



Department of Computer Science and Engineering

Presents

Brano Kusy, CSIRO

OPAL Sensor Node: Beyond Incremental Advances in Computation And Communication

Wireless sensor networks community has witnessed nearly a decade of incremental advances in sensor node technology. We argue that the time has come to step beyond incremental in both computation and communication capabilities of sensor nodes. We argue that modern 32-bit CPUs can match the low-power operation of their 8- and 16-bit brethren in many sensor network applications, while offering an order of magnitude better computation power and memory resources. In addition, efficient single-cycle operations lead to better energy efficiency and up to 3 orders of magnitude speedup in signal processing applications. We also advocate the use of radio diversity to improve reliability and robustness of wireless communication. Opal platform offers up to three radio interfaces operating in widely separate frequency bands. We have shown in real-world deployments that radio diversity can improve reliability of data collection to above 99%, in deployments where all individual radios perform poorly. In addition, we have developed an adaptive low-power listening network stack that allows Opals to communicate using less energy than the traditional single-radio platforms.

Bio: Dr. Brano Kusy holds Masters degree in Computer Science from Comenius University, Bratislava, Slovakia and PhD degree in Computer Science from Vanderbilt University, Nashville, TN. In his doctoral work, Brano co-developed and co-deployed a number of WSN systems, including a well-known WSN system for acoustic sniper localization, and his main research focus was on algorithms to coordinate wireless sensors in time and space.

Dr. Kusy worked with Prof. Leo Guibas as a postdoctoral scholar in the Computer Science department at Stanford University between 2007 and 2009. His research focused on low-latency delivery of sensor data to mobile users, discovery and utilization of mobility patterns in urban environments, and information discovery and brokerage in WSNs, with a specific focus on camera sensor networks.

He moved to CSIRO ICT Centre in Brisbane, Australia in 2009 where he works as a senior research scientist. His current research interests include time-space coordination and network protocols in wireless sensor networks; identification and modeling of social relations from spatio-temporal data traces of mobile entities; monitoring and classification of animal species using inertial and multimedia sensor data; and event-driven mobile systems.

Monday, November 5, 2012

3:30 - 4:45 PM

University at Buffalo – North Campus – Davis 113A

Refreshments for attendees after the talk.

This talk is free and open to the public

For more information, please email cse-dept@cse.buffalo.edu or contact (716) 645-3180