November 1 (Sun) - 4 (Wed)
Seoul, South Korea
collocated with BuildSys 2015 Nov. 4-5

SENSYS 2015

CONFERENCE PROGRAM
WELCOME TO SENSYS

http://sensys.acm.org/2015
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On behalf of the organizing committee, it is my great pleasure to welcome you to the 13th ACM Conference on Embedded Networked Sensor Systems (SenSys 2015) in Seoul, Korea. This is the first time that the SenSys comes to Asia. Also, SenSys 2015 continues to be co-located with the ACM International Conference on Embedded Systems for Energy-Efficient Built Environments (BuildSys), to take place on November 2nd to 5th following last year’s success.

SenSys is a leading venue for publication and presentation of research results on systems issues in the area of embedded, networked sensors and sensor-enabled smart systems. This year’s program has selected 27 exciting papers embracing a number of perspectives including energy, localization, systems, networking, information services and object/activity recognition. In addition to the regular full paper sessions, this year also sees a significantly expanded adjunct program, 26 demos and 33 posters. The workshop program has four workshops covering exciting topics in energy harvesting and energy-neutral sensing systems, context sensing and activity recognition, Internet of Things toward applications, real world wireless sensor networks. It also includes a Ph.D. Forum that provides a supportive environment for doctoral students to discuss their dissertation work. Last but not least, SenSys 2015 hosts two exciting keynote speakers: Professor Raj Rajkumar from CMU will provide a stimulating view on the challenges and opportunities of self-driving vehicles, and Dr. Hendrik F. Hamann from IBM will give an exciting talk on smarter solutions and physical analytics.

Putting together SenSys 2015 has been a huge team effort. I would like to thank many people for their tireless work, including the Local Arrangement Chairs JeongGil Ko, Jeongyeop Paek, and Jeonghoon Kang, Publicity Chairs Prabal Dutta, Koen Langendoen, and Insik Shin, Finance Chairs Sung-Ju Lee and Uichin Lee, Social Media Chair Eric Rozner, Registration Chair Sourav Kumar Dandapat, PC Local Organizer Niki Trigoni, Web administrators Chiwoo Cho and Sangwon Choi. A special thanks goes to the Student Travel Grants Chairs Young-Bae Ko, Raghu K. Ganti, and Taiwoo Park for the hard work acquiring funds and making it possible for dozens of students to come to SenSys 2015. I would like to acknowledge the tremendous efforts of the Technical Program Committee, including the chairs Cecilia Mascolo and Tarek Abdelzaher in particular, for making an outstanding technical program. In addition, I would like to thank Poster and Demo Chairs Rajesh Krishna BALAN, Inseok Hwang, and Seungwoo Kang, Doctoral Colloquium Chairs Nicholas Lane and Taiwoo Park, Workshop Chairs Marco Gruteser and Youngki Lee. A deep thanks goes to our Publication Chair Qin (Christine) Lv for managing and compiling all the details of the proceedings. I would like to thank Jie Liu and Kamin Whitehouse, the former and current Steering Committee Chairs. They have been very supportive in putting the conference together. Finally, I would like to express my deep gratitude to the sponsors of SenSys 2015.

I sincerely hope that this year’s conference will provide you with a valuable opportunity to share ideas and experiences with researchers and practitioners from institutions around the world, and you will find it interesting, useful and enjoyable.

Junehwa Song
SenSys 2015 General Chair
Korea Advanced Institute of Science and Technology
South Korea
It is our great pleasure to welcome you to the 13th ACM Conference on Embedded Networked Sensor Systems (SenSys 2015). We hope you enjoy this conference that attracts a diverse set of attendees from both academia and industry and is a leading venue for publications and idea exchange on networked sensing. SenSys this year introduces a highly selective, single-track program featuring systems issues of sensors and sensor-enabled smart systems, broadly defined. It provides an ideal venue to address research challenges facing the design, development, deployment, use, and fundamental limits of these systems.

The paper review process this year was highly selective. Out of 132 high quality submissions, only 27 were accepted for publication and presentation as full papers, yielding an acceptance rate around 20.45%. Submitted papers underwent a rigorous multistage review process. First, all submissions were checked for compliance and for general quality and topic match. Those not meeting conference criteria were administratively rejected without review. Papers surviving this stage were assigned three reviews in the first stage of the peer review process. At the conclusion of this stage, those papers that none of the reviewers recommended acceptance were rejected. The rest were assigned two additional reviews, thus totaling 5 reviews per paper. An online discussion phase then ensued, resulting in recommending 59 papers for discussion at the in-person physical PC meeting. At the conclusion of the PC meeting, a total of 27 papers were recommended for acceptance to the conference. All recommended papers were assigned shepherds to help ensure that the authors produce a final manuscript that satisfactorily addresses reviewer comments. All shepherded papers were ultimately accepted to the conference.

