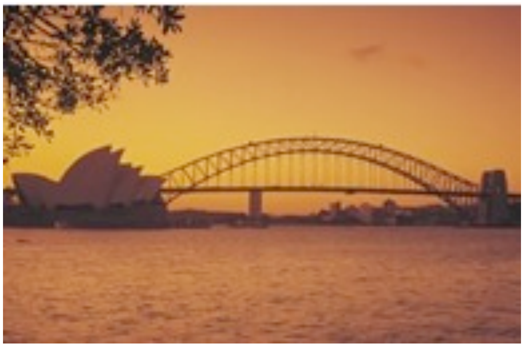
ACM SenSys 2007

The Fifth ACM Conference on Embedded Networked Sensor Systems

http://sensys.acm.org/2007/Home.html

6th – 9th November 2007

Swissotel, Sydney, Australia

Technical Program

Organising Committee

General Chair:
Sanjay Jha, The University of New South Wales
Program Co-Chairs:
Philip Gibbons, Intel Research
Akos Ledeczi, Vanderbilt University
Poster Co-Chairs:
Nirupama Bulusu, Portland State University
Rachel Cardell-Oliver, University of Western Australia
Demo Co-Chairs:
Suman Nath, Microsoft Research
Max Ott, National ICT Australia
Local Arrangements Co-Chairs:
Salil Kanhere, The University of New South Wales
Subhash Challa, National ICT Australia
Finance Chair:
Chun Tung Chou, The University of New South Wales
Registration Chair:
Ren Liu, CSIRO
Workshop Chair:
Andreas Savvides, Yale University
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Student Award Chair:
Alberto Cerpa, University of California at Merced
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Wen Hu, CSIRO
Steering Committee Chair:
John Heidemann, University of Southern California

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Tarek Abdelzaher, UIUC
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Philip Gibbons, Intel Research
Tian He, University of Minnesota
Ted Herman, University of Iowa
Brad Karp, University College London
Phil Levis, Stanford University
Chenyang Lu, Washington University in St. Louis
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Lama Nachman, Intel Research
Mani Srivastava, UCLA
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Gaetano Borriello, University of Washington
Peter Corke, CSIRO
Richard Han, University Colorado
John Heidemann, USC
Polly Huang, National Taiwan University
Akos Ledeczi, Vanderbilt University
Jie Liu, Microsoft Research
Sam Madden. MIT
Magaret Martonosi, Princeton University
Kay Romer, ETH Zurich
John Stankovic, University of Virginia
Thiemo Voigt, SICS

Technical Program

Tuesday, 6th November 2007

08:30 – 17:00 **Workshops (run concurrently)**

SenseID: Convergence of RFID and Wireless Sensor Networks and Their Applications
Oak Room, Lobby Level

Program Chairs:
Srdjan Krco, Ericsson
David Simplot-Ryl, INRIA-University of Lille
Konrad Wrona, SAP Research

Sensing of Everyday Mobile Phones in Support of Participatory Research
Maple Room, Lobby Level

Program Chairs:
Jeff Burke, UCLA
Deborah Estrin, UCLA

SenSys Doctoral Colloquium
University of Technology, Sydney

DC Chairs:
Mike Hazas, Lancaster University
Athanassios Boulis, NICTA
Lewis Girod, MIT

17:30 – 19:30 **Welcome Reception**
Maple Room and Foyer Area, Lobby Level

Sponsored by: CSIRO

Internet Access

Internet access will be available in the conference room, courtesy of our sponsor aarnet
Check with the registration desk for details on how to connect your laptop to the network.

Note: All technical sessions will be held in the main ballroom on the lobby level of the hotel.

