located in Kyoto International Conference Center will be open during the following hours:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Monday, March 11</td>
<td>7:30-18:00</td>
<td>Kyoto International Conference Center 1F Main Entrance</td>
</tr>
<tr>
<td>Tuesday, March 12</td>
<td>7:30-18:00</td>
<td>Kyoto International Conference Center 2F Room A Entrance</td>
</tr>
<tr>
<td>Wednesday, March 13</td>
<td>8:00-18:00</td>
<td>Kyoto International Conference Center 2F Room A Entrance</td>
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<tr>
<td>Thursday, March 14</td>
<td>8:00-18:00</td>
<td>Kyoto International Conference Center 2F Room A Entrance</td>
</tr>
<tr>
<td>Friday, March 15</td>
<td>8:00-17:00</td>
<td>Kyoto International Conference Center 1F Main Entrance</td>
</tr>
</tbody>
</table>

2. Conference Venue
Kyoto International Conference Center
Takaragaike, Sakyo-ku, Kyoto 606-0001 Japan
+81-075-705-1229

3. Social Events
◆Joint Reception of PerCom and JST-NSF-DATAIA Symposium
  Date & Time: Tuesday, March 12 / 18:00-20:00
  Venue: Kyoto International Conference Center, “New Hall”
◆PerCom2019 Banquet
  Date & Time: Wednesday, March 13 / 18:30-21:00
  Venue: Grand Prince Hotel Kyoto, “Prince Hall”

4. Public Wi-Fi Service
SSID: ICCK_Public_WiFi
No Passphrase
# Workshop Locations at a Glance

## Monday, March 11, Pre-conference Workshops

<table>
<thead>
<tr>
<th>Workshop name:</th>
<th>Room:</th>
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<tbody>
<tr>
<td>ARDUOUS'19 (3rd International Workshop on Annotation of useR Data for UbiquitOUS Systems)</td>
<td>665</td>
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<tr>
<td>BiRD'19 (International Workshop on Behavior analysis and Recognition for knowledge Discovery)</td>
<td>510</td>
</tr>
<tr>
<td>CASPer'19 (6th International Workshop on Crowd Assisted Sensing, PERvasive Systems and Communications)</td>
<td>509B</td>
</tr>
<tr>
<td>CoMoRea'19 (15th Workshop on Context Modeling and Recognition)</td>
<td>670</td>
</tr>
<tr>
<td>IQ2S'19 (10th International Workshop on Information Quality and Quality of Service for Pervasive Computing)</td>
<td>555</td>
</tr>
<tr>
<td>MUSICAL'19 (International Workshop on Mobile Ubiquitous Systems, Infrastructures, Communications and AppLications)</td>
<td>509A</td>
</tr>
<tr>
<td>PerAwareCity'19 (4th IEEE International Workshop on Pervasive Context-Aware Smart Cities and Intelligent Transport Systems)</td>
<td>662</td>
</tr>
<tr>
<td>PerCrowd'19 (2nd International Workshop on Context-Awareness for Multi-Device Pervasive and Mobile Computing)</td>
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<tr>
<td>PerIoT'19 (Third International Workshop on Mobile and Pervasive Internet of Things)</td>
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<tr>
<td>PerLS'19 (Third International Workshop on Pervasive Smart Living Spaces)</td>
<td>552</td>
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<tr>
<td>PerPersuasion'19 (1st International Workshop on Pervasive Persuasive System for Behavior Change)</td>
<td>670</td>
</tr>
<tr>
<td>PerVehicle'19 (1st International Workshop on Pervasive Computing for Vehicular Systems)</td>
<td>501</td>
</tr>
<tr>
<td>TSUM'19 (International Workshop on Technologies and Solutions for Urban Mobility)</td>
<td>501</td>
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<tr>
<td>WristSense'19 (Workshop on Sensing Systems and Applications using Wrist Worn Smart Devices)</td>
<td>664</td>
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<tr>
<td>PhD Forum Training</td>
<td>509B</td>
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<tr>
<td>N2Women meeting (Networking Event &amp; Panel Discussion)</td>
<td>509A</td>
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<tr>
<td>Workshop name:</td>
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<tr>
<td>EmotionAware'19 (3rd International Workshop on Emotion Awareness for Pervasive Computing with Mobile and Wearable Devices)</td>
<td>509B</td>
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<tr>
<td>PerDial'19 (The 1st International Workshop on Pervasive Computing and Spoken Dialogue Systems Technology)</td>
<td>664</td>
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<tr>
<td>PerFoT'19 (International Workshop on Pervasive Flow of Things)</td>
<td>501</td>
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<tr>
<td>PerHealth'19 (4th IEEE PerCom Workshop on Pervasive Health Technologies)</td>
<td>552</td>
</tr>
<tr>
<td>'19 (The Third International Workshop on Smart Edge Computing and Networking)</td>
<td>509A</td>
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<tr>
<td>SPT-IoT'19 (The Third Workshop on Security, Privacy and Trust in the Internet of Things)</td>
<td>554</td>
</tr>
<tr>
<td>UNAGI'19 (Workshop on UNmanned aerial vehicle Applications in the Smart City: from Guidance technology to enhanced system Interaction)</td>
<td>555</td>
</tr>
</tbody>
</table>
Monday, March 11, Pre-conference Workshops

| Morning coffee break: 10:00 am – 10:30 am | Rm 553 |
| Lunch: 12:00 pm – 1:30 pm | Swan |
| Afternoon coffee break: 3:00 pm – 3:30 pm | Rm 553 |

ARDUOUS'19 - 3rd International Workshop on Annotation of userR Data for UbiquitOUS Systems

Location: 665

ARDUOUS-S1: Keynote presentation

9:00 am – 10:00 am  
Chair: Kristina Yordanova (University of Rostock, Germany)

ARK.  
Lifelong learning in sensor-based human activity recognition  
Juan Ye (University of St Andrews, United Kingdom)

ARDUOUS-S2: Short presentations

10:30 am – 12:00 pm  
Chair: Emma L. Tonkin (University of Bristol, United Kingdom)

AR1. Permission-free Keylogging through Touch Events Eavesdropping on Mobile Devices

Luca Bedogni, Andrea Alcaras and Luciano Bononi (University of Bologna, Italy) Considering Manual Annotations in Dynamic Segmentation of Multimodal Lifelog Data Rashmi Gupta and Cathal Gurrin (Dublin City University, Ireland)

AR2. Semi-automated Annotation of Audible Home Activities

Matias Garcia-Constantino (Ulster University, United Kingdom); Jessica Beltran-Marquez (Instituto Politecnico Nacional, Mexico); Dagoberto Cruz-Sandoval (Centro de Investigacion Cientifica y de Educacion Superior de Ensenada, Mexico); Irvin Hussein López-Nava (Consejo Nacional de Ciencia y Tecnologia & Centro de Investigacion Cientifica y de Educacion Superior de Ensenada, Mexico); Jesus Favela (CICESE Research Center, Mexico); Andrew Ennis (Ulster University, United Kingdom); Chris Nugent (University of Ulster, United Kingdom); Joseph Rafferty, Ian Cleland, Jonathan Synnott and Netzahualcoyotl Hernandez-Cruz (Ulster University, United Kingdom)

AR3. Straightforward Recognition of Daily Objects in Smart Environments from Wearable Vision Sensor

Javier Medina Quero (University of Jaen & Campus Las Lagunillas, Spain); Federico Cruciani (Ulster University, United Kingdom); Lorenzo Seidenarii (University of Florence, Italy); Macarena Espinilla Estevez (University of...
Jaen, Spain); Chris Nugent (University of Ulster, United Kingdom)

AR4. **An annotation scheme for references to research artefacts in scientific publications**
David Schindler, Kristina Yordanova and Frank Krüger (University of Rostock, Germany)

AR5. **An investigation of transfer learning for deep architectures in group activity recognition**
Radu-Casian Mihailescu and Karl Casserfelt (Malmo University, Sweden)

<table>
<thead>
<tr>
<th>ARDUOUS-S3: Perspectives on annotation</th>
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<tr>
<td>1:30 pm – 2:30 pm  Chair: Adeline Paiement (Université de Toulon, France)</td>
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<tr>
<th>ARDUOUS-S4: Poster session</th>
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<tr>
<td>2:30 pm – 3:00 pm  Chair: Emma L. Tonkin (University of Bristol, United Kingdom)</td>
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<tr>
<th>ARDUOUS-S5: Panel discussion</th>
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<tr>
<td>3:30 pm – 4:45 pm  Chair: Kristina Yordanova (University of Rostock, Germany)</td>
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<tr>
<th>BiRD'19 - International Workshop on Behavior analysis and Recognition for knowledge Discovery</th>
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<td>Location: 510</td>
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<tr>
<th>BiRD-S0: Opening Remarks</th>
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<tbody>
<tr>
<td>9:00 am – 9:10 am  Chair: Takuya Maekawa (Osaka University, Japan)</td>
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<thead>
<tr>
<th>BiRD-S1: Keynote</th>
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<tr>
<td>9:10 am – 10:00 am  Chair: Takuya Maekawa (Osaka University, Japan)</td>
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<tr>
<th>BRK. Mining and Forecasting of Big Time-series Data</th>
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<tr>
<td>Yasushi Sakurai (The Institute of Scientific and Industrial Research, Osaka University, Japan)</td>
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<tr>
<th>BiRD-S2: Vision and trajectory</th>
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<tr>
<td>10:30 am – 11:30 am  Chair: Toru Tamaki (Hiroshima University, Japan)</td>
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<tr>
<th>BR1. Scene Context-aware Rapidly-exploring Random Trees for Global Path Planning</th>
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<tr>
<td>Tsubasa Hirakawa, Takayoshi Yamashita and Hironobu Fujiyoshi (Chubu University, Japan)</td>
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</tbody>
</table>
BR2. **Construction of a Route Choice Model for Application to a Pedestrian Flow Simulation**
Ryo Nishida (Tohoku University, Japan); Masaki Onishi (AIST, Japan); Koichi Hashimoto (Tohoku University, Japan)

BR3. **Object-based Activity Recognition Using Egocentric Video Based on Web Knowledge**
Tomoya Nakatani, Ryohei Kuga and Takuya Maekawa (Osaka University, Japan)

**BiRD-S3: Teaser Madness (Short presentations of poster papers)**
11:30 am – 12:00 pm Chair: Takuya Maekawa (Osaka University, Japan)

**BiRD-S4: Human Behavior Challenge 2018 Ceremony**
1:30 pm – 1:40 pm Chair: Toru Tamaki (Hiroshima University, Japan)

**BiRD-S5: Behavior and activity**
1:40 pm – 2:40 pm Chair: Toru Tamaki (Hiroshima University, Japan)

BR4. **Quantification of Aggregation and Associated Brain Areas in Drosophila Melanogaster**
Takuto Okuno, Koichi Hashimoto and Hiromu Tanimoto (Tohoku University, Japan)

BR5. **Estimating User Contexts from Mobile Application Usage Histories**
Toshimitsu Kamiya, Tatsuya Nakamura, Takuya Maekawa, Daichi Amagata and Takahiro Hara (Osaka University, Japan)

BR6. **Tracking Fluorescent Protein Transgenic Cells Using a Robot Microscope**
Toshiki Nozawa and Koichi Hashimoto (Tohoku University, Japan)

**BiRD-S6: Poster & discussion**
3:30 pm – 5:30 pm Chair: Takuya Maekawa (Osaka University, Japan)

BRP1. **The Next Phase for Tracking and Predicting the Navigational Behavior Using Machine Learning**
Susumu Takahashi, Satoshi Hoshino and Kaoru Ide (Doshisha University, Japan)