Our program this year covers an exciting set of topics including energy, localization, systems, networking, information services and object/activity recognition. It also includes a poster/demo session, a panel, and two distinguished keynote speakers: Professor Raj Rajkumar from CMU, and Dr. Hendrik Hamann from IBM Research.

Putting together the program of Sensys 2015 was a team effort. We would like to express our deepest gratitude to Prof. Junehwa Song, the General Chair, for organizing the team. We would also like to thank the authors for providing stellar contributions. We would like to express special thanks to the program committee members and shepherds who worked very hard in reviewing papers and providing suggestions for their improvement. We would also like to thank ACM and the other members of the organizing committee for all the logistical arrangements that made it possible to bring this program to the attendees. Last but not least, we would like to thank the attendees for your patronage of the conference and for making it a successful meeting place for multiple communities and a catalyst for discussions and creative exchange.

We hope that you will find this program interesting and thought-provoking and that the conference will provide you with a valuable opportunity to share ideas with other researchers and practitioners from institutions around the world.

Cecilia Mascolo
SenSys 2015 Program Co-Chairs
University of Cambridge, UK

Tarek Abdelzaher
SenSys 2015 Program Co-Chairs
University of Illinois at Urbana-Champaign, USA
KEYNOTE
Self-Driving Vehicles: The Challenges and Opportunities Ahead

Keynote Talk :
Raj Rajkumar (Carnegie Mellon University)

Prof. Raj Rajkumar is the George Westinghouse Professor of Electrical & Computer Engineering and Robotics Institute at Carnegie Mellon University. At Carnegie Mellon, he directs National University Transportation Center on Safety, which is sponsored by the US Department of Transportation. He also directs the Real-Time and Multimedia Systems Laboratory (RTML), and co-directs the General Motors-Carnegie Mellon Connected and Autonomous Driving Collaborative Research Laboratory (CAD-CRL). Raj has served as the Program Chair and General Chair of six international ACM/IEEE conferences on real-time systems, wireless sensor networks, cyber-physical systems and multimedia computing/networking. He has authored one book, edited another book, holds three US patents, and has more than 150 publications in peer-reviewed forums. Eight of these publications have received Best Paper Awards. He has given several keynotes and distinguished lectures at several conferences and universities. He is an IEEE Fellow, and an ACM Distinguished Engineer. He has been given an Outstanding Technical Achievement and Leadership Award by the IEEE Technical Committee on Real-Time Systems. Prof Rajkumar’s work has influenced many commercial operating systems. He was also the primary founder of Ottomatika Inc., a company that focused on delivering the core software intelligence for self-driving vehicles. Ottomatika was recently acquired by Delphi. His research interests include all aspects of cyber-physical systems.

Self-driving vehicles seem to have become quite the rage in popular culture over the past 3 years or so. Jumpstarted by the DARPA Grand Challenges, the promise of self-driving vehicles does have the potential to revolutionize modern transportation. This talk will provide some insights on many basic questions that, however, still remain unanswered. What are the technological barriers? What can or cannot be sensed? Can vehicles recognize and comprehend as good as (or better than) humans? What role does connectivity play (if any)? Will the technology be affordable for the masses? How do issues like liability, insurance, regulations and societal acceptance impact deployment? The talk will be based on road experiences interspersed with some speculation.
KEYNOTE
From Sensors to Smarter Solutions with Physical Analytics

Keynote Talk:
Hendrik Hamann (IBM Research)

Dr. Hendrik F. Hamann is a Research Manager in the Physical Sciences Department at the IBM T.J. Watson Research Center, Yorktown Heights, NY. He received his PhD from the University of Goettingen in Germany. In 1995 he joined JILA (Joint institute between the University of Colorado and NIST) as a Research Associate in Boulder, Colorado. During his tenure at JILA he developed novel near-field optical microscopes to study single molecules at high spatial resolution. Since 2001 he is leading the Physical Analytics program in IBM Research, first as a Research Staff Member and currently as a Research Manager. Between 2005 and 2009 he worked on energy management all the way from the device level to large scale computing systems. His current research interest includes sensor networks, sensor-based physical modeling, renewable energy, precision agriculture, energy management and system physics. He has authored and co-authored more than 80 peer-reviewed scientific papers and holds over 90 patents and has over 70 pending patent applications. Dr. Hamann is an IBM Master Inventor and has served on governmental committees such as the National Academy of Sciences and as an industrial advisor to Universities. He is a member of the American Physical Society (APS), Optical Society of America (OSA), The Institute of Electrical and Electronics Engineers (IEEE) and the NY Academy of Sciences.

