



Spring 2010 CIS Colloquium Series

Cyber-Physical and Networked Sensor Systems: Perspectives and Future Directions

Sajal K. Das

**Program Director, National Science Foundation
Director, Center for Research in Wireless Mobility and Networking (CReWMaN)
The University of Texas at Arlington**

*11am-12pm, Friday, June 11
4th Floor Conference Room (Wachman Hall, CC 447)*

Abstract: Rapid advancements in embedded systems, sensors and wireless communication technologies have led to the development of cyber-physical systems, pervasive computing and smart environments with important applications in civilian, military, industry, and government sectors. Wireless sensor networks (WSNs) play a significant role in such systems as they can effectively act as the human-physical world interface with the digital world through sensing and actuation. However, the inherent characteristics of WSNs typified by extremely scarce resources (bandwidth, CPU, memory and battery power), high degree of uncertainty, distributed control and operations pose significant challenges in providing the desired information quality, assurance, and reliability for information fusion and intelligent decision making. This is particularly important for such critical applications as smart grids, smart health care or pervasive security, to name a few.

This talk will examine uncertainty-driven unique research challenges in cyber-physical and networked sensor systems, and propose some novel solutions for data aggregation/fusion, dissemination, routing, coverage and connectivity, security and privacy with improved quality in information-intensive (e.g., multimedia) wireless sensor networks. The talk will be concluded with open issues and future directions of research.

Bio: Sajal K. Das is a University Distinguished Scholar Professor of Computer Science and Engineering and the Founding Director of the Center for Research in Wireless Mobility and Networking (CReWMaN) at the University of Texas at Arlington (UTA). He is currently a Program Director at the National Science Foundation in the Division of Computer Networks and Systems (CISE/CNS). He is also a Visiting Professor at the IIT- Kanpur and a Concurrent Professor of Fudan University in Shanghai, China. His current research interests include wireless and sensor networks, mobile and pervasive computing, smart environments, security and privacy, cloud computing, social networks, biological networking, applied graph theory and game theory. He has published over 400 papers and over 35 invited book chapters, and holds five US patents in wireless networks and mobile Internet. Dr. Das coauthored two books - Smart Environments: Technology, Protocols, and Applications (Wiley, 2005) and Mobile Agents in Distributed Computing and Networking (Wiley, 2010). He is a recipient of the IEEE Computer Society Technical Achievement Award (2009) for pioneering contributions to sensor networks and mobile computing; IEEE Region 5 Outstanding Engineering Educator Award (2008); and several

Best Paper Awards in such conferences as EWSN'08, IEEE PerCom'06, and ACM MobiCom'99. Dr. Das is also a recipient of Lockheed Martin Teaching Excellence Award (2009), UTA Academy of Distinguished Scholars Award (2006), University Award for Distinguished Record of Research (2005), College of Engineering Research Excellence Award (2003), and Outstanding Faculty Research Award in Computer Science (2001 and 2003). He serves as the Founding Editor-in-Chief of the Pervasive and Mobile Computing (PMC) journal, and an Associate Editor of IEEE Transactions on Mobile Computing, ACM/Springer Wireless Networks, Journal of Parallel and Distributed Computing, and Journal of Peer-to-Peer Networking. He is the founder of IEEE WoWMoM symposium and co-founder of IEEE PerCom conference. He has served as General and Technical Program Chair as well as TPC member of numerous IEEE and ACM conferences.

Refreshments will be served!