BRP2. **Preliminary Analysis of the Foraging Strategy of Seabirds on the Basis of Their Behavior and Physiological Cost**
Shiho Koyama, Yuichi Mizutani and Ken Yoda (Nagoya University, Japan)

BRP3. **Investigation of Large-Scale Navigation Behavior of Echolocating Bats During Natural Foraging Using GPS and Acoustic-GPS Data-**
BRP4. **Does Aging Change Foraging Behavior of Black-Tailed Gulls?**
Hirokazu Suzuki (Nagoya University, Japan); Yuichi Mizutani (Graduate School of Environmental Studies, Nagoya University, Japan); Akira Narita (Aomori-prefectural Hachinohe Daiichi School for SNE, Japan); Ken Yoda (Nagoya University, Japan)

BRP5. **Comparative Sequential Pattern Mining of Human Trajectory Data Collected from a Campus-wide BLE Beacon System**
Shinsuke Kajioka, Takuto Sakuma and Ichiro Takeuchi (Nagoya Institute of Technology, Japan)

BRP6. **Effects of Artificial Selection for Walking Movement on Reproductive Traits in the Red Flour Beetle Tribolium Castaneum**
Kentarou Matsumura and Takahisa Miyatake (Graduate School of Environmental and Life Science, Okayama University, Japan)

BRP7. **Trajectories Prediction of the Black-Tailed Gull Using the Inverse Reinforcement Learning**
Kanon Takemura and Ken Yoda (Nagoya University, Japan); Yuichi Mizutani (Graduate School of Environmental Studies, Nagoya University, Japan); Hirokazu Suzuki and Michi Tsuruya (Nagoya University, Japan); Tsubasa Hirakawa (Chubu University, Japan)

BRP8. **Recognizing Humans from Their Behavioral Patterns**
Sonia (Indian Institute of Technology Guwahati, India)

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**CASPer'19 - 6th International Workshop on Crowd Assisted Sensing, PERvasive Systems and Communications**

**Location:** 509B

**CASPer19-S1: Keynote**

9:00 am – 10:00 am Chair: **Thomas Silverston** (Shibaura Institute of Technology, Japan)

**CAK.**  **Security and Privacy Challenges in the Internet of Things**
Kui Ren (Zhejiang University & SUNY Buffalo)

**CASPer19-S2: Technical Session**

10:30 am – 11:30 am Chair: **Thomas Silverston** (Shibaura Institute of Technology, Japan)

**CA1.**  **How Smooth is my Ride? Detecting Bikeway Conditions from**
**Smartphone Video Streams**  
Janine Beecken and Andreas Reinhardt (TU Clausthal, Germany)

**CA2. Exploring data forwarding with Bluetooth for participatory crowd monitoring**  
Christin Groba (Technische Universitaet Dresden, Germany); Thomas Springer (Technische Universität Dresden, Germany)

**CA3. Simulation-based evaluation of a crowdsourced expert peer review system**  
Imre I Lendák, IV (University of Novi Sad & Faculty of Technical Sciences, Serbia)

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**CASPer19-S3: Panel with Speakers**

11:30 am – 12:00 pm  
Chair: **Thomas Silverston** (Shibaura Institute of Technology, Japan)

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**CoMoRea'19 - 15th Workshop on Context Modeling and Recognition**

Location: 670

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**CoMoRea-S0: Welcome Address**

8:30 am – 8:35 am  
Chairs: **Pascal Hirmer** (University of Stuttgart, Germany)  
**Jadwiga Indulska** (The University of Queensland, Australia)  
**Timo Sztyler** (University of Mannheim, Germany)

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**CoMoRea-S1: CoMoRea Keynote**

8:35 am- 9:20 am  
Chair: **Jadwiga Indulska** (The University of Queensland, Australia)

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**CRK. Human Activity Recognition in Smart-Home Environments for Health-Care Applications**  
Gabriele Civitarese (University of Milan, Italy)

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**CoMoRea-S2: Activity Recognition Using Deep Learning Approaches**

9:20 am – 10:00 am  
Chair: **Jadwiga Indulska** (The University of Queensland, Australia)

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**CR1. On the Combination of IMU and Optical Flow for Action Recognition**  
Taha Alhersh and Heiner Stuckenschmidt (University of Mannheim, Germany)
CR2. **Combining Symbolic Reasoning and Deep Learning for Human Activity Recognition**
Fernando Moya Rueda (TU Dortmund University, Germany); Stefan Lüdtke, Max Schröder, Kristina Yordanova and Thomas Kirste (University of Rostock, Germany); Gernot Fink (TU Dortmund University, Germany)

**CoMoRea-S3: Context and Activity Recognition**
10:30 am – 11:50am  Chair: **Pascal Hirmer** (University of Stuttgart, Germany)

CR3. **Human Activity and Context Recognition using Lifted Marginal Filtering**
Stefan Lüdtke, Kristina Yordanova and Thomas Kirste (University of Rostock, Germany)

CR4. **The Impact of Data Reduction on Wearable-Based Human Activity Recognition**
Hosein Nourani and Emad Shihab (Concordia University, Canada); Omid Sarbishei (Motsai Research, Canada)

CR5. **Worker Assistance in Smart Production Environments using Pervasive Technologies**
Hitesh Dhiman (Ostwestfalen-Lippe University of Applied Sciences, Germany)

Alexander Diete, Timo Sztyler and Heiner Stuckenschmidt (University of Mannheim, Germany)

**CoMoRea-S4: Wrap-up and Discussion**
11:50 am – 12:00pm  Chair: **Pascal Hirmer** (University of Stuttgart, Germany)
IQ2S'19 - 10th International Workshop on Information Quality and Quality of Service for Pervasive Computing

Location: 555

IQ2S: Opening
9:00 am – 9:10 am

IQ2S-IS1: Invited Speech
9:10 am – 10:00 am  Chair: Sajal Das (Missouri University of Science and Technology, USA)

IQK1. Coordinating distributed speaking objects
Franco Zambonelli (University of Modena and Reggio Emilia, Italy)

IQ2S-S1: Technical Session 1
10:30 am – 11:50 am  Chair: Flora D Salim (RMIT University, Australia)

IQ1. Managing QoS in Smart Buildings Through Software Defined Network and Usage Control
Andrea Saracino (Istituto di Informatica e Telematica, Italy); Fabio Martinelli (CNR-IIT, Italy); Paolo Mori (IIT, CNR, Italy); Christina Michailidou (IIT-CNR, Italy)

IQ2. Evaluating Performance of In-Situ Distributed Processing on IoT Devices by Developing a Workspace Context Recognition Service
Jose Talusan, Francis Tiausas, Sopicha Stirapongsasuti, Yugo Nakamura, Teruhiro Mizumoto and Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

IQ3. Know Thy Quality: Assessment of Device Detection by WiFi Signals
Tim Rütermann and Aboubakr Benabbas (University of Bamberg, Germany); Daniela Nicklas (University of Bamberg & Faculty Information Systems and Applied Computer Science, Germany)

IQ4. Road Anomaly Classification for Low-Cost Road Maintenance and Route Quality Maps
Naufil Hassan (Information Technology University, Pakistan); Ifrah Siddiqui (Information Technology University, Lahore Pakistan, Pakistan); Suleman Mazhar (Information Technology University, Pakistan); Hadia Hameed (Stevens Institute of Technology, USA)

IQ2S-IS1: Invited Speech
1:30 pm – 2:10 pm  Chair: Franco Zambonelli (University of Modena and Reggio Emilia, Italy)
1Q2S-S2: Technical Session 2
2:10 pm – 3:10 pm  Chair: Luca Bedogni (University of Bologna, Italy)

IQ5. Combining Numerical and Visual Approaches in Validating Sleep Data Quality of Consumer Wearable Wristbands
Zilu Liang (The University of Tokyo & National Institute of Advanced Industrial Science and Technology, Japan); Mario Alberto Chapa Martell (CAC Corporation, Japan)

IQ6. NN-SAR: A Neural Network Approach for Spatial AutoRegression
Pranita Dewan (IBM, USA); Raghu Ganti (IBM T J Watson Research Center, USA); Mudhakar Srivatsa (IBM T.J. Watson Research Center, USA); Sebastian Stein (University of Southampton, United Kingdom)

IQ7. Automatic Deadline-Oriented Sampling Method for Coarse-grained Stream Processing
Sunyanan Choochotkaew, Hirozumi Yamaguchi and Teruo Higashino (Osaka University, Japan)

1Q2S: Closing and Summary
3:10 pm – 3:15 pm
MU2. **Proposal of a Spherical Heat Map in 360-Degree Internet Live Broadcasting Using Viewers' POV**  
Masaya Takada, Dai Nishioka and Yoshia Saito (Iwate Prefectural University, Japan)

MU3. **Improvement of Image Retrieval-based Visual Localization Using Structured Database**  
Ayari Akada and Junji Takahashi (Kagoshima University, Japan); Yong Yu (Kagoshima University & Graduate School of Science and Engineering, Japan)

<table>
<thead>
<tr>
<th><strong>MUSICAL-S3: Network and Battery-less Systems</strong></th>
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<td>10:30 am – 11:50 am</td>
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MU4. **A Distributed Semantic Knowledge Framework for Collaborative Robotics**  
Soumyadeep Choudhury (Tata Consultancy Services - Research and Innovation, India); Sounak Dey (TCS, India); Arijit Mukherjee (Tata Consultancy Services, India)

MU5. **A Traffic-Demand-Aware Routing and Scheduling for CSMA-based Wireless Mesh Networks**  
Yi Tian and Takuya Yoshihiro (Wakayama University, Japan)

MU6. **A Feasibility Study on Battery-less Travel Context Estimation Using Ambient Backscatter**  
Toru Maeda, Akira Uchiyama and Teruo Higashino (Osaka University, Japan)

MU7. **Exploring Suitable Electrical Elements on Human Detection Sensor Using Electromagnetic Noise**  
Kazuki Ikeda and Ren Ohmura (Toyohashi University of Technology, Japan)

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<th><strong>MUSICAL-S4: Group Discussion</strong></th>
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<td>1:30 am – 2:30 pm</td>
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<tr>
<th><strong>MUSICAL-S5: Closing</strong></th>
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<td>2:30 am – 2:40 pm</td>
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PerAwareCity'19 - 4th IEEE International Workshop on Pervasive Context-Aware Smart Cities and Intelligent Transport Systems

Location: 662

PerAwareCity-S1: Welcome Address
9:00 am – 9:10 am  Chairs: Vaskar Raychoudhury (Miami University of Ohio, USA)
                       Janick Edinger (University of Mannheim, Germany)
                       Seng Loke (Monash University, Australia)

PerAwareCity-S2: Keynote Speech
9:15 am – 10:00 am

PACK.  When IoT Meets Big Data
       Jiannong Cao (The Hong Kong Polytechnic University Hong Kong)

PerAwareCity-S3: Smart Transportation 1
10:30 am – 12:00 pm  Chair: Vaskar Raychoudhury (Miami University of Ohio, USA)

PAC1.  A Novel Input Set for LSTM-based Transport Mode Detection
       Amac M. Guvensan (Yildiz Technical University, Turkey); Guven Asci
              (Istanbul Kultur University, Turkey)

PAC2.  A Qualitative and Quantitative Analysis of Real Time Traffic Information Providers
       Tim Bauer and Janick Edinger (University of Mannheim, Germany);
              Christian Becker (Universität Mannheim, Germany)

