Implementation and Research Issues in Query Processing for Wireless Sensor Networks

Wei Hong
Intel Research Labs
whong@berkeley.intel-research.net

Samuel Madden
Massachusetts Institute of Technology
madden@csail.mit.edu

This is a three-hour seminar discussing the design and implementation of software systems as well as open research problems related to data processing and collection in wireless sensor networks. During the first hour-and-a-half, we focus on the design of the TinyDB data collection system for networks of Berkeley motes running the TinyOS operating system. Then, during the remainder of the seminar, we survey relevant literature from the database, networking, and OS communities and identify a number of unsolved and inadequately addressed research problems. This seminar is intended for anyone interested in wireless sensor networks with a general background in computer science, be they users of sensor networks looking for an easy way to collect data, developers interested in the design of TinyOS and TinyDB, or researchers in search of challenging new problems.

Speakers

Wei Hong is a senior researcher at Intel Research, Berkeley. His current research focuses on data management in sensor networks. He leads the Tiny Application Sensor Kit (TASK) project at Intel Research and co-designed/developed TinyDB, an open-source, in-network sensor database system with Samuel Madden. Prior to joining Intel Research, Wei co-founded and architected the products of two startup companies: Illustra Information Technology Inc. and Cohera Corp. Illustra developed the first successful commercial Object-Relational database system. It was acquired by Informix, now part of IBM. Cohera provided electronic catalog management solutions based on a novel federated database system that it developed. Its technology was acquired by PeopleSoft. Wei earned a Ph.D. in computer science from UC Berkeley and holds a master and two bachelor degrees from Tsinghua University in Beijing, China.

Samuel Madden is an Assistant Professor in the Department of Electrical Engineering and Computer Sciences and a member of the Computer Sciences and Artificial Intelligence Laboratory at MIT. He received his Ph.D. in Computer Science from the University of California at Berkeley in 2003. His research interests are in the area of distributed and adaptive data management and related networking and systems issues, particularly as they pertain to sensor networks and streaming data.