While in the past most information on the internet was generated by humans or computers, with the emergence of the Internet of Things, vast amount of data is now being created by sensors from devices, machines etc, which are placed in the physical world. Here we present a series of example applications enabled by such sensor data and what we call “Physical Analytics”, which provides the underlying intelligence using a combination of physical and statistical models. The smarter solutions, which are being presented in this talk, range from active energy management and optimization, environmental sensing and controls, precision agriculture to renewable energy forecasting. All these different applications have been built using a single platform, which is comprised of a set of “configurable” technologies components including ultra-low power sensing and communication, big data management technologies, numerical modeling for physical systems, machine learning based physical model blending, and physical analytics based automation and control.
## PROGRAM AT-A-GLANCE

### Nov. 1 (Sun)

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Monday, November 2, 2015

08:00 - 08:15
Welcome

08:15 - 08:30
Introduction of Seoul, Korea

08:30 - 09:30
Keynote Talk: Raj Rajkumar
(Carnegie Mellon University)
"Self-Driving Vehicles: The Challenges and Opportunities Ahead"

09:30 - 10:00
Break

10:00 - 12:00
Energy (Session chair: Nic Lane)

Tragedy of the Coulombs: Federating Energy Storage for Tiny, Intermittently-Powered Sensors
Josiah Hester, Lanny Sitnayak, Jacob Sorber
(Clemson University)

PowerBlade: A Low Profile True Power Plug Load Meter
Samuel DeBruin, Branden Chena, Ye-Sheng Kuo,
Prabal Dutta (University of Michigan)

PowerForecaster: Predicting Smartphone Power Impact of Continuous Sensing Applications at Pre-installation Time
Chulhong Min (KAIST), Youngki Lee (Singapore Management University), Chungkuk Yoo (KAIST),
Seungwoo Kang (KOREATECH), Sangwon Choi, Pillsoon Park (KAIST), Inseok Hwang (IBM Research Austin), Younghyun Ju (NAVER Labs), Seungpyo Choi, Junehwa Song (KAIST)

Zippy: On-Demand Network Flooding
Felix Sutton, Bernhard Buchli, Jan Beutel, Lothar Thiele (ETH Zurich)

12:00 - 13:00
Lunch

13:00 - 15:00
Indoor Mapping and Navigation
(Session chair: Fred Jiang)

Rise of the Indoor Crowd: Reconstruction of Building Interior View via Mobile Crowdsourcing
Si Chen, Muyuan Li, Kui Ren (SUNY Buffalo), Xinwen Fu (University of Massachusetts Lowell), Chunming Qiao (SUNY Buffalo)

ALPS: A Bluetooth and Ultrasound Platform for Mapping and Localization
Patrick Lazik, Niranjini Rajagopal, Oliver Shi, Bruno Sinopoli, Anthony Rowe (Carnegie Mellon University)

iMoon: Using Smartphones for Image-based Indoor Navigation
Jiang Dong, Yu Xiao, Marius Noreikis, Zhonghong Ou, Antti Ylä-Jääski (Aalto University)

VeTrack: Real Time Vehicle Tracking in Uninstrumented Indoor Environments
Mingmin Zhao, Tao Ye, Ruipeng Gao (Peking University), Fan Ye (Stony Brook University), Yizhou Wang, Guojie Luo (Peking University)

15:00 - 15:30
Break

15:30 - 17:30
Object and Activity Recognition
(Session chair: Wen Hu)

ShopMiner: Mining Customer Shopping Behavior in Physical Clothing Stores with Passive RFID
Longfei Shangguan, Zimu Zhou (HKUST), Xiaolong Zheng, Lei Yang, Yunhao Liu (Tsinghua University), Jinsong Han (X’ian Jiaotong University)