PAC3.  Towards Adaptive Car-to-Cloud Communication
       Stefan Herrnleben (University of Wuerzburg, Germany); Martin
              Pfannemüller (University of Mannheim, Germany); Christian Krupitzer
              (Universität Würzburg, Germany); Samuel Kounev (University of
              Wuerzburg, Germany); Michele Segata (University of Trento, Italy); Felix
              Fastnacht and Magnus Nigmann (Intedis GmbH & Co. KG, Germany)

PerAwareCity-S4: Smart Transportation 2
1:30 pm – 3:00 pm  Chair: Janick Edinger (University of Mannheim, Germany)

PAC4.  Vehicle Availability Profiling from Diverse Data Sources
       Sophie Naylor (University of Nottingham & AT Kearney, United
              Kingdom (Great Britain)); James Pinchin (University of Nottingham,
              United Kingdom (Great Britain)); Rebecca Gough (A. T. Kearney, United
Kingdom (Great Britain)); Mark Gillott (University of Nottingham, United Kingdom (Great Britain))

PAC5. **A Blockchain-based Architecture for Integrated Smart Parking Systems**
Sabbir Ahmed (American International University Bangladesh, Bangladesh); Soaibuzzaman M (American International University-Bangladesh, Bangladesh); Mohammad Saiedur Rahaman (RMIT University, Australia)

PAC6. **Error Sources in the Analysis of Crowdsourced Spatial Tracking Data**
Casper Van Gheluwe (Ghent University & Flanders Make, Belgium); Angel J. Lopez (Ghent University, Belgium & Escuela Superior Politecnica del Litoral - ESPOL, Ecuador); Sidharta Gautama (Ghent University, Belgium)

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**PerAwareCity-S5: Smart City**

3:30 pm – 4:30 pm   Chair: **Mohammad Saiedur Rahaman** (RMIT University, Australia)

PAC7. **Flood Area Estimation using Personal Location Data - Case Study of Japan floods in 2018**
Kei Hiroi (Nagoya University, Japan); Takahiro Yoshida and Yoshiki Yamagata (National Institute for Environmental Studies, Japan); Nobuo Kawaguchi (Nagoya University, Japan)

PAC8. **Yours Truly? Survey on Accessibility of Our Personal Data in the Connected World**
Manh Nguyen, Md Osman Gani and Vaskar Raychoudhury (Miami University, USA)

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**PerAwareCity-S6: Group Discussion and Closing Session**

4:30 pm – 5:30 pm

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**PerCrowd'19 - 2nd International Workshop on Context-Awareness for Multi-Device Pervasive and Mobile Computing**

**Location:** 554

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**PerCrowd: Opening session**

8:45 am – 9:00 am
**PerCrowd-S1: Multi-device experience**

9:00 am – 10:00 am  Chair: **Petteri Nurmi** (University of Helsinki, Finland & Lancaster University, United Kingdom)

**PC1.**  **Understanding Usability Challenges in Shifting between Multiple Devices during a Task**  
Ngoc Nguyen and Hyowon Lee (Singapore University of Technology and Design, Singapore)

**PC2.**  **Bucketfood: A Crowdsourcing Platform for Promoting Gastronomic Tourism**  
Aimilia-Myriam Michail and Damianos Gavalas (University of the Aegean, Greece)

**PerCrowd: Keynote**

10:30 am – 12:00 pm

**PCK.**  **OpportunisticCrowds: A Place for Device-to-Device Collaboration in Pervasive Crowd Applications**  
Christine Julien (University of Texas at Austin, USA)

**PerCrowd-S2: Multi-device sensing**

1:30 pm – 3:00 pm  Chair: **Huber Flores** (University of Helsinki, Finland)

**PC3.**  **SCENTS: Collaborative Sensing in Proximity IoT Networks**  
Chenguang Liu, Jie Hua and Christine Julien (University of Texas at Austin, USA)

**PC4.**  **Protecting IoT-environments against Traffic Analysis Attacks with Traffic Morphing**  
Ibbad Hafeez (University of Helsinki, Finland); Markku Antikainen (Aalto University, Finland); Sasu Tarkoma (University of Helsinki, Finland)

**PC5.**  **A Vision for Pervasive Information Visualisation to Support Passenger Navigation in Public Metro Networks**  
Paul Craig and Yu Liu (Xian Jiaotong Liverpool University, P.R. China)

**PerCrowd-S3: Multi-device computing**

3:30 pm – 5:00 pm  Chair: **Tristan Braud** (The Hong Kong University of Science and Technology, Hong Kong)

**PC6.**  **Device to Device Collaboration for Mobile Clouds in Drop Computing**
PC7. Towards a Runtime Devices Adaptation in a Multi-Device Environment Based on People's Needs
Daniel Flores-Martin, Javier Berrocal Olmeda, José García-Alonso and Juan Manuel Murillo Rodríguez (University of Extremadura, Spain)

PC8. AI on the Move: From On-Device to On-Multi-Device
Huber Flores (University of Helsinki, Finland); Petteri Nurmi (University of Helsinki, Finland & Lancaster University, United Kingdom (Great Britain)); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong)

PerCrowd: Panel discussion and closing remarks
5:00 pm – 6:00 pm

PCP. AI-powered Multi-device Systems and Applications
Huber Flores (University of Helsinki, Finland); Petteri Nurmi (University of Helsinki, Finland & Lancaster University, United Kingdom (Great Britain)); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong)
Marten Fischer (University of Applied Sciences Osnabrück, Germany); Ralf Tönjes and Alfred Scheerhorn (University of Applied Sciences Osnabrück, Germany)

**PI2. ComPOS: Composing Oblivious Services**  
Alfred Åkesson, Görel Hedin, Boris Magnusson and Mattias Nordahl  
(Lund University, Sweden)

**PI3. Origin-Destination Tracking Analysis of an Intelligent Transit Bus System using Internet of Things**  
Samy S. El-Tawab, Zachary Yorio, Ahmad Salman and Raymond Oram  
(James Madison University, USA); B. Brian Park (University of Virginia, USA)

<table>
<thead>
<tr>
<th>Session 2: Systems and Applications in IoT</th>
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<tbody>
<tr>
<td>1:30 pm – 3:00 pm</td>
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<tr>
<td>Chair: <strong>Ahmad Salman</strong> (James Madison University, USA)</td>
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Fan Li and Siobhán Clarke (Trinity College Dublin, Ireland)

Aida Ghazizadeh (Old Dominion University, USA); Puya Ghazizadeh  
(Seton Hall University, USA); Stephan Olariu (Old Dominion University, USA)

**PI6. Access Time Improvement Framework for Standardized IoT Gateways**  
Asad Javed (Aalto University, School of Science, Finland); Narges Yousefnezhad (Aalto University, Finland); Jérémy Robert (University of Luxembourg, Luxembourg); Keijo Heljanko (University of Helsinki & HIIT, Finland); Kary Främling (Aalto University & ControlThings Oy Ab, Finland)

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<tr>
<th>Session 3: IoT applications and implementations</th>
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<tr>
<td>3:30 pm – 4:30 pm</td>
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<tr>
<td>Chair: <strong>Puya Ghazizadeh</strong> (Seton Hall University, USA)</td>
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**PI7. A False Sense of Home Security - Exposing the Vulnerability in Away Mode of Smart Plugs**  
Austin Wang and Shahriar Nirjon (University of North Carolina at Chapel Hill, USA)

**PI8. Cloud-based Low-cost Energy Monitoring System through Internet of Things**  
Claire Fulk, Grant Hobar, Kevin Olsen and Samy S. El-Tawab (James Madison University, USA); Puya Ghazizadeh (Seton Hall University, USA); Farzana Rahman (Florida International University, USA)
PerIoT-S6: Closing remarks
4:30 pm – 4:50 pm   Chair: Puya Ghazizadeh (Seton Hall University, USA)

PerLS'19 - Third International Workshop on Pervasive Smart Living Spaces
Location: 552

PerLS-K: Keynote
11:30 am – 12:15 pm   Chairs: Andreas Jacobsson (Malmö University, Sweden)

PLSK. Interoperability in Smart Spaces
Christian Becker (Universität Mannheim, Germany)

PerLS-S1: Smart Living
1:30 pm – 2:45 pm   Chair: Brent Lagesse (University of Washington Bothell, USA)

PLS1. A Study of User Intent in Immersive Smart Spaces
Kelsey Rook (Andrews University, USA); Brendan Witt (University of Maryland, Baltimore County, USA); Reynold Bailey, Joe Geigel, Peizhao Hu and Ammina Kothari (Rochester Institute of Technology, USA)

PLS2. Predicting Occurrence Time of Daily Living Activities Through Time Series Analysis of Smart Home Data
Wataru Sasaki, Masashi Fujiwara, Manato Fujimoto and Hirohiko Suwa (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

PLS3. Everyday Life ToDo Display on Ceiling for Smart Living Space
Shigeyuki Hirai and Michi Takamura (Kyoto Sangyo University, Japan)

PerLS-S2: IoT in Smart Spaces
3:15 pm – 4:30 pm   Chair: Mohan J Kumar (Rochester Institute of Technology, USA)

PLS4. An End-to-end Security Model for IoT Ecosystems
Joseph Bugeja (Malmo University, Sweden); Bahtijar Vogel and Andreas Jacobsson (Malmö University, Sweden); Rimpu Varshney (Sony Mobile Communications, Sweden)

PLS5. Improving Pedestrian Dead Reckoning Using Likely Paths and Backtracking for Mobile Devices
PerPersuasion'19 - 1st International Workshop on Pervasive Persuasive System for Behavior Change

Location: 670

### PerPersuasion-S0: Opening

1:15 pm – 1:30 pm Chair: **Yutaka Arakawa** (Nara Institute of Science and Technology, Japan)

### PerPersuasion-S1: Psychological persuasion

1:30 pm – 3:00 pm Chair: **Yoshito Tobe** (Aoyama Gakuin University, Japan)

PP1. **Pervasive Persuasion for Stress Self-Regulation**  
Yingding Wang, Nikolai Fischer and François Bry (Ludwig-Maximilian University of Munich, Germany)

PP2. **Development of a Psychological-Behavioral Model of Behavioral Change**  
Takanobu Matsuura (Nihon University, Japan); Keita Sato (DENSO Corporation, Japan)

PP3. **Facilitating Unmotivated Tasks Based on Affection for Virtual Pet**  
Kaori Fujinami (Tokyo University of Agriculture and Technology, Japan)

### PerPersuasion-S2: Empirical research

3:30 pm – 5:00 pm Chair: **Tadashi Okoshi** (Keio University, Japan)

PP4. **Design of Behavior Change Environment with Interactive Signage Having Active Talk Function**  
Zhihua Zhang (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Harri Oinas-Kukkonen (University of Oulu, Finland)

PP5. **Preliminary Questionnaire-Based Study on Using Behaviour Change to Increase Tourism to Toyama**  
Yukitoshi Kashimoto and Masahito Terashita (KDDI Research Inc., Japan); Hiroki Ishizuka (KDDI Research Inc., Japan); Masato Taya (KDDI Research Inc., Japan); Arei Kobayashi (KDDI Research, Japan)

Kenta Taki and Yuki Matsuda (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

**PerVehicle'19 - 1st International Workshop on Pervasive Computing for Vehicular Systems**

**Location:** 501

**PerVehicle-S1: TSUM Workshop Mini-Session**

9:00 am – 10:00 am  
Chair: **Susumu Ishihara** (Shizuoka University, Japan)

