

Why Does Asynchronous Sampling Benefit Wireless Sensor Networks?

Speaker: Jing Wang, CReWMan researcher

Date: Friday, February 22, 2008

Time: 10:00 - 11:30 AM

Venue: Woolf Hall 413

Abstract:

Recent years have seen extensive research efforts in the area of Wireless Sensor Networks (WSNs) with applications in various fields such as habitat monitoring, disaster relief, smart environments, pervasive computing, etc. However, resource constraints of wireless sensor nodes pose significant challenges to the deployment of WSNs. In this talk, we will introduce the novel concept of asynchronous communication strategy that benefits WSNs in terms of energy consumption and other performance metrics. In particular, we will prove how asynchronous sampling minimizes energy consumption through reduced sampling rate, and increases entropy of sensor data without additional energy cost. We will also show how our asynchronous strategy helps the design of MAC protocols and extend the lifetime of WSNs by avoiding the listening state of nodes' radio and properly scheduling their wake-up patterns. Finally, we will examine the tradeoff between energy consumption and quality of information with a goal to provide useful insights to the design and deployment of WSNs.

Biography:

Ms. Jing Wang joined UTA in 2006 and is currently pursuing Ph. D. degree in Computer Science and Engineering of UTA, co-supervised by Prof. Sajal K. Das and Dr. Yonghe Liu. She obtained her B.S. and M.S. degrees in Electrical Engineering from Xi'an Jiaotong University, China, in 1998 and 2001 respectively. Her research interests are wireless sensor networks and pervasive computing.