



***Electrical Engineering Seminar Series &
Dallas Chapter of IEEE Signal Processing Society Present***

Cross-Layer Design for Energy-Efficient Wireless Communications

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Samsung**

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The future success of communication networks hinges on the ability to overcome the mismatch between requested quality of service (QoS) and limited network resources. Energy efficiency (EE) is becoming increasingly important as battery technology and energy industry has not kept up with the growing requirements stemming from ubiquitous mobile multimedia applications. This presentation introduces cross-layer technologies to improve energy efficiency from different perspectives of wireless systems. We will first discuss technology trend and the methodologies needed to enable highly energy-efficient wireless networks. Then we will introduce state-of-art cross-layer wireless communication technologies that enable high energy efficiency for both individual users and multi-user networks. The presentation will be concluded by the discussion of the tradeoff between spectral and energy efficiency in interference limited wireless networks.

Guowang Miao received the Ph.D. degree in electrical and computer engineering from Georgia Institute of Technology, Atlanta, GA, in 2009. He joined Dallas Telecom Lab of Samsung, Texas, in Jan 2010 as a Senior Algorithms and Standards Engineer and worked on next generation wireless communications technologies and 3GPP Long Term Evolution – Advanced (LTE-A) Standard, with a focus on both PHY and MAC layers. In 2011, he won an Individual Gold Award from Samsung Telecom America for his outstanding contribution in LTE-A standardization. Starting in Fall 2011, he will be an assistant professor in the Department of Communications Systems, KTH – The Royal Institute of Technology, Stockholm, Sweden. His research interest is in the design and optimization of wireless communications and networking, with a current focus on energy efficient wireless communications, optimization of distributed random access, scheduling, heterogeneous networks, coordinated multi-point transmission/reception, and PHY-MAC cross-layer design for wireless networks. His patents in MAC and PHY layers have been adopted in 4G standards. He serves as a technical reviewer of more than twenty international journals and conferences. He has also been a technical program committee member of several international conferences including IEEE Global Communications Conference and IEEE International Conference on Communications.

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