**TS1.**  **Data-driven Methods for Dockless Bike Infrastructure Planning**  
William Barbour (Vanderbilt University & Institute for Software Integrated Systems, USA); Ashley Majewski, Leigh Shoup, Eric Kopstain and Craig Philip (Vanderbilt University, USA); Daniel Work (Vanderbilt University & Institute for Software Integrated Systems, USA)

**TS2.**  **WheelShare: Crowd-sensed Surface Classification for Accessible Routing**  
Janick Edinger (University of Mannheim, Germany); Vaskar Raychoudhury (Miami University, USA); Alexandra Hofmann (University of Mannheim, Germany); Anton Wachner and Christian Becker (Universität Mannheim, Germany); Christian Krupitzer (Universität Würzburg, Germany)

**PerVehicle-S2: Connected Vehicles**

10:30 am – 12:00 pm  
Chair: **Hiroshi Shigeno** (Keio University, Japan)

**PV1.**  **A Comparison of Decentralized Congestion Control Algorithms for Multiplatooning Communications**  
Ali Balador (Mälardalen University & RISE SICS Västerås, Sweden); Chumeng Bai (KTH Royal Institute of Technology, Sweden); Foroogh Sedighi (Niroo Research Institute, Iran)

**PV2.**  **Toward a Better IPA Experience for a Connected Vehicle by Means of Usage Prediction**  
Osamu Masutani (Nissan Motor Co., Ltd., Japan)

**PV3.**  **A Scalable MDP-based Sensing and Processing Framework for Vehicular Networks**  
Rajarshi Chattopadhyay and Chen-Khong Tham (National University of Singapore, Singapore)
**PerVehicle-S3: Enabling VANET**
1:30 pm – 3:00 pm  Chair: **Hiroaki Morino** (Shibaura Institute of Technology, Japan)

**PV4. A System Design of Tight Physical Integration for Large-scale Vehicular Network Emulation**
Arata Kato (Shizuoka University, Japan); Mineo Takai (University of California, Los Angeles & Osaka University, USA); Susumu Ishihara (Shizuoka University, Japan)

**PV5. A Hybrid Trust Management Heuristic for VANETs**
Adnan Mahmood (Macquarie University, Australia & TSSG, Science Foundation Ireland - CONNECT, Ireland); Bernard Butler (TSSG, Science Foundation Ireland - CONNECT, Ireland); Wei Emma Zhang, Quan Z. Sheng and Sarah Ali Siddiqui (Macquarie University, Australia)

Kaito Furukawa (Shizuoka University, Japan); Mineo Takai (University of California, Los Angeles & Osaka University, USA); Susumu Ishihara (Shizuoka University, Japan)

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**PerVehicle-S4: Vehicle Sensing Technologies**
3:30 pm – 5:00 pm  Chair: **Hirozumi Yamaguchi** (Osaka University, Japan)

**PV7. Initial Design of Acoustic Vehicle Detector with Wind Noise Suppressor**
Masato Uchino, Shigemi Ishida and Kazuo Kubo (Kyushu University, Japan); Shigeaki Tagashira (Kansai University, Japan); Akira Fukuda (Kyushu University, Japan)

**PV8. Vehicular Route Identification Using Mobile Devices Integrated Sensors**
Luca Bedogni and Luciano Bononi (University of Bologna, Italy)

**PV9. Road Surface Condition Inspection Using a Laser Scanner Mounted on an Autonomous Driving Car**
Kenta Urano and Kei Hiroi (Nagoya University, Japan); Shinpei Kato (University of Tokyo, Japan); Nozomi Komagata (NICHIREKI CO., LTD, Japan); Nobuo Kawaguchi (Nagoya University, Japan)
TSUM'19 - International Workshop on Technologies and Solutions for Urban Mobility
Location: 501

PerVehicle-S1: TSUM Workshop Mini-Session
9:00 am – 10:00 am  Chair: Susumu Ishihara (Shizuoka University, Japan)

TS1. Data-driven Methods for Dockless Bike Infrastructure Planning
William Barbour (Vanderbilt University & Institute for Software Integrated Systems, USA); Ashley Majewski, Leigh Shoup, Eric Kopstain and Craig Philip (Vanderbilt University, USA); Daniel Work (Vanderbilt University & Institute for Software Integrated Systems, USA)

TS2. WheelShare: Crowd-sensed Surface Classification for Accessible Routing
Janick Edinger (University of Mannheim, Germany); Vaskar Raychoudhury (Miami University, USA); Alexandra Hofmann (University of Mannheim, Germany); Anton Wachner and Christian Becker (Universität Mannheim, Germany); Christian Krupitzer (Universität Würzburg, Germany)

The Third IEEE International Workshop on Sensing Systems and Applications Using Wrist Worn Smart Devices (WristSense)
Location:664

WristSense-KN: Keynote Talk
9:00 am – 10:00 am

WSK. Interactive Technology for Personal Healthcare Applications
Koji Yatani (University of Tokyo, Japan)

WristSense-S1: Wellness and Digital Health
10:30 pm – 12:00 pm  Chair: Archan Misra (Singapore Management University, Singapore)

WS1. Heart Rate Estimation Algorithm From Wrist-based Photoplethysmogram Using Subspace Learning Method
Nasimuddin Ahmed (Tata Consultancy Service, India); Shalini Mukhopadhyay (Tata Consultancy Service, India); Varsha Sharma (TCS Research & Innovation, India); Avik Ghose (Tata Consultancy Services, India)
WS2. **Design and Assessment of Myoelectric Games for Prosthesis Training of Upper Limb Amputees**  
Meeralakshmi Radhakrishnan (Singapore Management University, Singapore); Asim Smailagic, Brian French and Daniel Siewiorek (Carnegie Mellon University, USA); Rajesh K Balan (Singapore Management University, Singapore)

WS3. **On-site Personal Sport Skill Improvement Support Using only a Smartwatch**  
Guillaume Lopez, Shohei Abe, Kengo Hashimoto and Anna Yokokubo (Aoyama Gakuin University, Japan)

WS4. **Dynamic Offset Correction for Smartphone Thermal Cameras Using a Wristband Sensor**  
Hiroki Yoshikawa, Akira Uchiyama and Teruo Higashino (Osaka University, Japan)

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**WristSense-S2: Novel Applications**

1:30 pm – 3:00 pm  
Chair: **Abhishek Mukherji** (Cisco Systems Inc. & Worcester Polytechnic Institute, USA)

WS5. **Strikes-Thrusts Activity Recognition Using Wrist Sensor Towards Pervasive Kendo Support System**  
Yugo Nakamura, Yohei Torigoe, Manato Fujimoto and Masashi Takata (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

WS6. **Gesture-based incident reporting through smart watches**  
Panagiotis Kasnesis (National Technical University of Athens, Greece); Christos Chatzigeorgiou (Piraeus University of Applied Science, Greece); Lazaros Toumanidis (University of West Attica, Greece); Charalampos Z Patrikakis (Piraeus University of Applied Sciences (TEI of Piraeus) & Computer Networks & Services Research Team (CONSErT), Greece)

WS7. **Touch Sensing on the Forearm Using the Electrical Impedance Method**  
Yutaro Suzuki, Kodai Sekimori, Buntarou Shizuki and Shin Takahashi (University of Tsukuba, Japan)

WS8. **Wrist-Worn Capacitive Sensor for Activity and Physical Collaboration Recognition**  
Sizhen Bian (German Research Center for Artificial Intelligence, Germany); Vitor F Rey (Deutsches Forschungszentrum für Künstliche Intelligenz & University of Kaiserslautern, Germany); Junaid Younas (Technical University Kaiserslautern, Germany); Paul Lukowicz (DFKI and University of Kaiserslautern, Germany)
**WristSense-S3: Data Collection Framework**

3:30 pm – 3:50 pm

**WS9. Scaling-out Longitudinal Clinical Analytics with Dataflow Processing**
Joan Saez Pons, Cosmin Stamate and David Weston (Birkbeck College, United Kingdom); George Roussos (Birkbeck College, University of London, United Kingdom)

**WristSense-P: Panel**

4:00 pm – 5:00 pm  Chair: **Nabil Alshurafa** (Northwestern University, USA)

**WSP. How to Establish Objective Gold Standard Measurements for Health Constructs**

**PhD Forum training (internal workshop for PhD Forum authors only)**

Location: 509B
1:30 pm - 4:30 pm  Chairs: **Jin Nakazawa** (Keio University, Japan)  
**Vana Kalogeraki** (Athens University of Economics and Business, Greece)

**N2Women Meeting**

Location: 509A
4:00 pm – 5:00 pm  Organizer: **Hannaneh Barahouei Pasandi** (Virginia Commonwealth University, USA)

Mentors:
**Flora D Salim** (RMIT University, Australia)  
**Chelsea Dobbins** (The University of Queensland, Australia)
Tuesday, March 12

**Conference Opening**  
Room A  
8:30 am – 8:45 am Chairs: **Behrooz Shirazi** (Washington State University, USA)  
**Keiichi Yasumoto** (Nara Institute of Science and Technology, Japan)

**Keynote Lecture**  
Room A  
8:45 am – 9:45 am Chair: **Behrooz Shirazi** (Washington State University, USA)

K1. **Networked Robot Swarms – Ready or Not?**  
Kevin Fall (ACM, USA)

**Coffee/Tea Break**  
Foyer  
9:45 am – 10:20 am

**Session 1: Pervasive Sensing and Data Collection**  
Room A  
10:20 am – 11:50 am Chair: **Christine Julien** (University of Texas at Austin, USA)

1A1. **WiWear: Wearable Sensing via Directional WiFi Energy Harvesting**  
Vu Tran and Archan Misra (Singapore Management University, Singapore); Jie Xiong (University of Massachusetts Amherst, USA); Rajesh K Balan (Singapore Management University, Singapore)

1A2. **bioSmartSense: A Bio-inspired Data Collection Framework for Energy-efficient, QoI-aware Smart City Applications**  
Satyaki Roy (Missouri University of Science and Technology, USA); Nirnay Ghosh (Singapore University of Technology and Design (SUTD), Singapore); Sajal K. Das (Missouri University of Science and Technology, USA)

1A3. **Improving Experience Sampling with Multi-view User-driven Annotation Prediction**  
Jonathan Liono and Flora D Salim (RMIT University, Australia); Niels van Berkel and Vassilis Kostakos (The University of Melbourne, Australia); Alex Kai Qin (Swinburne University of Technology, Australia)

**PhD Forum “Teaser Madness”**  
Room A  
11:50 am – 12:10 pm Chairs: **Jin Nakazawa** (Keio University, Japan)  
**Vana Kalogeraki** (Athens University of Economics and Business, Greece)
Lunch
12:10 pm – 1:30 pm

Session 2: Trust, Security, Privacy
Room A
1:30 pm – 3:30 pm  Chair: Sergio Mascetti (Università degli Studi di Milano & EveryWare Technologies, Italy)

2A1. On The Performance Bound of Structured Key-Based RFID Authentication
Kazuya Sakai (Tokyo Metropolitan University, Japan); Min-Te Sun (National Central University, Taiwan); Wei-Shinn Ku (Auburn University, USA); Ten-Hwang Lai (Ohio State University, USA)

2A2. Aggregating Crowd Wisdom via Blockchain: A Private, Correct, and Robust Realization
Huayi Duan, Yifeng Zheng and Yuefeng Du (City University of Hong Kong, Hong Kong); Zhou Anxin (City of University of Hong Kong, Hong Kong); Cong Wang (City University of Hong Kong, Hong Kong); Man Ho Au (The Hong Kong Polytechnic University, Hong Kong)

