## THE CHINESE UNIVERSITY OF HONG KONG
### Institute of Network Coding
### and
### Department of Information Engineering
*Seminar*

# QoS Provisioning in Cognitive Radio Networks

by

## Prof. Xi ZHANG
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Date : ~~12 June 2012  (Tuesday)~~ 20 June 2012 (Wednesday)
Time : 2:30 pm - 3:30 pm
Venue： Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

*Abstract*
Recently, the cognitive radio networks (CRNs) has emerged as an intelligent, flexible, and efficient spectrum-accessing based wireless network technique to increase the spectrum efficiency by enabling the secondary users (unlicensed users) to opportunistically utilize the vacant spectrum which is not used by the primary users (licensed users). This talk will start with investing the motivations and reviewing the state-of-the-art of CRNs, including its fundamental theories and key techniques, classification of different spectrum sensing and sharing modes. Then, we will focus on the main challenges of cognitive radio MAC for QoS provisioning in synchronous CRNs, which is critical to many delay-, reliability-, and/or throughput-sensitive QoS-driven CRNs. The problem is challenging in that the QoS performance of the secondary users is not only affected by the time-varying radio channels of wireless networks, but also constrained by the uncertain incumbency of the primary users. Finally, we will concentrate on our newly developed cognitive radio MAC and its modeling techniques for QoS-driven CRNs with emphasis on PHY and MAC cross-layer optimization. Specifically, we will present the cognitive radio MAC protocols design, its channel sensing algorithms and policies, and $M/G^Y/1$ queuing modeling techniques for packet delay analysis and control. We will conclude the talk by discussing the potential future research directions in CRNs.

*Biography*
Xi Zhang received his Ph.D. in electrical engineering and computer science (Electrical Engineering-Systems) from The University of Michigan, Ann Arbor. He is currently an Associate Professor and Founding Director of Networking and Information Systems Laboratory, Dept. of Electrical and Computer Engineering, Texas A&M University. He was with Networks and Distributed Systems Research Department, AT&T Bell Laboratories, Murray Hills, NJ, and with AT&T Laboratories Research, Florham Park, NJ. Prof. Zhang has published more than 200 research papers. He received U.S. National Science Foundation CAREER Award in 2004. He is an IEEE Communications Society Distinguished Lecturer. He received Best Paper Awards in IEEE GLOBECOM 2007, IEEE GLOBECOM 2009, and IEEE WCNC 2010, respectively. He also received TEES Select Young Faculty Award for Excellence in Research Performance from Look College of Engineering at Texas A&M University in 2006. He has been serving as Editors, TPC Chairs, Vice-Chairs for a number of *IEEE Transactions, Journals, Conferences, Workshops, etc*. His research interests include wireless networks and communications systems, wireless networks coding, network protocol design and modeling, statistical communications, random signal processing, information theory, and control theory and systems.

**\*\*ALL ARE WELCOME \*\***

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