Smart Devices are Different: Assessing and Mitigating Mobile Sensing Heterogeneities for Activity Recognition
Allan Stisen, Henrik Blunck (Aarhus University), Sourav Bhattacharya (Bell Laboratories), Thor Sigur Prentow, Mikkel Baun Kjaegaard (Aarhus University), Anind Dey (Carnegie Mellon University), Tobias Sonne, Mads Møller Jensen (Aarhus University)

FEMO: A Platform for Free-weight Exercise Monitoring with RFIDs
Han Ding (X’ian Jiaotong University), Longfei Shangguan (HKUST), Zheng Yang (Tsinghua University), Jinsong Han (X’ian Jiaotong University), Zimu Zhou (HKUST), Panlong Yang (PLA University of Science and Technology), Wei Xi, Jizhong Zhao (X’ian Jiaotong University)

Glimpse: Continuous, Real-Time Object Recognition on Mobile Devices
Tiffany Yu-Han Chen (MIT), Lenin Ravindranath (Microsoft Research), Shuo Deng (MIT), Paramvir Bahl (Microsoft Research), Hari Balakrishnan (MIT)

17:30 - 20:00
Reception / Posters / Demos
## Tuesday, November 3, 2015

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<td>08:30 - 10:00</td>
<td>Information Services (Session chair: Akos Ledeczi)</td>
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<td>Truth Discovery on Crowd Sensing of Correlated Entities</td>
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<tr>
<td></td>
<td>Chuishi Meng, Wenjun Jiang, Yaliang Li, Jing Gao, Lu Su, Hu Ding (SUNY Buffalo), Yun Cheng (Air Scientific)</td>
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<td>Cloud-Enabled Privacy-Preserving Truth Discovery in Crowd Sensing Systems</td>
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<td>Chenglin Miao, Wenjun Jiang, Lu Su, Yaliang Li, Suxin Guo, Zhan Qin, Houping Xiao, Jing Gao, Kui Ren (SUNY Buffalo)</td>
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<td>Talos: Encrypted Query Processing for the Internet of Things</td>
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<td>Hossein Shafagh, Anwar Hithnawi, Andreas Droescher (ETH Zurich), Simon Duquennoy (SICS Swedish ICT), Wen Hu (UNSW)</td>
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<td>10:00 - 10:30</td>
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<td>Localization (Session chair: Tian He)</td>
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<td>SpinLight: A High Accuracy and Robust Light Positioning System for Indoor Applications</td>
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<td>Bo Xie, Guang Tan (SIAT, Chinese Academy of Sciences), Tian He (University of Minnesota)</td>
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<td>Contour-based Trilateration for Indoor Fingerprinting Localization</td>
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<td>Suining He, Tianyang Hu, S.-H. Gary Chan (HKUST)</td>
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<td>Accurate Positioning via Cross-Modality Training</td>
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<td>Savvas Papaioannou, Hongkai Wen, Zhiouling Xiao, Andrew Markham, Niki Trigoni (University of Oxford)</td>
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<td>CARLOC: Precise Positioning of Automobiles</td>
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<td>Yurong Jiang, Hang Qiu, Matthew McCartney, Gaurav Sukhatme (University of Southern California), Marco Gruteser (Rutgers University), Fan Bai, Donald Grimm (GM Global Research &amp; Development), Ramesh Govindan (University of Southern California)</td>
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<td>12:30 - 13:30</td>
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<td>13:30 - 15:30</td>
<td>Systems (Session chair: Luca Mottola)</td>
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<td>Bolt: A Stateful Processor Interconnect</td>
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<td>Felix Sutton, Reto Da Forno, Marco Zimmerling, Roman Lim, Tonio Gsell, Georgia Giannopoulou, Federico Ferrari, Jan Beutel, Lothar Thiele (ETH Zurich)</td>
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<td>MarketNet: An Asymmetric Transmission Power-based Wireless System for Managing e-Price Tags in Markets</td>
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## Wednesday, November 4, 2015