2A3. Do You See What I See? Detecting Hidden Streaming Cameras Through Similarity of Simultaneous Observation
Kevin Wu (University of Washington, USA); Brent Lagesse (University of Washington Bothell, USA)

2A4. DoubleEcho: Mitigating Context-Manipulation Attacks in Copresence Verification
Hien Thi Thu Truong (NEC Laboratories Europe, Germany); Juhani Toivonen (University of Helsinki, Finland); Thien Duc Nguyen (Technische Universität Darmstadt, Germany); Claudio Soriente (NEC Laboratories Europe, Germany); Sasu Tarkoma (University of Helsinki, Finland); N. Asokan (Aalto University & University of Helsinki, Finland)

Coffee/Tea Break
Foyer
3:30 pm – 4:00 pm

Session 3: Concise Contributions
Room A
4:00 pm – 5:00 pm  Chair: Ali Hurson (Missouri University of Science and Technology, USA)

3A1. Autoencoders for QoS Prediction at the Edge
Gary White (Trinity College Dublin, Ireland); Andrei Palade (Distributed Systems Group, School of Computer Science and Statistics, Trinity College Dublin, Ireland); Christian Cabrera and Siobhán Clarke (Trinity College Dublin, Ireland)
3A2. **Representation Learning for Minority and Subtle Activities in a Smart Home Environment**  
Andrea Rosales Sanabria, Tom Kelsey and Juan Ye (University of St Andrews, United Kingdom)

3A3. **Hot or Not? Robust and Accurate Continuous Thermal Imaging on FLIR cameras**  
Titti Malmivirta, Jonatan Hamberg, Eemil Lagerspetz and Xin Li (University of Helsinki, Finland); Ella Peltonen (University of Oulu, Finland); Huber Flores (University of Helsinki, Finland); Petteri Nurmi (University of Helsinki, Finland & Lancaster University, United Kingdom)

3A4. **Robust Audio Sensing with Multi-Sound Classification**  
Peter M Haubrick and Juan Ye (University of St Andrews, United Kingdom)

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**WiP and Demo “Teaser Madness”**

<table>
<thead>
<tr>
<th>Time</th>
<th>Room A</th>
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</thead>
</table>
| 5:00 pm – 5:30 pm | Chairs: Takuya Maekawa (Osaka University, Japan)  
Peizhao Hu (Rochester Institute of Technology, USA)  
Susumu Ishihara (Shizuoka University, Japan)  
Salil S Kanhere (UNSW Sydney, Australia) |

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**Joint Reception of PerCom and JST-NSF-DATAIA Symposium (parallel to PhD/Demo/WiP Posters)**

<table>
<thead>
<tr>
<th>Time</th>
<th>New Hall</th>
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<tr>
<td>6:00 pm – 8:00 pm</td>
<td>Sponsor exhibition in the same room</td>
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**Work-in-Progress Poster Session (parallel)**

<table>
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<tr>
<th>Time</th>
<th>New Hall</th>
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</table>
| 6:00 pm – 8:00 pm | Chairs: Takuya Maekawa (Osaka University, Japan)  
Peizhao Hu (Rochester Institute of Technology, USA) |

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W1. **Ambient Cues of Kitchen Counter in Guiding Cooking Activities for Alzheimer's Patient**  
Ku Nurul Fazira Ku Azir (Universiti Malaysia Perlis, Malaysia)

W2. **Adaptive C-RAN Architecture for Smart City using Crowdsourced Radio Units**  
Yu Nakayama (Aoyama Gakuin University, Japan); Kazuaki Honda (Keio University, Japan); Daisuke Hisano (Osaka University, Japan); Kazuki Maruta (Chiba University, Japan)

W3. **System Architecture for Content-Oriented IoT Services**  
Hiromu Ogawa (NHK, Japan); Hisayuki Ohmata (NHK (Japan Broadcasting Corporation), Japan); Masaya Ikeo (NHK, Japan); Arisa Fujii (NHK (Japan Broadcasting Corporation), Japan); Hiroshi Fujisawa (Japan Broadcasting Corporation (NHK), Japan)
W4. A Two-Layered Task Servicing Model for Drone Services: Overview and Preliminary Results
Majed Alwateer (Latrobe University, Australia); Seng W Loke (Deakin University, Australia)

W5. Preliminary Investigation of Predicting Next-use Mobile Apps Using App Semantic Representations
Cheng Chen, Takuya Maekawa, Daichi Amagata and Takahiro Hara (Osaka University, Japan)

W6. Illegal Photograph Detection under Modulated LED Illumination
Kouhei Uno and Arata Hirano (Hokkaido University, Japan); Hiromichi Hashizume (National Institute of Informatics, Japan); Masanori Sugimoto (Hokkaido University, Japan)

W7. Anticipated Acceptance of Head Mounted Displays: a content analysis of YouTube comments
Niek Zuidhof (Saxion University of Applied Sciences, The Netherlands)

W8. Towards a Sustainable Ecosystem of Intelligent Transportation Systems
Lewis Tseng and Liwen Wong (Boston College, USA)

Hidenobu WATANABE (Hiroshima University, Japan)

W10. Gaze Estimation Using Residual Neural Network
En Teng Wong, Seanglidet Yean, Qingyao Hu, Bu Sung Lee, Jigang Liu and Deepu Rajan (Nanyang Technological University, Singapore)

W11. OccuSpace: Towards a Robust Occupancy Prediction System for Activity Based Workplace
Mohammad Saiedur Rahaman, Harsh Pare, Jonathan Liono, Flora D Salim, Yongli Ren and Jeffrey Chan (RMIT University, Australia); Shaw Kudo, Tim Rawling and Alex Sinickas (Arup, Australia)

W12. IoT Device Virtualization for Efficient Resource Utilization in Smart City IoT Platform
Keigo Ogawa and Kenji Kanai (Waseda University, Japan); Kenichi Nakamura (Panasonic, Japan); Jiro Katto and Hidenori Nakazato (Waseda University, Japan)

W13. LoRaIn: Making a Case for LoRa in Indoor Localization
Bashima Islam, Md Tamzeed Islam, Jasleen Kaur and Shahriar Nirjon (University of North Carolina at Chapel Hill, USA)

<table>
<thead>
<tr>
<th>Demo Session (parallel)</th>
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<tbody>
<tr>
<td>6:00 pm – 8:00 pm</td>
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<tr>
<td>Chairs: Susumu Ishihara (Shizuoka University, Japan)</td>
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<tr>
<td>Salil S Kanhere (UNSW Sydney, Australia)</td>
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</tbody>
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D1. Demo: Visualizing Adaptation Decisions in Pervasive Communication
Systems
Martin Pfannemüller and Janick Edinger (University of Mannheim, Germany); Markus Weckesser, Roland Kluge, Manisha Luthra and Robin Klose (Technische Universität Darmstadt, Germany); Christian Becker (Universität Mannheim, Germany); Andy Schüßr (Darmstadt University of Technology, Germany)

D2. **Robot-Assisted Acupuncture**
Jun-Xiang Zhang, Guan-Sheng Li and Kun-chan Lan (National Cheng Kung University, Taiwan)

D3. **Anatomy and Deployment of Robust AI-Centric Indoor Positioning System**
Yiannis Gkoufas (IBM, Ireland); Stefano Braghin (IBM Research - Ireland, Ireland)

D4. **EasyFind: A Mobile Crowdsourced Guiding System with Lost Item Finding Based on IoT Technologies**
Lien-Wu Chen and Jun-Xian Liu (Feng Chia University, Taiwan)

D5. **Out-Of-Hospital Body Movement Data Collection using E-Skin Sensors**
Yuxin Zhang, Pari Delir Haghighi, Frada Burstein, Lim Wei Yap, Wenlong Cheng and Flavia Cicuttini (Monash University, Australia)

D6. **Multi-Provider Secure Processing of Sensors Data**
Enrico Bacis (University of Bergamo, Italy); Sabrina De Capitani di Vimercati (Università degli Studi di Milano, Italy); Dario Facchinetti (University of Bergamo, Italy); Sara Foresti and Giovanni Livraga (Università degli Studi di Milano, Italy); Stefano Paraboschi and Marco Rosa (University of Bergamo, Italy); Pierangela Samarati (Università degli Studi di Milano, Italy)

D7. **Hide-and-Disclose: On-Site Information Sharing for Privacy-Aware Mobile IoT Communications**
Yusuke Fukushima and Ved P. Kafle (National Institute of Information and Communications Technology, Japan)

D8. **Reminisce: Transparent and Contextually-Relevant Retrospetion**
Sangsu Lee, Tomasz Kalbarczyk and Christine Julien (University of Texas at Austin, USA)

D9. **Towards Real-Time Contextual Touristic Emotion and Satisfaction Estimation with Wearable Devices**
Dmitrii Fedotov (Ulm University, Germany & ITMO University, Russia); Yuki Matsuda and Yuta Takahashi (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan); Wolfgang Minker (University of Ulm, Germany)

D10. **Stacon: Self-Stabilizing Context Neighborhood for Mobile IoT Devices**
Chenguang Liu, Jie Hua, Changyong Hu and Christine Julien (University of Texas at Austin, USA)
Michail Sidorov and Nhut Phan Viet (Toyohashi University of Technology, Japan); Atsushi Okubo (Toyo Metal Co., LTD, Japan); Yukihiro Matsumoto and Ren Ohmura (Toyohashi University of Technology, Japan)

D12. **BeatSync: Walking Pace Control through Beat Synchronization between Music and Walking**  
Atsushi Otsubo and Hirohiko Suwa (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)

D13. **Human Movement Analytics via WiFi Probes**  
Georgios Pipelidis (TU München, Germany); Nikolaos Tsiamitros (Software and Systems Engineering Research Group, Technical University of Munich, Germany); Christian Prehofer (TU München, Germany); Malte Kessner (Technical University of Munich, Germany)

D14. **Autonomic context management in interoperable pervasive platforms**  
Philippe Lalanda (Grenoble University, France); Christian Becker (Universität Mannheim, Germany); Felix M Roth (University of Mannheim, Germany); German Vega (LIG, France)

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**PhD Forum Poster Session (parallel) – New Hall**

6:00 pm – 8:00 pm Chairs: **Jin Nakazawa** (Keio University, Japan)  
**Vana Kalogeraki** (Athens University of Economics and Business, Greece)

F1. **An efficient thermal comfort delivery in workplaces**  
Kizito Nkurikiyeyezu (Aoyama Gakuin University, Japan)

F2. **Blockchain Technology for e-Marketplace**  
Yi-Wei Chang (National Sun Yat-Sen University, Taiwan)

F3. **Limitations and Approaches in Access Control and Identity Management for Constrained IoT Resources**  
Shantanu Pal (Macquarie University, Australia)

Hannaneh Barahouei pasandi (Virginia Commonwealth University, USA)

F5. **Context-aware notification management systems for just-in-time adaptive interventions**  
Florian Künzler (ETH Zürich, Switzerland)

F6. **Clinically Aware Data Summarization at the Edge for Internet of Medical Things**  
Rahul Krishnan (Amrita Vishwa Vidyapeetham, India)

F7. **Sensor-based Daily Activity Understanding in Caregiving Center**
Tahera Hossain and Sozo Inoue (Kyushu Institute of Technology, Japan)

F8. Towards Software Defined Heterogeneous Vehicular Networks for Intelligent Transportation Systems
Adnan Mahmood (Macquarie University, Australia & TSSG, Science Foundation Ireland - CONNECT, Ireland)