Wednesday, 7th November 2007

08:00 – 08:30 Registration and Morning Coffee

08:30 – 08:45 Opening Announcement (Sanjay Jha and Philip Gibbons)

08:45 – 10:00 Keynote (Chair: Akos Ledeczi)

Title: **On the Path Towards Programmable Matter**
Speaker: **Seth Goldstein, Carnegie Mellon University**

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10:00 – 10:30 Coffee Break

10:30 – 12:00 Localization
Session Chair: John Stankovic, University of Virginia

Beep Beep: A High Accuracy Acoustic Ranging System Using COTS Mobile Devices
Chunyi Peng, Guobin Shen, Yongguang Zhang, Yanlin Li, Kun Tan (Microsoft Research Asia)

MSP: Multi-Sequence Positioning of Wireless Sensor Nodes
Ziguo Zhong, Tian He (University of Minnesota)

Tracking Mobile Nodes Using RF Doppler Shifts
Branislav Kusy, Akos Ledeczi, Xenofon Koutsoukos (Vanderbilt University)

12:00 – 13:30 Lunch

Sponsored by: ACoRN ARC Communications Research Network

13:30 – 15:00 Protocols
Session Chair: John Heidemann, University of Southern California

CountTorrent: Ubiquitous Access to Query Aggregates in Dynamic and Mobile Sensor Networks
Abhinav Kamra, Vishal Misra, Dan Rubenstein (Columbia University)

A Component Based Architecture for Power-Efficient Media Access Control in Wireless Sensor Networks
Kevin Klues, Greg Hackmann, Octav Chipara, Chenyang Lu (Washington University in St Louis)

Visibility: A New Metric for Protocol Design
Megan Wachs, Jung Il Choi, Jung Woo Lee, Kannan Srinivasan (Stanford University), Zhen Chen (Columbia University), Mayank Jain, Philip Levis (Stanford University)

15:00 – 15:30 Coffee Break

15:30 – 17:00 Applications
Session Chair: Lama Nachman, Intel

The BikeNet Mobile Sensing System for Cyclist Experience Mapping
Shane B. Eisenman (Columbia University), Emiliano Miluzzo, Nicholas D. Lane, Ronald A. Peterson (Dartmouth College), Gahng-Seop Ahn (Columbia University), Andrew T. Campbell (Dartmouth College)

Luster: Wireless Sensor Network for Environmental Research
Leo Selavo, Anthony Wood, Qiuhua Cao, Tamim Sookoor, Hengchang Liu, Aravind Srinivasan, Yafeng Wu, Woochul Kang, John Stankovic (University of Virginia), Don Young (Virginia Commonwealth University), John Porter (University of Virginia)

SensorFlock: An Airborne Wireless Sensor Network of Micro-Air Vehicles
Jude Allred, Ahmad Bilal Hasan, Saroah Panichsakul, William Pisano, Peter Gray, Jyh Huang, Richard Han, Dale Lawrence, Kamran Mohseni (University of Colorado)

18:00 – 22:00 Banquet Dinner Cruise

Sponsored by: Intel, Microsoft Research

Captain Cook cruises depart from the King Street Wharf # 1 (Northern end of Lime Street in front of Bungalow 8 bar), Darling Harbour. See attached map at the back of this program.

How to get there:

Walk: We will assemble in the hotel lobby at **17:30** and walk towards the marina. This is a short 10-minute walk. See attached map.

MonoRail: You can take the monrail from the *City Centre* station at the corner of Market and Pitt Streets (a 2 minute walk from the hotel) to *Darling Park* station (the next station along the route). The departure terminal for Matilda cruises is a 2-minute walk from the station. Purchase a standard fare (1 loop) for AUD4.50. The train ride takes approximately 1-2 minutes.

Thursday, 8th November 2007

08:30 – 10:00 Power Management
Session Chair: Chenyang Lu, Washington University in St. Louis

Meeting Lifetime Goals with Energy Levels
Andreas Lachenmann (University of Stuttgart), Pedro José Marrón (University of Bonn), Daniel Minder, Kurt Rothermel (University of Stuttgart)

CargoNet: A Low-Cost MicroPower Sensor Node Exploiting Quasi-Passive Wakeup for Adaptive Asynchronous Monitoring of Exceptional Events
Mateusz Malinowski, Matthew Moskwa, Mark Feldmeier, Mathew Laibowitz, Joseph Paradiso (MIT)