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<td>08:30 - 09:30</td>
<td>Hyung-Sin Kim, Hosoo Cho, Myung-Sup Lee (Seoul National University), Jeongyeeup Paek (Chung-Ang University), JeongGil Ko (Ajou University), Saewoong Bahk (Seoul National University)</td>
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<td>DrunkWalk: Collaborative and Adaptive Planning for Navigation of Micro-Aerial Sensor Swarm</td>
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<td>Xinlei Chen, Aweek Purohit, Carlos Ruiz Dominguez (Carnegie Mellon University), Stefano Carpin (UC Merced), Pei Zhang (Carnegie Mellon University)</td>
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<td>Sensing Ambient Light for User Experience-Oriented Color Scheme Adaptation on Smartphone</td>
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<td>Jiadi Yu, Jiaming Zhao (Shanghai Jiaotong University), Yingying Chen (Stevens Institute of Technology), Jie Yang (Florida State University)</td>
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<td>09:30 - 10:00</td>
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<td>10:00 - 12:00</td>
<td>Networking (Session chair: Kamin Whitehouse)</td>
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<td>cETX: Incorporating Spatiotemporal Correlation for Better Wireless Networking</td>
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<td>Song Min Kim, Shuang Wang, Tian He (University of Minnesota)</td>
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<td>Orchestra: Robust Mesh Networks Through Autonomously Scheduled TSCH</td>
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<td>Simon Duquennoy (SICS Swedish ICT), Beshr Al Nahas, Olaf Landsiedel (Chalmers University of Technology), Thomas Watteyne (INRIA)</td>
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<td>Directional Transmissions and Receptions for High-throughput Bulk Forwarding in Wireless Sensor Networks</td>
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<td>Ambuj Varshney (Uppsala University), Luca Motto-la (Politecnico di Milano, SICS Swedish ICT), Mats Carlsson (SICS Swedish ICT), Thiemo Voigt (Uppsala University, SICS Swedish ICT)</td>
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<td>When Pipelines Meet Fountain: Fast Data Dissemination in Wireless Sensor Networks</td>
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<td>Wan Du, Jansen Christian Liando, Huanle Zhang, Mo Li (Nanyang Technological University)</td>
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<th>Time</th>
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<tr>
<td>12:00 - 13:00</td>
<td>Business Meeting</td>
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A Smart Framework for IoT Analytic Workflow Development
Dibyanshu Jaiswal (Tata Consultancy Services); Pubali Datta (Tata Consultancy Services); Sounak Dey (Tata Consultancy Services); Himadri Sekhar Paul (Tata Consultancy Services); Tanushyam Chattopadhyay (Tata Consultancy Services); Avik Ghose (Tata Consultancy Services); Abhishek Singh (Tata Consultancy Services); Arpan Pal (Tata Consultancy Services); Arijit Mukherjee (Tata Consultancy Services)

Scalable Visual Codes for Embedding Digital Data in the Physical World
Frederik Hermans (Uppsala University); Liam McNamara (SICS Swedish ICT); Thiemo Voigt (Uppsala University & SICS)

KinVocal: Detecting Agitated Vocal Events
Asif Salekin (University of Virginia); Hongning Wang (University of Virginia); John Stankovic (University of Virginia)

Building Reliable Wireless Embedded Platforms using the Bolt Processor Interconnect
Felix Sutton (ETH Zurich); Marco Zimmerling (ETH Zurich); Reto Da Forno (ETH Zurich); Roman Lim (ETH Zurich); Tonio Gsell (ETH Zurich); Georgia Giannopoulou (ETH Zurich); Federico Ferrari (ETH Zurich); Jan Beutel (ETH Zurich); Lothar Thiele (ETH Zurich)

PowerBlade A Low-Profile, True-Power, Plug-Through Energy Meter
Samuel DeBruin (University of Michigan); Branden Ghen (University of Michigan); Ye-Sheng Kuo (University of Michigan); Prabal Dutta (University of Michigan)

Bringing Down Wires in Vehicles - Interconnecting ECUs using Wireless Connectivity
Changwon Lee (Electronics and Telecommunications Research Institute); Hoon Jeong (Electronics and Telecommunications Research Institute); Jaehong Ryu (Electronics and Telecommunications Research Institute); Byeong-Hee Choi (Electronics and Telecommunications Research Institute); JeongGil Ko (Ajou University)

RPL over Bluetooth Low Energy
Taeseop Lee (Seoul National University); Hyung-Sin Kim (Seoul National University); Myung-Sup Lee (Seoul National University); Saewoong Bahk (Seoul National University)

A Hardware Platform for Separating Energy Concerns in Tiny, Intermittently-Powered Sensors
Josiah Hester (Clemson University); Lanny Sitanyah (Clemson University); Jacob Sorber (Clemson University)

iMoon: Using Smartphones for Image-based Indoor Navigation
Jiang Dong (Aalto University); Yu Xiao (Aalto University); Marius Noreikis (Aalto University); Zhonghong Ou (Aalto University); Antti Ylä-Jääski (Aalto University)