F9. Outdoor Wi-Fi RSSI Map Construction Based on Crowdsourcing and Simulation
Tatsuya Amano (Osaka University, Japan)

F10. Quality-aware Sensor Data Stream Management in a Living Lab Environment
Aboubakr Benabbas (University of Bamberg, Germany)

F11. An Approach to Exonerate Innocent Suspects in Hit-And-Run Accidents via Route Reconstruction
Marian Waltereit (University of Duisburg-Essen, Germany)

F12. A Bio-inspired Approach to Design Robust and Energy-efficient Communication Network Topologies
Satyaki Roy (Missouri University of Science and Technology, USA)

F13. Lightweight Offloading System For Mobile Edge Computing
Hyuk-Jin Jeong (Seoul National University, Korea)

F14. Making Wearable Sensing Less Obtrusive
Vu Tran (Singapore Management University, Singapore)

F15. Design Space of Multipurpose Daily Worn Snake-Shaped Robotic Appendages
Mohammed Al-sada (Waseda University, Japan)

F16. Distributed Processing Middleware on Mesh Network for Connectivity Challenged Environments
Jose Talusan (Nara Institute of Science and Technology, Japan)

F17. A Smartphone Short-Range Path Estimation with Hyperbolic Function for Spinning Magnet Marker
Kosuke Watanabe (Nagoya University, Japan)

Wednesday, March 13

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<tr>
<th>Keynote Lecture</th>
<th>Room A</th>
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<tr>
<td>8:45 am – 9:45 am Chair: Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)</td>
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</tbody>
</table>

K2. Studies on Interactive Robots
Hiroshi Ishiguro (Osaka University, Japan)
Coffee/Tea Break
9:45 am – 10:15 am

Session 4: Best Paper Candidates
10:15 am – 11:45 am
Chair: Gregor Schiele (University of Duisburg-Essen, Germany)

4A1. **Quantifying the Breakability of Voice Assistants**
Maliheh Shirvanian (Visa Research, USA); Summer Vo (Massachusetts Institute of Technology, USA); Nitesh Saxena (University of Alabama at Birmingham, USA)

4A2. **Always-On Quick Charging for Mobile Devices**
Daeyong Kim, Seunghyeok Jeon and Sukjun Lee (Yonsei University, Korea); Hojung Cha (Yonsei University, S. Korea, Korea)

4A3. **Securely Storing and Sharing Memory Cues in Memory Augmentation Systems: A Practical Approach**
Agon Bexheti, Marc Langheinrich and Ivan Elhart (Università della Svizzera Italiana, Switzerland); Nigel Davies (Lancaster University, United Kingdom)

Lunch
11:45 am – 1:15 pm

Session 5: Activity Recognition & Machine Learning
1:15 pm – 3:15 pm
Chair: Flora D Salim (RMIT University, Australia)

5A1. **Passive Capacitive based Approach for Full Body Gym Workout Recognition and Counting**
Sizhen Bian (German Research Center for Artificial Intelligence, Germany); Vitor F Rey (Deutsches Forschungszentrum für Künstliche Intelligenz & University of Kaiserslautern, Germany); Peter Hevesi (German Research Center for Artificial Intelligence (DFKI), Germany); Paul Lukowicz (DFKI and University of Kaiserslautern, Germany)

5A2. **Super Low Resolution RF Powered Accelerometers for Alerting on Hospitalized Patient Bed Exits**
Michael Chesser and Asangi Jayatilaka (The University of Adelaide, Australia); Renuka Visvanathan (The Queen Elizabeth Hospital, Australia); Christophe Fumeaux (The University of Adelaide & School of Electrical and Electronic Engineering, Australia); Alanson Sample (University of Michigan, USA); Damith C. Ranasinghe (The University of Adelaide, Australia)

5A3. **Avoiding Stress Driving: Online Trip Recommendation from Driving**
Behavior Prediction
Rohit Verma (Indian Institute of Technology, Kharagpur, India); Bivas Mitra and Sandip Chakraborty (Indian Institute of Technology Kharagpur, India)

5A4. **Automatic Detection of Urban Features from Wheelchair Users' Movements**
Gabriele Civitarese (University of Milan, Italy); Sergio Mascetti (Università degli Studi di Milano & EveryWare Technologies, Italy); Alberto Butifar (Università degli Studi di Milano, Italy); Claudio Bettini (University of Milan, Italy)

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<tr>
<th>Coffee/Tea Break</th>
<th>Foyer</th>
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<td>3:15 pm – 3:45 pm</td>
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<tr>
<th>Industry Session</th>
<th>Room A</th>
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<tr>
<td>3:45 pm – 5:45 pm</td>
<td>Chairs: Nabil Alshurafa (Northwestern University, USA), Paul Havinga (University of Twente, The Netherlands)</td>
</tr>
</tbody>
</table>

11. **Improving Infrastructure-based Indoor Positioning Systems with Device Motion Detection**
Huy Tran (Portland State University, USA); Abhishek Mukherji (Cisco Systems Inc. & Worcester Polytechnic Institute, USA); Nirupama Bulusu (Portland State University, USA); Santosh Pandey (Cisco Systems Inc, USA); Xu Zhang (Cisco Systems, USA)

12. **Local App Classification using Deep Neural Network based on Mobile App Market Data**
Keiichi Ochiai and Fatina Putri (NTT DOCOMO, INC., Japan); Yusuke Fukazawa (NTT DOCOMO, Inc., Japan)

13. **OnlineAirTrajClus: An Online Aircraft Trajectory Clustering for Tarmac Situation Awareness**
Wei Shao, Flora D Salim, Jeffrey Chan, Kai Qin and Jiaman Ma (RMIT University, Australia); Bradley Feest (Northrop Grumman Cooperation, Australia)

14. **TenSense: IIoT enabled sensor node for remote measurement of a bolted joint tension**
Michail Sidorov and Nhut Phan Viet (Tohohashi University of Technology, Japan); Atsushi Okubo (Toyo Metal Co., LTD, Japan); Yukihiro Matsumoto and Ren Ohmura (Tohohashi University of Technology, Japan)

15. **A Study on Behavior of Autonomous Vehicles Cooperating with Manually-Driven Vehicles**
Yusuke Nishimura (Sumitomo Electric Industries, Ltd., Japan); Atsushi Fujita, Akihito Hiromori, Hirozumi Yamaguchi and Teruo Higashino (Osaka University, Japan); Akira Suwa (Sumitomo Electric Industries, Ltd., Japan); Hirofumi Urayama (Sumitomo Electric Industries, LTD., Japan); Susumu Takeshima (Sumitomo Electric Industries, Ltd., Japan); Mineo Takai (University of California, Los Angeles, USA)

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<tr>
<th>Conference Banquet</th>
<th>Grand Prince Hotel Kyoto &quot;Prince Hall&quot;</th>
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Thursday, March 14

<table>
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<tr>
<th>Panel</th>
<th>Room A</th>
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<tbody>
<tr>
<td>8:45 am – 9:45 am</td>
<td>Moderator: Claudio Bettini (University of Milan, Italy)</td>
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Panelists:
Salil S Kanhere (UNSW Sydney, Australia)
Marc Langheinrich (Università della Svizzera Italiana, Switzerland)
Archan Misra (Singapore Management University, Singapore)
Delphine Reinhardt (University of Göttingen, Germany)

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<td>9:45 am – 10:10 am</td>
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<tr>
<th>Session 6: Localisation and Context Detection</th>
<th>Room A</th>
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<tr>
<td>10:10 am – 12:10 pm</td>
<td>Chair: Daniela Nicklas (University of Bamberg &amp; Faculty Information Systems and Applied Computer Science, Germany)</td>
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</tbody>
</table>

6A1. **EHAAS: Energy Harvesters As A Sensor for Place Recognition on Wearables**
Yoshinori Umetsu and Yugo Nakamura (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Manato Fujimoto and Hirohiko Suwa (Nara Institute of Science and Technology, Japan)

6A2. **WiDeep:WiFi-based Accurate and Robust Indoor Localization System using Deep Learning**
Moustafa Abbas (Alexandria University, Egypt); Moustafa Elhamshary (Egypt-Japan University for Science and Technology & School of Communication and Computer Science, Egypt); Hamada Rizk (EJUST, Egypt); Marwan Torki and Moustafa Youssef (Alexandria University, Egypt)

6A3. **Automatic Detection of Everyday Social Behaviours and Environments from Verbatim Transcripts of Daily Conversations**
Kristina Yordanova (University of Rostock, Germany); Burcu Demiray (University of Zurich, Switzerland); Matthias R. Mehl (University of Arizona, USA); Mike Martin (University of Zurich, Switzerland)

6A4. **HCFContext: Smartphone Context Inference via Sequential History-based Collaborative Filtering**
Vidyasagar Sadhu and Saman Zonouz (Rutgers University, USA); Vincent Sritapan (DHS, USA); Dario Pompili (Rutgers University, USA)
**Lunch**  
12:10 pm – 1:20 pm

**Session 7: Edge Computing and Offloading**  
1:20 pm – 3:20 pm  
Chair: Hirozumi Yamaguchi (Osaka University, Japan)

7A1. **Low-latency distributed computation offloading for pervasive environments**  
Claudio Cicconetti, Marco Conti and Andrea Passarella (IIT-CNR, Italy)

7A2. **Context-Aware Data and Task Placement in Edge Computing Environments**  
Martin Breitbach, Dominik Schäfer and Janick Edinger (University of Mannheim, Germany); Christian Becker (Universität Mannheim, Germany)

7A3. **POET: Privacy on the Edge with Bidirectional Data Transformations**  
Nianyu Li (Peking University, P.R. China); Christos Tsigkanos (TU Wien, Austria); Zhi Jin (Peking University, P.R. China); Schahram Dustdar (Vienna University of Technology, Austria); Zhenjiang Hu (National Institute of Informatics, Japan); Carlo Ghezzi (Politecnico di Milano, Italy)

7A4. **Extreme SDN Framework for IoT and Mobile Applications Flexible Privacy at the Edge**  
Mostafa Uddin (Bell Labs (Nokia), USA); Tamer Nadeem and Santosh Kumar Nukavarapu (Virginia Commonwealth University, USA)

**Coffee/Tea Break**  
Foyer  
3:20 pm – 3:45 pm

**Session 8: Pervasive and Augmented User Interfaces**  
3:45 pm – 5:45 pm  
Chair: Kristina Yordanova (University of Rostock, Germany)

8A1. **HIBEY: Hide the Keyboard in Augmented Reality**  
Lik Hang Lee, Kit Yung Lam, Yui Pan Yau and Tristan Braud (The Hong Kong University of Science and Technology, Hong Kong); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong)

8A2. **AcouDigits: Enabling Users to Input Digits in the Air**  
Yongpan Zou, Qiang Yang, Yetong Han and Dan Wang (Shenzhen University, P.R. China); Jianhong Cao (Hong Kong Polytechnic Univ, Hong Kong); Kaishun Wu (Shenzhen University, P.R. China)
8A3. **M2A: A Framework for Visualizing Information from Mobile Web to Mobile Augmented Reality**
Kit Yung Lam, Lik Hang Lee and Tristan Braud (The Hong Kong University of Science and Technology, Hong Kong); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong)

8A4. **Sonification of Rotation Instructions to Support Navigation of People with Visual Impairment**
Dragan Ahmetovic (Università degli Studi di Torino, Italy); Federico Avanzini (University of Milano, Italy); Adriano Baratè, Cristian Bernareggi and Gabriele Galimberti (Università degli Studi di Milano, Italy); Luca Ludovico (Università degli Studi di Milano & LIM, Italy); Sergio Mascetti (Università degli Studi di Milano & EveryWare Technologies, Italy); Giorgio Presti (Università degli Studi di Milano, Italy)