Eon: A Language and Runtime System for Perpetual Systems
Jacob Sorber, Alexander Kostadinov, Matthew Garber (University of Massachusetts Amherst), Matthew Brennan (University of Southern California), Mark Corner, Emery Berger (University of Massachusetts Amherst)

10:00 – 10:30 Coffee Break

10:30 – 12:00 Programming
Session Chair: Tarek Abdelzaher, University of Illinois at Urbana-Champaign

The Design and Implementation of A Declarative Sensor Network System
David Chu, Lucian Popa, Arsalan Tavakoli, Joseph Hellerstein (University of California at Berkeley), Philip Levis (Stanford University), Scott Shenker, Ion Stoica (University of California at Berkeley)

Clairvoyant: A Comprehensive Source-Level Debugger for Wireless Sensor Networks
Jing Yang, Mary Lou Soffa, Leo Selavo, Kamin Whitehouse (University of Virginia)

Efficient Memory Safety for TinyOS
Nathan Cooprider, Will Archer, Eric Eide (University of Utah), David Gay (Intel Research), John Regehr (University of Utah)

12:00 – 14:00 Lunch + Business Meeting

Sponsored by: ISSNIP

14:00 – 17:15 Demonstration and Poster Session

(There will be a coffee break between 15:00 – 15:30)

Posters
Chairs: Nirupama Bulusu, Portland State University and Rachel Cardell-Oliver, University of Western Australia

Fair Waiting Protocol: Achieving Isolation in Wireless Sensornets
Jung Il Choi, Jung Woo Lee (Stanford University), Zhe Chen (Columbia University), Philip Levis (Stanford University)

Secure Multi-Path in Sensor Networks
Feng Lu (Nanyang Technological University), Lijuan Geng (Institute for Infocomm Research), Liang-Tien Chia (Nanyang Technological University), Ying-Chang Liang (Institute for Infocomm Research)

PrivaSense: Providing Privacy Protection for Sensor Networks
Yi Ouyang, Zhengyi Le (Dartmouth College), James Ford, Fillia Makedon (University of Texas at Arlington)

A Framework for Data Quality and Feedback in Participatory Sensing
Sasank Reddy, Jeff Burke, Deborah Estrin, Mark Hansen, Mani Srivastava (University of California at Los Angeles)

TomuDB: Multi-Resoultion Queries in Heterogenous Sensor Networks Through Overlay Network
Yoh Shiraishi (JST), Niwat Thepvilojanapong (KDDI), Yosuke Tamura, Tatsuro Endo, Koichi Yamada, Nayuta Ishii, Hiroki Ishizuka (JST), Keisuke Kanai (Tokyo Denki University), Yoshito Tobe (JST)

A Model-Based Routing Protocol for a Mobile, Delay Tolerant Network
Tim Wark, Wen Hu, Pavan Sikka, Lasse Klingbeil, Peter Corke, Chris Crossman, Greg Bishop-Hurley (CSIRO)

A Fault-Tolerant Node Scheduling Scheme to Extend the Lifetime of Wireless Sensor Networks
Babak Pazand, Amitava Dutta, Rachel Cardell-Oliver (University of Western Australia)

Detection and Tracking Using Wireless Sensor Networks
Nadeem Ahmed, Yifei Dong, Tatiana Bokareva, Salil Kanhere, Sanjay Jha (University of New South Wales), Travis Bassell, Mark Rutten, Branko Ristic, Neil Gordon (DSTO)

An Effective Method for State-of-Change Estimation in Wireless Sensor Networks
Christian Behrens, Ole Bischoff, Steffen Paul, Rainer Laur (University of Bremen)

Adaptive Sampling in the COlumbia RIvEr Observation Network
Thanh Dang, Nirupama Bulusu, Wu-chi Feng (Portland State University), Sergev Frolov, Antonio Baptista (Oregon Health and Science University)

SASSI: The Silverware Architecture for Sensor System Integration
Seth Holloway, Alexander Griffith, Angela Dalton, Drew Stovall, Christine Julien (University of Texas at Austin)

