



*The Connecticut Joint Chapters of the **IEEE Computer Society, Microwave Theory & Techniques Society, Antenna & Propagation, Ultrasonics, Ferroelectrics and Frequency Control Society, Women in Engineering Society and IEEE Student Branch at UCONN** are presenting a lecture on:*

Sensor Networks, Wireless Sensors and MacroProgramming

Prof. Matt Welsh – Department of Computer Science, School of Engineering and Applied Sciences, Harvard University

Tuesday, June 24, 2008 at 7:00 PM
University of Connecticut, ITEB 336

(This seminar is free and all are invited. Refreshments will be served at 6:00 PM.)

Abstract: Fiji - A Platform for Data-Intensive Sensor Network Applications

Sensor networks are becoming increasingly important for data-intensive applications that involve moderate to high data rates, fine-grained timestamping of recorded signals, and computationally-intensive processing within the network. Examples of this new class of applications include volcano monitoring, structural health monitoring, and biomedical data capture. In contrast to the first generation of sensor networks, which were focused on low-duty-cycle data collection and aggregation, these new applications demand much greater data fidelity and computational sophistication.

At the same time, wireless sensor platforms are inherently resource-constrained, leading to severe limitations of computational horsepower, memory capacity, and radio bandwidth. The stringent application demands and resource constraints conflate to make programming complex sensor applications a very difficult task, even for experts in embedded systems. As a result there is a vast gap between the needs of domain scientists wishing to develop and deploy a sensor network and the level of expertise required to realize a resource-efficient implementation.

In this talk, I will present Fiji, a new programming platform intended to make it much easier for domain scientists to leverage wireless sensor networks. Fiji is based on the concept of macroprogramming, in which a program describing the global behavior of the network is compiled down to an efficient node-level binary. This is accomplished using a flexible dataflow-based intermediate form supported by multiple compilers for each target language. Fiji also provides a powerful node-level runtime and OS for resource-aware programming, allowing applications to naturally adapt to varying resource availability.

Speaker Biography:

Matt Welsh is an associate professor of Computer Science at Harvard University. His research interests span many aspects of complex systems, including Internet services, distributed systems, and sensor networks. His current projects include macroprogramming language, operating system, and resource management techniques for sensor networks. He is the co-founder of AID Networks, an early-stage company developing wireless sensor platforms for emergency medicine. He is also a long-time Linux hacker and is the author of "Running Linux", published by O'Reilly and Associates. He received his Ph.D. in 2002, from University of California at Berkeley, M.S. in 1999 from University of

California at Berkeley and B.S. in 1996 from Cornell University

Location:

This seminar will be held at University of Connecticut, ITEB 336

Direction: <http://www.uconn.edu/campuses/storrs.php>

(Please try to join us early and enjoy networking with your colleagues before the seminar begins. The seminar is expected to last 60 minutes.)

The seminar is free and all are invited, however registration is appreciated.

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