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<th><strong>Townhall Meeting</strong></th>
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<td>5:45 pm – 6:45 pm</td>
<td>Chair: Mohan J Kumar (Rochester Institute of Technology, USA)</td>
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Friday, March 15, Post-conference Workshops

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<th>Time</th>
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<td>10:00 am – 10:30 am</td>
<td>Morning coffee break</td>
<td>Rm 553</td>
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<tr>
<td>12:00 pm – 1:30 pm</td>
<td>Lunch</td>
<td>Swan</td>
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<tr>
<td>3:00 pm – 3:30 pm</td>
<td>Afternoon coffee break</td>
<td>Rm 553</td>
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**EmotionAware'19 - 3rd International Workshop on Emotion Awareness for Pervasive Computing with Mobile and Wearable Devices**

Location: 509B

**EmotionAware-OP: Opening**

9:25 am - 9:30 am  
**Tadashi Okoshi** (Keio University, Japan)  
**Klaus David** (University of Kassel, Germany)  
**Chelsea Dobbins** (The University of Queensland, Australia)

**EmotionAware-S1: Session 1**

9:00 am - 10:00 am  
Chair: **Chelsea Dobbins** (The University of Queensland, Australia)

**EA1. Angry or Climbing Stairs? Towards Physiological Emotion Recognition in the Wild**

Judith Heinisch, Christoph Anderson and Klaus David (University of Kassel, Germany)

**EmotionAware-S2: Session 2**

10:30 am – 12:00 pm  
Chair: **Bernd M. Radig** (Technische Universitaet Muenchen, Germany)

**EA2. Requirements for a Reference Dataset for Multimodal Human Stress Detection**

Bhargavi Mahesh (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Teena Hassan (Fraunhofer Institute for Integrated Circuits IIS, Germany); Erwin Prassler (Bonn-Rhein-Sieg University of Applied Sciences, Germany); Jens-Uwe Garbas (Fraunhofer Institute for Integrated Circuits IIS, Germany)

**EA3. Detecting and Visualizing Context and Stress via a Fuzzy Rule-Based System During Commuter Driving**

Chelsea Dobbins (The University of Queensland, Australia); Stephen Fairclough (Liverpool John Moores University, United Kingdom (Great Britain))
EA4. **Analysis of Personality Dependent Differences in Pupillary Response and its Relation to Stress Recovery Ability**
Pelin Genc (Fraunhofer Institute for Integrated Circuits IIS, Friedrich-Alexander-Universität Erlangen-Nürnberg); Teena Hassan (Fraunhofer Institute for Integrated Circuits IIS, Germany)

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**EmotionAware-KN: Keynote Speaker**
1:30 pm – 2:30 pm Chair: **Tadashi Okoshi** (Keio University, Japan)

**EAK. Emotion aware robot by emotion estimation using biological sensors**
Midori Sugaya (Shibaura Institute of Technology, Japan)

**EmotionAware Closing: Discussion Session and closing**
2:30 pm – 3:00 pm Chair: **Klaus David** (University of Kassel, Germany)

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**PerDial'19 - The 1st International Workshop on Pervasive Computing and Spoken Dialogue Systems Technology**

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**PerDial-OP: Opening**
8:40 am - 8:45 am Chairs: **Dmitrii Fedotov** (Ulm University, Germany & ITMO University, Russia) **Yuki Matsuda** (Nara Institute of Science and Technology, Japan)

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**PerDial-S1: Session 1**
8:45 am - 10:00 am Chair: **Alexey A. Karpov** (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences, Russia)

**PD1. Learning Natural Language Understanding Systems from Unaligned Labels for Voice Command in Smart Homes**
Anastasia Mishakova (Université Grenoble Alpes, France); François Portet (Laboratory LIG, UMR CNRS/INPG/UJF 5217, Team GETALP, France); Thierry Desot (Université Grenoble Alpes, CNRS, Grenoble INP, LIG, France); Michel Vacher (CNRS & LIG Laboratory, France)

**PD2. Emotion Recognition Based Preference Modelling in Argumentative Dialogue Systems**
Niklas Rach (Ulm University, Germany); Klaus Weber (Augsburg University, Germany); Annalena Aicher (Ulm University, Germany); Florian Lingenfelser (Augsburg University, Germany); Elisabeth Andre (University of Augsburg, Germany); Wolfgang Minker (University of...
PerDial-KN: Keynote Session
10:30 am – 11:30 am  Chair: Dmitrii Fedotov (Ulm University, Germany & ITMO University, Russia)

PDK..  Integration of Spoken Dialogue System and Ubiquitous Computing
Yutaka Arakawa (Nara Institute of Science and Technology, Japan)

PerDial-S2: Session 2
11:05 am – 11:55 am  Chair: Yuki Matsuda (Nara Institute of Science and Technology, Japan)

PD4.  From Smart to Personal Environment: Integrating Emotion Recognition into Smart Houses
Dmitrii Fedotov (Ulm University, Germany & ITMO University, Russia);
Yuki Matsuda (Nara Institute of Science and Technology, Japan);
Wolfgang Minker (University of Ulm, Germany)

PD5.  Human-Robot Interaction with Smart Shopping Trolley Using Sign Language: Data Collection
Denis Ivanko, Dmitry Ryumin, Alexandr Axyonov and Alexey A. Karpov (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences, Russia); Milos Zelezny (University of West Bohemia in Pilsen, Czech Republic); Ildar Kagirov (St. Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences, Russia)

PerDial-CL: Closing
11:55 am – 12:00 pm  Chairs: Dmitrii Fedotov (Ulm University, Germany & ITMO University, Russia)
Yuki Matsuda (Nara Institute of Science and Technology, Japan)

PerFoT'19 - International Workshop on Pervasive Flow of Things
Location: 501
**PerFoT-S0: Opening**

8:50 am – 9:00 am  
Chair: **Keiichi Yasumoto** (Nara Institute of Science and Technology, Japan)

**UMIQUE-S1: Pervasive Education**

9:00 am – 10:00 am  
Chair: **Keiichi Yasumoto** (Nara Institute of Science and Technology, Japan)

**UM1. PerLE: A Testbed for Pervasive Middlewares in Learning Environments**  
Jens Naber and Steffen Schmitz (University of Mannheim, Germany); Christian Becker (Universität Mannheim, Germany)

**UM2. STEM Learning and Career Orientation via IoT Hands-on Activities in Secondary Education**  
Dimitrios P Glaroudis (Computer Technology Institute and Press (CTI) Diophantus & Alexander Technological Educational Institute of Thessaloniki, Greece); Athanasios C. Iossifides (Alexander Technological Educational Institute of Thessaloniki & Computer Technology Institute and Press (CTI) - Diophantus, Greece); Natalia Spyropoulou (Hellenic Open University & Computer Technology Institute and Press (CTI) - Diophantus, Greece); Ioannis D. Zaharakis (Technological Educational Institute of Western Greece & Computer Technology Institute, Greece); Achilles Kameas (Hellenic Open University & Computer Technology Institute, Greece)

**PerFoT-S1: Security for Pervasive Flows**

10:30 am – 12:00 pm  
Chair: **Hirozumi Yamaguchi** (Osaka University, Japan)

**FOT1. Towards an Adaptive Multi-modal Traffic Analytics Framework at the Edge**  
Geoffrey Pettet, Saroj Sahoo and Abhishek Dubey (Vanderbilt University, USA)

**FOT2. A Trust Model Focusing on Node Usage in Mobile Ad hoc Networks**  
Nanaka Asai (Keio University, Japan); Sonoko Goka (Keio University, Japan); Hiroshi Shigeno (Keio University, Japan)

**FOT3. Detecting Surrounding Users by Reverberation Analysis with a Smart Speaker and Microphone Array**  
Naoki Yoneoka (Nara Institute of Science and Technology, Japan); Yutaka Arakawa (Nara Institute of Science and Technology, Japan); Keiichi Yasumoto (Nara Institute of Science and Technology, Japan)
PerFoT-S2: Pervasive Flow Processing
1:30 pm – 3:00 pm Chair: Ismail Arai (Nara Institute of Science and Technology, Japan)

FOT4. Designing IoT Systems: Patterns and Managerial Conflicts
Leila Fatmasari Rahman, Tanir Özçelebi and Johan J. Lukkien (Eindhoven University of Technology, The Netherlands)

Mirko Viroli (Alma Mater Studiorum - Università di Bologna, Italy); Giancarlo Fortino (University of Calabria, Italy); Barbara Re (University of Camerino, Italy); Franco Zambonelli (University of Modena and Reggio Emilia, Italy)

FOT6. APREP-DM: a Framework for Automating the Pre-Processing of a Sensor Data Analysis based on CRISP-DM
Hiroko Nagashima and Yuka Kato (Tokyo Woman's Christian University, Japan)

PerFoT-S3: Applications of Pervasive Flows
3:30 pm – 5:00 pm Chair: Yuka Kato (Tokyo Woman's Christian University, Japan)

FOT7. Passenger Counter Based on Random Forest Regressor Using Drive Recorder and Sensors in Buses
Hayato Nakashima, Ismail Arai and Kazutoshi Fujikawa (Nara Institute of Science and Technology, Japan)

FOT8. Volleyball Setting Technique Assessment Using a Single Point Sensor
Ann Kathrin Holatka (Karlsruhe Institute of Technology, Germany); Keiichi Yasumoto and Hirohiko Suwa (Nara Institute of Science and Technology, Japan)

FOT9. An Evaluation of Multipath TCP in Lossy Environment
Kien Nguyen (Chiba University, Japan); Mirza Golam Kibria (University of Luxembourg, Luxembourg); Kentaro Ishizu and Fumihide Kojima (National Institute of Information and Communications Technology, Japan); Hiroo Sekiya (Chiba University, Japan)

PerHealth'19 - 4th IEEE PerCom Workshop on Pervasive Health Technologies
Location: 552
PerHealth-I1: Welcome to PerHealth 2019
8:55 am – 9:00 am Chair: Manfred Huber (The University of Texas at Arlington, USA)

PerHealth-S1: Anomaly and Health Prediction
9:00 am – 10:00 am Chair: Manfred Huber (The University of Texas at Arlington, USA)

PH1. Probabilistic Analysis of Abnormal Behaviour Detection in Activities of Daily Living
Matias Garcia-Constantino (Ulster University, United Kingdom (Great Britain)); Alexandros Konios (Coventry University, United Kingdom (Great Britain)); Idongesit Ekerete (Ulster University, United Kingdom (Great Britain)); Stavros-Richard Christopoulos (Coventry University, United Kingdom (Great Britain)); Colin Shewell (Ulster University, United Kingdom (Great Britain)); Chris Nugent (University of Ulster, United Kingdom (Great Britain)); Gareth Morrison (The Lava Group, United Kingdom (Great Britain))

PH2. Robust Health Score Prediction from Pyro-Sensor Activity Data based on Greedy Feature Selection
Masamichi Shimosaka and Qiyang Zhang (Tokyo Institute of Technology, Japan)

PerHealth-S2: Technologies for Dementia
10:40 am – 11:40 am Chair: Manfred Huber (The University of Texas at Arlington, USA)

PH3. Abnormal Behaviour Detection for Dementia Sufferers via Transfer Learning and Recursive Auto-Encoders
Damla Arifoglu and Abdelhamid Bouchachia (Bournemouth University, United Kingdom (Great Britain))

