Broadband Wireless Access - The Next Wireless Revolution
by Benny Bing, Georgia Tech

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Place: 202 ECEC, NJIT

About the Speaker

Dr. Benny Bing is an associate director of the Georgia Tech Broadband Institute. He is also a research faculty member with the School of ECE at Georgia Tech. He has published over 40 papers and 10 books. His publications have also appeared in the IEEE Spectrum. His books on wireless networks are highly regarded by many technology visionaries. They contain forewords from both chairmen of the IEEE 802.11 Working Group since its inception, the inventor of Internet technology, and the inventor of the first wireless protocol. In early 2000, his groundbreaking book on wireless LANs was adopted by Cisco Systems to launch the Cisco-Aironet Wi-Fi product. The product has since enjoyed phenomenal success, dominating the corporate arena and capturing over 60% of the Wi-Fi market share. He was subsequently invited by Qualcomm Inc. in San Diego, CA to conduct a customized course on wireless LANs for its engineering executives. He was again invited to conduct a similar course for the Office of Information Technology. In 2002, his edited book on wireless LANs was extensively reviewed by the IEEE Communications Magazine, IEEE Network, and ACM Networker, the first time a book has been reviewed by all three journals. He is currently an editor for the IEEE Wireless Communications Magazine, and has also guest edited for the IEEE Communications Magazine and the IEEE Journal on Selected Areas on Communications. In addition, he was featured in the MIT Technology Review in a special issue on wired and wireless technologies as well as the Atlanta Business Chronicle and the IEEE Spectrum. He has served on the wireless networking panel for National Science Foundation (NSF) and was selected as one of the 10 best wireless designers in the United States by Building Industry Consulting Services International (BICSI), a 22,000-industry member telecommunication association based in Tampa, Florida. He was invited by NSF to participate in an NSF-sponsored workshop on "Residential Broadband Revisited: Research Challenges in Residential Networks, Broadband Access and Applications", held on October 2003. He is also a frequent presenter at several IEEE Communications Society flagship conferences such as IEEE Infocom and IEEE Globecom. He is a recipient of the Lockheed-Martin Fellowship for his Ph.D studies at the University of Maryland, College Park and a best paper award at the 1998 IEEE International Conference on ATM. He is a Senior Member of IEEE and has over 100 international research citations to his name. His current research interests include broadband access, wireless LANs, cognitive radio, mobile TV, and queueing theory.

About the Talk

Broadband wireless access is the third wireless revolution, after cellphones (1990s) and Wi-Fi (2000s). It is viewed by many carriers and cable operators as a "disruptive" technology and rightly so. The broadcast nature of wireless transmission offers ubiquity and immediate access for both fixed and mobile users, clearly a vital element of next-generation quadruple play (i.e., voice, video, data, and mobility) services. Unlike wired access (copper, coax, fiber), a large portion of the deployment costs is incurred only when a subscriber signs up for service. An increasing number of municipal governments around the world are financing the deployment of multihop wireless networks with the overall aim of providing ubiquitous Internet access and enhanced public services.

This presentation will provide a comparative assessment of the key issues and technologies underpinning promising broadband wireless access solutions such as 802.16 (Wi-Max), long-range/multihop 802.11 (Wi-Fi), wireless DOCSIS, 3G/4G, mobile TV, digital TV broadcast, 802.20 (mobile broadband), 802.21 (media independent handoff and interoperability), and the emerging 802.22 (wireless regional area networks) standard. Key topics include licensed and unlicensed spectrum consideration; reliable physical layer transmission using multiple antennas; multichannel medium access protocols with QoS provisioning; wireless access topologies: point-to-point, point-to-multipoint, peer-to-peer multihop (mesh); wireless multimedia services: wireless video, wireless VoIP; mobility; cognitive radio technologies; advanced wireless security; wireless/wireline integration.

Sponsors: IEEE Communications Society North Jersey Chapter
NJIT Department of Electrical and Computer Engineering

For more information contact Nirwan Ansari (973) 596-3670 or check **http://web.njit.edu/~ieeenj/comm.html** for latest updates. Directions to NJIT can be found at: **http://www.njit.edu/University/Directions.html**.