On Node Isolation in Directional Sensor Networks
Unoma Ndili Okorafor, Deepa Kundur (Texas A&M University)

Application Semantics in Query Optimization for WSNs
Egemen Tanin (University of Melbourne), Songting Chen, Junichi Tatemura, Wang-Pin Hsiung (NEC Laboratories)

Distributed Computation in Wireless Ad Hoc Grids with Bandwidth Control
Elisa Rondini, Stephen Hailes (University College London)

An Autonomic Communication Framework for Sensor Networks
Jingbo Sun, Rachel Cardell-Oliver (University of Western Australia)

Demonstrations
Chairs: Suman Nath, Microsoft Research and Max Ott, National ICT Australia

A Real-Time Sensor Network Visualization System Using KVS – Kyoto Visualization System
Norihisa Segawa (Iwate Prefectural University), Yukio Yasuhara, Naohisa Sakamoto, Tomoki Yoshihisa, Yasuo Ebara, Koji Koyamada (Kyoto University)

The National Weather Sensor Grid
Hock Beng Lim, Keck Voon Ling, Wenqiang Wang, Yuxia Yao, Mudasser Iqbal, Boyanf Li, Xiaonan Yin, Tarun Sharma (Nanyang Technological University)

A Multi-Channel MAC Implementation for Wireless Sensor Networks
Youngmin Kim, Hyojeong Shin, Hojung Cha (Yonsei University)

A High Density Earthquake Monitoring System Using Wireless Sensor Networks
Makoto Suzuki, Shunsuke Saruwatari (University of Tokyo), Narito Kurata (Kajima Corporation), Hiroyuki Morikawa (University of Tokyo)

A 6LoWPAN Application Environment
Gilman Tolle (Arch Rock Corporation)

Multi-User Data Sharing in Radar Sensor Networks
Ming Li, Tingxin Yan, Deepak Ganesan, Eric Lyons, Prashant Shenoy, Arun Venkataramani, Michael Zink (University of Massachusetss Amherst)

Navigation and Interaction in Physical Spaces Using RFID Enabled Spatial Sensing
Muhammad Atif Mehmood, Lars Kulik (National ICT Australia), Egmen Tanin (University of Melbourne)

An Interactive UNIX Shell for Low-End Sensor Nodes with LiteOS
Qing Cao, Tarek Abdelzaher (University of Illinois at Urbana-Champaign), John Stankovic (University of Virginia), Tian He (University of Minnesota)

A Co-Simulation Platform for Actuator Networks
Ahmad Al-Hammouri, Vicenzo Liberatore, Huthaifa Al-Omari, Zakaria Al-Qudah, Michael Branicky (Case Western Reserve Univeristy), Deepak Agrawal (IIT Kharagpur)

Sensor Network Programming with Flask
Geoffrey Mainland, Greg Morisett, Matt Welsh (Harvard University), Ryan Newotn (MIT)

Design and Implementation of PCO-Based Protocol for Sensor Networks
Roberto Pagliari, Anna Scaglione (Cornell University)

Fountain Reprogramming Protocol (FRP): A Reliable Data Dissemination Scheme for Wireless Sensor Networks Using Fountain Codes
Riccardo Crepaldi, Albert Harris III (University of Illinois at Urbana-Champaign), Michele Rossi, Giovanni Zanca, Michele Zorzi (University of Padova)

Acoustic Sensor Networks for Environmental Monitoring
Jinhai Cai, Dominic Ee, Andy Lau, Richard Mason, Binh Pham, Paul Roe, Jinglan Zhang (Queensland University of Technology), Stuart Gage (Michigan State University)

Programming Wireless Sensor Networks with Logical Neighborhoods: A Road Tunnel Use Case
Luca Mottola (Politecnico di Milano), Gian Pietro Picco (University of Trento)

Video Surveillance Patrol Robot System in 3G, Internet and Sensor Networks
Fung Po Tso, Lizhuo Zhang, Weijia Jia (City University of Hong Kong)