AsthmaGuide: An Ecosystem for Asthma Monitoring and Advice
Ho-Kyeong Ra (Daegu Gyeongbuk Institute of Science and Technology); Asif Salekin (University of Virginia); Hee Jung Yoon (Daegu Gyeongbuk Institute of Science and Technology); Jeremy Kim (University of Virginia); Shahriar Nirjon (University of Virginia); David J. Stone (University of Virginia School of Medicine); Sujeong Kim (Kyungpook National University School of Medicine); Jong-Myung Lee (Kyungpook National University School of Medicine); Sang Hyuk Son (Daegu Gyeongbuk Institute of Science and Technology); John A. Stankovic (University of Virginia)

A Connection Oriented Mesh Network for Mobile Devices using Bluetooth Low Energy
Yaswanth Kumar Reddy (Samsung R&D Institute India-Bangalore); Praneeth Juturu (Samsung R&D Institute India-Bangalore); Hari Prabhat Gupta (Samsung R&D Institute India-Bangalore); Pramod Reddy Serikar (Samsung R&D Institute India-Bangalore); Shruthi Sirur (Samsung R&D Institute India-Bangalore); Sulekha Barak (Samsung R&D Institute India-Bangalore); Bonggon Kim (Samsung Electronics)

Towards Quantifying Activeness of Meeting Using a Smartphone
Akira Yoneoka (Aoyama Gakuin University); Yanan Wang (Aoyama Gakuin University); Niwat Thepvioljanapong (Mie University); Itaru Usami (Aoyama Gakuin University); Yoshito Tobe (Aoyama Gakuin University)
IASC: Information Analytics for Sensors
Soma Bandyopadhyay (Tata Consultancy Services); Arijit Ukiil (Tata Consultancy Services); Chetanya Puri (Tata Consultancy Services); Arpan Pal (Tata Consultancy Services); Rituraj Singh (Tata Consultancy Services); Tulika Bose (Tata Consultancy Services)

Recognizing non-negative emotions based on physiological changes
Sinh Huynh (Singapore Management University); Youngki Lee (Singapore Management University); Rajesh Balan (Singapore Management University)

Towards Global Interworking of IoT Systems - oneM2M Interworking Proxy Entities
Jaeseok Yun (Korea Electronics Technology Institute); Sung-Chan Choi (Korea Electronics Technology Institute); Nak-Myoung Sung (Korea Electronics Technology Institute); Jaeho Kim (Korea Electronics Technology Institute)

Choco – A Versatile Communication Protocol in Wireless Sensor Networks
Yuki KATSUMATA (University of Tokyo); Makoto SUZUKI (University of Tokyo); Hiroyuki MORIKAWA (University of Tokyo)

Realtime detection for multiple occupancy and near real-time hoggng detection
Nguyen Huy Hoang Huy (Singapore Management University); Rajesh Krishna Balan (Singapore Management University); Youngki Lee (Singapore Management University)

Distributed MaxRS in Wireless Sensor Networks
Muhammed Mas-ud Hussain (Northwestern University); Panitan Wongse-armmat (Northwestern University); Goce Trajcevski (Northwestern University)

Browsing the Web of Things with Summon
Thomas Zachariah (University of Michigan); Joshua Adkins (University of Michigan); Prabal Dutta (University of Michigan)

PolyPoint: High-Precision Indoor Localization with UWB
Benjamin Kempeke (University of Michigan); Pat Pannuto (University of Michigan); Bradford Campbell (University of Michigan); Joshua Adkins (University of Michigan); Prabal Dutta (University of Michigan)

A Toolkit of Platforms, Sensors, and Software for Assembling the IoT Puzzle
Joshua Adkins (University of Michigan); Bradford Campbell (University of Michigan); Samuel DeBruin (University of Michigan); Branden Ghen (University of Michigan); Benjamin Kempeke (University of Michigan); Noah Klugman (University of Michigan); Ye-sheng Kuo (University of Michigan); Deepika Natarajan (University of Michigan); Pat Pannuto (University of Michigan); Thomas Zachariah (University of Michigan); Alan Zhen (University of Michigan); Prabal Dutta (University of Michigan)

Glimpse - Continuous, Real-Time Object Recognition on Mobile Devices
Tiffany Yu-Han Chen (MIT); Lenin Ravindranath (Microsoft Research); Shuo Deng (MIT); Paramvir Bahl (Microsoft Research); Hari Balakrishnan (MIT)

