Master Thesis Defense

Speaker:	Yi Hui Chen
Supervisor:	Dr. L. Narayanan
Examining Committee:	Drs. J. W. Atwood, H. Harutyunyan, N. Shiri (Chair)
Title:	Real-Time Scheduling Algorithms in Wireless Sensor Networks
Date:	Monday, April 12, 2010
Time:	14:00
Place:	EV 3.101

ABSTRACT

Wireless sensor networks have recently attracted research and industry interest. Wireless sensor networks have great potential to be used in many applications because of their unique characteristics. In many applications, such as military battlefield surveillance and medical health care, the data packets need to be delivered to their destinations with real-time constraints. Traditional real-time algorithms cannot be directly used in wireless sensor networks. Therefore, a new challenge in wireless sensor networks arises.

In this thesis, we proposed several new real-time scheduling algorithms for wireless sensor networks. Unlike other existing real-time scheduling algorithms, we design real- time scheduling algorithms which not only consider the current situations of packets but they also take the travelling history of packets into consideration. We evaluated these algorithms both in terms of the packet delivery rate and fairness to different flows. Finally we extended *IEEE* 802.11 to be able to prioritize the packets. We implemented these algorithms in NS-2 and extensively evaluated the experimental results. The results demonstrate that our new algorithms efficiently increase the system real-time performance and fairness.