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Proceedings of the 14th ACM Conference on Embedded Networked Sensor Systems

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SenSys'16

Proceedings of the 14th ACM Conference on

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Message from the General Chairs

Welcome to the 14th Conference on Embedded Networked Sensor Systems (SenSys 2016)! On behalf of the organizing committee and Stanford University, we would like to extend our hospitality, inviting you to hear the latest research results in embedded sensing systems and engage in deep technical discussions.

While this is not the first time SenSys has been in the San Francisco Bay Area (SenSys 2009 was in Berkeley), it is the first time it has been in Silicon Valley. In the past few years, embedded networked sensor systems have moved from a topic of research into a booming market: the Internet of Things is of tremendous interest in industry today. The proliferation of sensors and the Internet of Things is part of a larger trend that includes the rise of machine learning and big data. We have reached a tipping point and now is the moment when sensors, communications networks, and data analytics are sufficient to do really important and impactful things that were impossible as recently as just a few years ago. Those of you attending SenSys are enabling this revolution and influencing its trajectory. The keynote will be by Sanjit Biswas, a leader of the Roofnet research project at MIT who co-founded Meraki Networks (purchased by Cisco in 2012) and is now co-founder and CEO of Samsara, which is building a data platform for connected devices.

SenSys is the premier publication venue for research on embedded networked systems. When the conference started, 14 years ago, we did not yet have big data, deep learning, or a mobile phone application ecosystem. While the scope of the conference has greatly expanded since its early days, the same common intellectual threads still weave through the work it publishes. This years program selected 21 of out 119 papers (18%), including work on security, networking, and applications. The demonstration session has always been a highlight of SenSys, the time when researchers show the systems they have built and allow detailed discussions about the underlying technology; this year continues this tradition, with 23 demonstrations.

SenSys 2016 is co-located with The 3rd ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2016) as well as the 4th International Workshop on Energy Harvesting & Energy Neutral Sensing Systems (ENSsys 2016). These other events highlight how SenSys has grown to embrace new areas of research as well as dig deeper into core topics.

Putting together SenSys 2016 has been a team effort: it could not have been successful without tremendous help from a long list of people. Lama Nachman and Anthony Rowe assembled an excellent program committee and deserve great credit for the technical program, while Xiaofan (Fred) Jiang oversaw the demo session and Karthik Dantu oversaw the poster session. Pei Zhangs tireless efforts as finance chair are why we were able to keep registration fees flat this year, despite holding the event in an area as expensive as Silicon Valley. Jorge Ortiz's work in encouraging industrial sponsors was also instrumental in keeping fees low. Omprakash Gnawali coordinated with the NSF to get a sizable gift to support student travel grants, making it easier for students to attend and contribute at the event. Pine Liu and Shijia Pan have done an excellent job of publicizing the event and keeping the community informed as it has approached, while can thank Pandarasamy Arjunan for such a clean and informative website which always had the latest information. Meredith Noe and Suzanne Rose Bennett from Stanford Events did all of the heavy lifting in local arrangements, including hotels, buses, food, and the banquet. Finally, we would especially like to thank Rasit Eskicioglu, who agreed to be the publications chair for all three events; the needed effort to get all of the papers, demo abstracts, and other documents together was far more intense than we had imagined, and he did it with great patience and care.

Philip Levis and Steve Eglash
SenSys'16 General Co-Chairs

Message from the Program Co-Chairs

It is our great pleasure to welcome you to the 14th ACM Conference on Embedded Networked Sensor Systems (SenSys 2016). We hope you enjoy this conference, get some insights from the papers and discussions and use this as an opportunity to connect with the wonderful researchers from academia and industry and engage in exchanging ideas on networked systems. 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 119 high quality submissions, only 21 were accepted for publication and presentation as full papers, yielding an acceptance rate around 17.64%. 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 passing this stage were assigned three reviewers in the first round of the peer review process. At the conclusion of this stage, papers without a single recommended acceptance were rejected. The rest were assigned two additional reviewers, thus totaling 5 reviews per paper. An online discussion phase then started, resulting in recommending 63 papers for discussion at the in-person PC meeting. At the conclusion of the PC meeting, a total of 21 papers were recommended for acceptance to the conference. Recommended papers were assigned shepherds to help ensure that the final manuscript addresses reviewer comments and is ready for publication. All shepherded papers were accepted to the conference.

Our program this year covers an exciting set of topics including systems, networking, security, mobile applications, wearables and deep learning, and includes a poster/demo session. We are also excited to have Sanjit Biswas from Samsara Networks as our distinguished keynote speaker this year. Putting together the program of Sensys 2016 was a team effort. We would like to thank Professors Phil Levis and Steve Eglash, our General Chairs, for assembling the team, handling the logistics and helping us throughout this process. We would also like to thank the authors for their great work, high quality submissions and for working diligently to address the reviewers comments. We would also like to express special thanks to the program committee members and shepherds who worked very hard to review papers, discuss them passionately and provide 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.

Lama Nachman and Anthony Rowe
SenSys'16 Program Co-Chairs

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