First International Workshop on the Swarm at the Edge of the Cloud
September 29, 2013, Montreal Canada
ESWeek one-day workshop

Organizers:

General Chair:
Jan Rabaey, UC Berkeley

Co-Chairs:
Prabal Dutta, Univ. of Michigan
George Pappas, Univ. of Pennsylvania

Description

Over the past decade there has been increasing interest in the use of "swarms" of sensors to help solve societal-scale problems. Sensor swarms, which can be wirelessly interconnected and deposit vast quantities of data in centralized repositories, offer an unprecedented ability to monitor and act on a range of evolving physical quantities. Sensor and actuator-based systems have been proposed and deployed for a broad range of applications, but the potential goes far beyond what has been accomplished so far. When realized in full, these technologies can integrate the cyber world (centered today in the cloud) with our physical/biological world. This can enable humans, machines and infrastructure that are far more aware and adaptive to their environment. Just as today much of our data resides "in the cloud," tomorrow much of our physical world will have a presence "in the swarm." From the perspective of the information world, this revolution gives the network eyes, ears, hands, and feet to interact with the physical world. From the perspective of the physical and biological world, this revolution enables coordination, intelligence, and efficient use of resources. This workshop will bring together world-class experts on the enabling technology, potential applications, and risks of swarm technologies.

Topics of Interest

- Applications in health, transportation, energy, etc.
- Architectures, including APIs, protocols, contracts
- Assurance, including security, privacy, and verification
- Control, including adaptation, synthesis
- Data management, including aggregation, storage, learning, and mining.
- Design, including methodologies, co-simulation, co-design
- Energy-optimized services and devices
- Localization technologies and location-aware services
- Modeling, including
- Ontologies of sensors, actuators, and services
- Resource identification, management, allocation, and optimization
- Sensor and actuator component architecture
- Smart buildings and cities
- Temporal dynamics, including safety-critical networked operation
- User interaction, including novel interfaces, omnipresense
- Wireless sensor networks

Program Committee:

- David Blaauw, U. Michigan
- Prabal Dutta, U. Michigan
- Kevin Fu, U. Michigan
- Roozbeh Jafari, UT Dallas
- Doug Jones UIUC
- Carlos Guestrin, UW
- Louisa Guise, Raytheon
- Ling Huang, Intel
- John Kubiatowicz, Berkeley
- Edward Lee, UC Berkeley
- Petros Maniatis, Intel
- Richard Murray, Caltech
- George Pappas, U. Pennsylvania
- Jan Rabaey, UC Berkeley
- Anthony Rowe, CMU
- Carl Sechen, UT Dallas
- Tajana Simunic Rosing, UCSD
- Alberto Sangiovanni-Vincentelli, UC Berkeley
- Sanjit Seshia, UC Berkeley
- Ben Taskar, UW
- John Wawrzynek, UC Berkeley
- David Wessel, UC Berkeley