A BeepBeep Ranging System on Mobile Phones
Chunyi Peng, Guobin Shen, Zheng Han, Yongguang Zhang, Yanlin Li, Kun Tan (Microsoft Research Asia)

A Traveling Wave-Based Self-Organizing Communication Mechanism for WSNs
Yashiaki Taniguchi, Naoki Wakamiya, Masayuki Murata (Osaka University)

Micro-Blog: Map-Casting from Mobile Phones to Virtual Sensor Maps
Shravan Gaonkar (University of Illinois at Urbana Champaign), Romit Roy Choudhury (Duke University)

Multi-Radio Medium Access Control Protocol for Wireless Sensor Networks
Junaid Ansari, Xi Zhang, Petri Mahonen (RWTH Aachen University)

Effective Source-Level Debugging of Wireless Sensor Networks
Jing Yang, Mary Lou Soffa, Kamin Whitehouse (University of Virginia)

Castalia: Revealing Pitfalls in Designing Distributed Algorithms in WSN
Athanassios Boulis (National ICT Australia)

Software-Based Sensor Node Energy Estimation
Adam Dunkels, Fredrik Osterlind, Nicolas Tsiftes, Zhitao He (Swedish Institute of Computer Science)

Friday, 9th November 2007

08:30 – 10:00 Utilities
Session Chair: Tian He, University of Minnesota

A Framework for Automated Generation and Instantiation of Power-Efficient Classifiers For Embedded Sensor Nodes
Ari Benbasat, Joseph Paradiso (MIT)

Message-In-a-Bottle: User-Friendly and Secure Key Deployment for Sensor Nodes
Cynthia Kuo, Mark Luk, Rohit Negi, Adrian Perrig (Carnegie Mellon University)

Multi-user Data Sharing in Radar Sensor Networks
Ming Li, Tingxin Yan, Deepak Ganesan, Eric Lyons, Prashant Shenoy, Arun Venkataramani, Michael Zink (University of Massachusetts Amherst)

10:00 – 10:30 Coffee Break

10:30 – 12:00 Monitoring/Simulation
Session Chair: Philip Levis, Stanford University

Catching Elephants with Mice: Sparse Sampling for Monitoring Sensor Networks
Sorabh Gandhi, Subhash Suri (University of California at Santa Barbara), Emo Welzl (ETH-Zurich)

Simulation-Based Augmented Reality for Sensor Network Development
Ye Wen, Wei Zhang, Rich Wolski (University of California at Santa Barbara)

Exploring In-Situ Sensing Irregularity in Wireless Sensor Networks
Joengmin Hwang, Tian He, Yongdae Kim (University of Minnesota)

12:00 – 13:30 Lunch

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13:30 – 15:30 Communication
Session Chair: Subhash Suri, University of California at Santa Barbara

Rate-Controlled Reliable Transport for Wireless Sensor Networks
Jeongyeup Paek, Ramesh Govindan (University of Southern California)

Data Forwarding in Extremely Low Duty-Cycle Sensor Networks with Unreliable Communication Links
Yu Gu, Tian He (University of Minnesota)

An Adaptive Communication Architecture for Wireless Sensor Networks
Adam Dunkels, Fredrik Österlind, Zhitao He (Swedish Institute of Computer Science)

Flush: A Reliable Bulk Transport Protocol for Multihop Wireless Networks
Sukun Kim, Rodrigo Fonseca, Prabal Dutta, Arsalan Tavakoli, David Culler (University of California at Berkeley), Philip Levis (Stanford University), Scott Shenker, Ion Stoica (University of California at Berkeley)

15:30 – 15:45 Coffee Break

15:45 – 17:00 "Soap Box" talks
Chair: Peter Corke, CSIRO

A series of 5 minute talks providing strong, controversial, and/or outrageous opinions on a topic within the scope of SenSys, e.g., direction the field should/should not take, future predictions, etc.

17:00 – 17:15 Best Paper Award and Closing (Akos Ledeczi)

Award sponsored by: ArchRock

Darling Harbour Map