PH4. Preliminary Evaluation of a Self-Management Health App by People with Cognitive Impairment
Netzahualcoyotl Hernandez-Cruz and Federico Cruciani (Ulster University, United Kingdom (Great Britain)); Jesus Favela (CICESE Research Center, Mexico); Ian McChesney and Shuai Zhang (Ulster University, United Kingdom (Great Britain)); Chris Nugent (University of Ulster, United Kingdom (Great Britain))

PerHealth-I2: Conclusions and Discussion
11:45 – 12:00 pm Chair: Manfred Huber (The University of Texas at Arlington, USA)
SmartEdge'19 - The Third International Workshop on Smart Edge Computing and Networking

Location: 509A

SmartEdge-Opening: Opening Remarks
8:45 am - 9:00 am Chairs: Tamer Nadeem (Virginia Commonwealth University, USA)
                        Glenn Ricart (US Ignite, USA)

SmartEdge-S1: AI at the Edge
9:00 am - 10:00 am Chair: Tamer Nadeem (Virginia Commonwealth University, USA)

SME1. ERL: Edge Based Reinforcement Learning for Optimized Urban Traffic Light Control
       Pengyuan Zhou (University of Helsinki, Finland); Tristan Braud and Ahmad Alhilal (The Hong Kong University of Science and Technology, Hong Kong); Pan Hui (Hong Kong University of Science and Technology & University of Helsinki, Hong Kong); Jussi Kangasharju (University of Helsinki, Finland)

SME2. Offloaded Execution of Deep Learning Inference at Edge: Challenges and Insights
       Swarnava Dey (Tata Consultancy Service Limited, India); Jayeeta Mondal (TCS Research and Innovation Labs, India); Arijit Mukherjee (Tata Consultancy Services, India)

SmartEdge-S2: Edge Systems and Applications
10:30 am – 12:00 pm Chair: Glenn Ricart (US Ignite, USA)

SME3. Achlys: Towards a Framework for Distributed Storage and Generic Computing Applications for Wireless IoT Edge Networks with Lasp on GRiSP
       Igor Kopestenski and Peter Van Roy (Université Catholique de Louvain, Belgium)

       Favian Dewanta and Masahiro Mambo (Kanazawa University, Japan)

SME5. Emergency Service for Smart Home System Using Ethereum Blockchain: System and Architecture
       Yu Aung and Thitinan Tantidham (Mahidol University, Thailand)
### SmartEdge-Keynote: Keynote Talk
1:30 pm – 2:45 pm  
Chair: **Glenn Ricart** (US Ignite, USA)

### SmartEdge-S3: Edge Data Management and Communication
3:15 pm - 4:45 pm  
Chair: **Tamer Nadeem** (Virginia Commonwealth University, USA)

SME6. **A Distributed System for Reducing Uploaded Data Redundancy in Vehicular Networks**  
Zezhi Wang, Yajie Zhao and Lewis Tseng (Boston College, USA); Takamasa Higuchi (Toyota InfoTechnology Center USA, USA); Onur Altintas (Toyota InfoTechnology Center, USA, Inc., USA)

SME7. **Context-Aware Caching With Social Behavior in MEC-enabled Wireless Cellular Networks**  
Xinwei Liu and Chuanhao Sun (Beijing University of Posts and Telecommunications, P.R. China); Xing Zhang (BUPT, P.R. China)

SME8. **Multi-Channel Utilization for Local Data Sharing in Multi-Layered Wireless Robotic Networks**  
Rui Teng (Advanced Telecommunications Research Institute International, Japan); Shirayuki Araki, Satoru Shimizu, Kazuto Yano and Yoshinori Suzuki (ATR, Japan)

### SmartEdge-Close: Closing Remarks
4:45 pm – 5:00 pm  
Chairs: **Tamer Nadeem** (Virginia Commonwealth University, USA)  
**Glenn Ricart** (US Ignite, USA)
## SPT-IoT'19 - The Third Workshop on Security, Privacy and Trust in the Internet of Things

**Location:** 554

## SPT-IoT: Welcome and keynote

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
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<tbody>
<tr>
<td>9:00 am – 10:00 am</td>
<td><strong>Welcome and keynote</strong></td>
<td><strong>Damith C. Ranasinghe</strong> (The University of Adelaide, Australia)</td>
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</table>

## SPT-IoT-S1: Attacks and Defenses

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
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<tbody>
<tr>
<td>10:30 am – 12:00 pm</td>
<td><strong>Attacks and Defenses</strong></td>
<td><strong>Sven Wohlgemuth</strong> (Hitachi, Ltd., Japan)</td>
</tr>
</tbody>
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1. **IOT1. Uncovering Security Vulnerabilities in the Belkin WeMo Home Automation Ecosystem**
   Haoyu Liu, Tom Spink and Paul Patras (The University of Edinburgh, United Kingdom (Great Britain))

2. **IOT2. Security Analysis of Device Binding for IP-based IoT Devices**
   Jiongyi Chen, Menghan Sun and Kehuan Zhang (Chinese University of Hong Kong, Hong Kong)

   Michael Heigl (University of West Bohemia, Czech Republic); Martin Schramm (Deggendorf Institute of Technology, Germany); Dalibor Fiala (University of West Bohemia, Czech Republic)

4. **IOT4. Building Secure SRAM PUF Key Generators on Resource Constrained Devices**
   Yansong Gao and Yang Su (The University of Adelaide, Australia); Wei Yang (Nanjing University of Science and Technology, P.R. China); Shiping Chen (Commonwealth Scientific and Industrial Research Organisation, Australia); Surya Nepal (CSIRO, Australia); Damith C. Ranasinghe (The University of Adelaide, Australia)

## SPT-IoT-S2: Security in Industrial IoT

<table>
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<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
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<tbody>
<tr>
<td>1:30 pm – 3:00 pm</td>
<td><strong>Security in Industrial IoT</strong></td>
<td><strong>Damith C. Ranasinghe</strong> (The University of Adelaide, Australia)</td>
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   Mehdi Nobakht (University of New South Wales, Australia); Craig L Russell (CSIRO, Australia); Wen Hu (the University of New South Wales (UNSW) & CSIRO, Australia); Aruna Seneviratne (University of New South Wales, Australia)

Florian Kammueller (Middlesex University London, United Kingdom (Great Britain))

IOT7. **Competitive Compliance with Blockchain**
Sven Wohlgemuth (Hitachi, Ltd., Japan); Katsuyuki Umezawa (Shonan Institute of Technology, Japan); Yusuke Mishina (Advanced Industrial Science and Technology (AIST), Japan); Kazuo Takaragi (AIST, Japan)

IOT8. **A Hybrid Architecture for Secure Management of Manufacturing Data in Industry 4.0**
Anku Adhikari (University of Illinois, Urbana-Champaign, USA); Marianne Winslett (University of Illinois, USA)

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<th><strong>SPT-IoT-S3: Security Services in Resource Limited Environments</strong></th>
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<tr>
<td>3:30 pm – 5:00 pm</td>
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</table>

IOT9. **Zest: REST over ZeroMQ**
Johny Moore, Andres Arcia-Moret, Poonam Yadav and Richard Mortier (University of Cambridge, United Kingdom (Great Britain)); Anthony Brown (University of Nottingham, United Kingdom (Great Britain)); Derek McAuley (University of Nottingham & University of Cambridge, United Kingdom (Great Britain)); Andy Crabtree and Chris Greenhalgh (University of Nottingham, United Kingdom (Great Britain)); Hamed Haddadi (Imperial College London, United Kingdom (Great Britain)); Yousef Amar (Queen Mary University of London, United Kingdom (Great Britain))

IOT10. **Hash Functions and Benchmarks for Resource Constrained Passive Devices: A Preliminary Study**
Yang Su and Yansong Gao (The University of Adelaide, Australia); Omid Kavehei (The University of Sydney & The University of Melbourne, Australia); Damith C. Ranasinghe (The University of Adelaide, Australia)

IOT11. **Survey for Secure IoT Group Communication**
Jiye Park and Markus Jung (OSRAM GmbH, Germany); Erwin P Rathgeb (University of Duisburg-Essen, Germany)
UNAGI'19 - Workshop on UNmanned aerial vehicle Applications in the Smart City: from Guidance technology to enhanced system Interaction

Location: 555

UNAGI-W: Welcome
9:00 am – 9:10 am  Chair: Ana M. Bernardos (Universidad Politecnica de Madrid, Spain)

UNAGI-S1: Applications and drone-based service delivery
9:10 am – 10:00 am  Chair: Ana M. Bernardos (Universidad Politecnica de Madrid, Spain)

UN1. SwarmCity Project: Can an Aerial Swarm Monitor Traffic in a Smart City?
Juan Jesús Roldán, Pablo Garcia-Aunon, Elena Peña-Tapia and Antonio Barrientos (Technical University of Madrid, Spain)

UN2. Environment-Aware Deployment of Wireless Drones Base Stations with Google Earth Simulator
Mohammad Mozaffari, Aaron French, AbdelRahman Eldosouky and Walid Saad (Virginia Tech, USA)

UNAGI-S2: Platforms/systems to support drone operations
10:30 am – 12:10 pm  Chair: Jose Manuel Molina (Univ. Carlos III de Madrid, Spain)

UN3. Multi-drone Control with Autonomous Mission Support
Nuno Paula (Universidade de Aveiro & Instituto de Telecomunicações, Portugal); Bruno Areias (Instituto de Telecomunicações, Universidade de Aveiro, Portugal); Andre B. Reis (Instituto de Telecomunicacoes, Portugal); Susana Sargento (Instituto de Telecomunicações, Universidade de Aveiro, Portugal)

Juan Besada (Universidad Politecnica de Madrid, Spain); Ivan Campaña and Luca Bergesio (Universidad Politécnica de Madrid, Spain); Ana M. Bernardos (Universidad Politecnica de Madrid, Spain); Gonzalo de Miguel (Universidad Politécnica de Madrid, Spain)

UN5. Drones-as-a-service: A Management Architecture to Provide Mission Planning, Resource Brokerage and Operation Support for Fleets of Drones
Juan Besada and Ana M. Bernardos (Universidad Politecnica de Madrid,
UN6. **On-Drone Decision Making for Service Delivery: Concept and Simulation**
Majed Alwateer (Latrobe University, Australia); Seng W Loke (Deakin University, Australia)

**UNAGI-S3: Technologies for high-performing drone-based systems**
1:30 pm – 2:45 pm	Chair: **Juan Besada** (Universidad Politecnica de Madrid, Spain)

UN7. **Simulation in Real Conditions of Navigation and Obstacle Avoidance with PX4/Gazebo Platform**
Jesus Garcia and Jose Manuel Molina (Universidad Carlos III de Madrid, Spain)

UN8. **An Hypervisor Approach for Mixed Critical Real-Time UAV Applications**
Laurent George (ESIEE Paris, France); Frédéric Fauberteau (Léonard de Vinci Pôle Universitaire, Research Center, France); Tristan Fautrel and Thierry Grandpierre (ESIEE, France)

UN9. **A Convolutional Neural Network Model for Superresolution Enhancement of UAV Images**
Miguel Angel Patricio (Universidad Carlos III de Madrid, Spain); Daniel Gonzalez (Company BQ, Spain); Jose Manuel Molina and Antonio Berlanga de Jesús (Universidad Carlos III de Madrid, Spain)

**UNAGI-R: Retrospective and wrap up**
2:45 pm – 3:00 pm