



泛在计算系统研究中心学术报告会

报告题目: Network Resource Management in Wireless Networked Control Systems

时间: 2017年6月29日(周四) 下午2:30—3:30

地点: 计算所1101会议室

报告人: Prof. Xiaobo Sharon Hu, University of Notre Dame

摘要:



Wireless networked control systems (WNCSs) are fundamental to many Internet-of-Things (IoT) applications that must work under real-time constraints in order to ensure timely collection of environmental data and proper delivery of control decisions. The Quality of Service (QoS) offered by a WNCS is thus often measured by how well it satisfies the end-to-end deadlines of the real-time tasks executed in the WNCS. Network resource management in WNCSs plays a critical role in achieving the desired QoS. Unexpected internal and external disturbances that may appear in WNCSs concurrently make resource management inherently challenging. The explosive growth of IoT applications especially in terms of their scale and complexity further exacerbate the level of difficulty in network resource management.

In this talk, I first give a general introduction of WNCSs and the challenges that they present to network resource management. In particular, I will discuss the complications due to external disturbances and the need for dynamic data-link layer scheduling. I then highlight our recent work that aims at tackling this challenge. Our work balances the scheduling effort between a gateway (or access points) and the rest of the nodes in a network. It paves the way towards decentralized network resource management in order to achieve scalability. Experimental implementation on a wireless test bed further validates the applicability of our proposed research. I will end the talk outlining our on-going effort in this exciting and growing area of research.

报告人简介:

Xiaobo Sharon Hu is a professor in the department of Computer Science and Engineering at the University of Notre Dame, Notre Dame, Indiana, USA. Her research interests include real-time embedded systems, low-power system design, hardware/software codesign, and computing with emerging technologies. She has published more than 280 papers in these areas, and received the Best Paper Award from the ACM/IEEE Design Automation Conference in 2001 and from the IEEE Symposium on Nanoscale Architectures in 2009. Another paper of hers was named one of "The Most Influential Papers of 10 Years Design, Automation, and Test in Europe Conference (DATE)" in 2007. She is the vice general chair of Design Automation Conference in 2017, and is on the editorial board of IEEE Design and Test Magazine. She also served as Associate Editor for several IEEE and ACM journals. She is a fellow of the IEEE.