

**THE CHINESE UNIVERSITY OF HONG KONG**

Department of Information Engineering

*Seminar***RED Theory for QoS Provisioning in Wireless Networks**

by

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**Date : 20 May, 2009 (Wed.)**  
**Time : 11:00am – 12:00noon**  
**Venue : Room 833, Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

*Abstract*

Next-generation wireless networks are expected to provide quality of service (QoS) guarantees. In this talk, I will present our recently developed theory, called RED theory, for QoS provisioning in wireless networks. The RED theory is used to quantify the relationship among data rate (R), packet error probability (E), and delay bound (D), under the interaction between the link layer and the physical layer. Our results provide important insights about optimal rate control policy for joint link layer and physical layer design; the proposed RED Pareto surface represents a major step toward deriving the probabilistic delay-constrained channel capacity of fading channels, which is an unsolved problem in information theory.

*Biography*

Dapeng Oliver Wu received Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University, Pittsburgh, PA, in 2003. Since 2003, he has been on the faculty of Electrical and Computer Engineering Department at University of Florida, Gainesville, FL, where he is currently Associate Professor. His research interests are in the areas of networking, communications, video coding, image processing, computer vision, signal processing, and machine learning. He received University of Florida Research Foundation Professorship Award in 2009, AFOSR Young Investigator Program (YIP) Award in 2008, ONR Young Investigator Program (YIP) Award in 2008, NSF CAREER award in 2007, the IEEE Circuits and Systems for Video Technology (CSVT) Transactions Best Paper Award for Year 2001, and the Best Paper Award in International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine) 2006. Currently, he serves as an Associate Editor for IEEE Transactions on Wireless Communications, IEEE Transactions on Circuits and Systems for Video Technology, and International Journal of Ad Hoc and Ubiquitous Computing. He was the founding Editor-in-Chief of Journal of Advances in Multimedia between 2006 and 2008, and an Associate Editor for IEEE Transactions on Vehicular Technology between 2004 and 2007. He is also a guest-editor for IEEE Journal on Selected Areas in Communications (JSAC), Special Issue on Cross-layer Optimized Wireless Multimedia Communications. He will serve as Technical Program Committee (TPC) Chair for IEEE INFOCOM 2012, and has served as TPC Chair for IEEE International Conference on Communications (ICC 2008), Signal Processing for Communications Symposium. He serves as Chair for the Award Committee, Technical Committee on Multimedia Communications, IEEE Communications Society.

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