Tethys – An Energy Harvesting Networked Water Flow Sensor
Holly Chiang (Stanford University); James Hong (Stanford University); Kevin Kiningham (Stanford University); Jiaqi Xue (Stanford University); Laurynas Riiliiskis (Stanford University); Philip Levis (Stanford University); Mark Horowitz (Stanford University)

Where am I and where are the walls?
Patrick Lazik (Carnegie Mellon University); Niranjini Rajagopal (Carnegie Mellon University); Oliver Shih (Carnegie Mellon University); Bruno Sinopoli (Carnegie Mellon University); Anthony Rowe (Carnegie Mellon University)

User Support for Power Management of Continuous Sensing Applications
ChulHoon Min (KAIST); Seungwoo Kang (KOREATECH); Chungkuk Yoo (KAIST); Youngki Lee (Carnegie Mellon University); Sangwon Choi (KAIST); Pillsoon Park (KAIST); Inseok Hwang (IBM Research - Austin); Younghyun Ju NAVER Labs; Seungpyo Choi (KAIST); Junehwa Song (KAIST)

Posture Correction Using Smartphone-based Relational Intervention Model
JaeMyung Shin (KAIST); Bumsoo Kang (KAIST); Jinhan Kim (KAIST); Taiwoo Park (Michigan State University); Jina Huh (University of California, San Diego); Junehwa Song (KAIST)
Asynchronous Acoustic Localization using Commercial Devices  
Jongtack Jung (Korea University)

ParkGauge: Gauging the Congestion Level of Parking Garages with Crowdsensed Parking Characteristics  
Jim Cherian (Nanyang Technological University); Jun Luo (Nanyang Technological University); Hongliang Guo (Nanyang Technological University); Shen-Shyang Ho (Nanyang Technological University); Richard Wisbrun (BMW Group)

Non-invasive Human Activity Monitoring using a Low-cost Doppler Sensor and an RF Link  
Yang Zhao (GE Global Research); Ting Yu (GE Global Research); Jeffrey Ashe (GE Global Research)

A Medium Access Control Protocol for Full-duplex Wireless Information and Power Transfer  
Shiho Kodera (Shizuoka University); Yoshiaki Narusue (University of Tokyo); Yoshihiro Kawahara (University of Tokyo); Takashi Watanabe (Osaka University); Shunsuke Saruwatari (Shizuoka University)

Maximizing Renewable Energy Usage in Buildings using Smart Energy Switching Platform  
Qasim Khalid (Lahore University of Management Sciences); Naveed Arshad (Lahore University of Management Sciences); Tahangir Ikram (Lahore University of Management Sciences)

A Dynamically Switchable Scheduling System in Wireless Sensor Networks  
Yoshiki Komachi (Keio University); Jin Nakazawa (Keio University); Hideyuki Tokuda (Keio University)

Solar-Powered Adaptive Street Lighting Evaluated with Real Traffic and Sunlight Data  
Sei Ping Lau (University of Southampton); Alex S. Weddell (University of Southampton); Neil M. White (University of Southampton); Geoff V. Merrett (University of Southampton)
Enspect—Simplifying the Design of Energy Harvesting Systems
Nick F. Tinsley (University of Southampton); Stuart T. Witts (University of Southampton); Jacob M. R. Ansell (University of Southampton); Emily Barnes (University of Southampton); Simeon M. Jenkins (University of Southampton); Dhanushan Raveendran (University of Southampton); Geoff V. Merrett (University of Southampton); Alex S. Weddell (University of Southampton)

MICO: Model-Based Irrigation Control Optimization
Daniel A. Winkler (University of California, Merced); Robert Wang (University of California, Merced); Francois Blanchette (University of California, Merced); Miguel Á. Carreira-Perpiñán (University of California, Merced); Alberto E. Cerpa (University of California, Merced)

CARLOC: Precisely Tracking Automobile Position
Yurong Jiang (University of Southern California); Hang Qiu (University of Southern California); Matthew McCartney (University of Southern California); Gaurav Sukhatme (University of Southern California); Marco Gruteser (Rutgers University); Fan Bai (GM Global Research & Development); Donald Grimm (GM Global Research & Development); Ramesh Govindan (University of Southern California)

A Low-Power Sensing Method Using Linux Kernel on Android Devices
Masaru Takagi (University of Tokyo); Yoshihiro Kawahara (University of Tokyo); Tohru Asami (University of Tokyo)

An Indoor-Outdoor Navigation Service for Subway Transportation Systems
Xiaoqiang Teng (National University of Defense Technology); Deke Guo (National University of Defense Technology); Xiaolei Zhou (National University of Defense Technology); Zhong Liu (National University of Defense Technology)

Data-Centric Task Scheduling for Battleship Island Monitoring
Kotomi Kuroki (Shizuoka University); Shihod Kodera (Shizuoka University); Narito Kurata (National University Corporation Tsukuba University of Technology); Takuji Hamamoto (Tokyo City University); Shunsuke Saruwatari (Shizuoka University)

Fair Scheduling for Energy Harvesting WSN in Smart City
Kai Li (Singapore University of Technology and Design); Chau Yuen (Singapore University of Technology and Design); Sanjay Jha (University of New South Wales)

Coordination of Wireless Sensor Networks using Visible Light
Ambuj Varshney (Uppsala University); Luca Mottoia (Politecnico di Milano); Thiemo Voigt (Uppsala University)

Exploring the Need for Sensor Learning and Collaboration in IoT-based Parking Systems
Yu Huang (National Taiwan University); Kai-Lung Hua (National Taiwan University of Science and Technology); Dian-Xuan Wu (National Taiwan University of Science and Technology); Wen-Huang Cheng (Academia Sinica); Yi-Ling Chen (National Taiwan University); Chuang-Wen You (National Taiwan University); Chi-Ling Yang (National Taiwan University of Science and Technology); Jane Yung-Jen Hsu (National Taiwan University); Seng-Yong Lau (National Taiwan University)

Toward Efficient and Secure Code Dissemination Protocol for the Internet of Things
Jun young Kim (UNSW); Wen Hu (UNSW); Sanjay Jha (UNSW); Hossein Shafagh (ETH Zurich); Mohamed Ali Kaafar (National ICT)

CountryRoads: Large-Scale Nationwide Ridesharing System
Weiwei Jiang (Tsinghua University); Chunxiao Jiang (Tsinghua University); Pei Zhang (Carnegie Mellon University); Lin Zhang (Tsinghua University)

Were You in the Cafe Yesterday? Location Proof Generation & Verification for Mobile Users
Chitra Javali (UNSW, National ICT Australia); Girish Revadigar (UNSW, National ICT Australia); Wen Hu (UNSW); Sanjay Jha (UNSW)

Context-aware Adaptation Mechanism for Smart Resources: a RGBD Sensor case study
Eduardo Munera (Universitat Politècnica de València); Jose-Luis Pozo-Luján (Universitat Politècnica de València); Manuel Muñoz (Universitat Politècnica de València); Juan-Luis Posadas-Yagüe (Universitat Politècnica de València); Juan Fco. Blanes Noguera (Universitat Politècnica de València)
Drone Can Find Lost Smartphones
Sunyoung Kim (Gwangju Institute of Science and Technology (GIST)); Yohan Kim (Gwangju Institute of Science and Technology (GIST)); Sun Young Park (Gwangju Institute of Science and Technology (GIST)); Ryangsoo Kim (Gwangju Institute of Science and Technology (GIST)); Hyuk Lim (Gwangju Institute of Science and Technology (GIST))

Communicating "in the Air"- Studying the Impact of UAVs on Sensor Network Data Collection
Hoon Jeong (Electronics and Telecommunications Research Institute); Changwon Lee (Electronics and Telecommunications Research Institute); Jaehong Ryu (Electronics and Telecommunications Research Institute); Byeong-Cheol Choi (Electronics and Telecommunications Research Institute); JeongGil Ko (Ajou University)

Model Predictive Control with Real-time Occupancy Detection
Alex Beltran (University of California, Merced); Alberto E. Cerpa (University of California, Merced)

Towards Robust Reprogrammability for Wireless Sensors
Nicole Tobias (Clemson University); Connor Bolton (Clemson University); Josiah Hester (Clemson University); Lanny Sitanayah (Clemson University); Jacob Sorber (Clemson University)

Niloufar P. Esfahani (University of California, Merced); Alberto E. Cerpa (University of California, Merced)

Cross-Layer Optimization for Low-power Wireless Coexistence
Anwar Hithnawi (ETH Zurich); Su Li (ETH Zurich); Hossein Shafagh (ETH Zurich); Simon Duquennoy (SICS Swedish ICT); James Gross (KTH)
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