



香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

IE - ITCSC Joint Seminar

Location -Aware Wireless Networks

By

Prof. Moe Win

*Associate Professor, Laboratory for Information and Decision Systems (LIDS)
Massachusetts Institute of Technology*

January 6, 2010 (Wednesday)

2:30pm - 3:30pm

Rm. 121, Ho Sin Hang Engineering Building, CUHK

Abstract:

The availability of positional information is of great importance in numerous commercial, health-care, public safety, and military applications. The coming years will see the emergence of high-definition location-aware (HDLA) networks with sub-meter accuracy, minimal infrastructure, and robustness in harsh environments. We propose to realize this ambitious goal using cooperative peer-to-peer algorithms. This talk will present a brief technical overview of our recent activities with particular emphasis on cooperative localization in wideband wireless networks from three points of view: fundamental performance bounds, cooperative algorithms, and experimentation. Fundamental bounds serve as performance benchmarks and as guidelines for network design. Cooperative algorithms will be designed to approach these bounds, resulting in dramatic performance improvements over traditional techniques. Experimentation will be used to determine important attributes of physical environments; these realistic models are necessary to obtain accurate bounds, to develop robust algorithms, and to validate their performance in harsh environments.

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

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Biography:

Moe Win is an Associate Professor at the Laboratory for Information & Decision Systems (LIDS) and the Department of Aeronautics & Astronautics, Massachusetts Institute of Technology (MIT). Prior to joining MIT, he was at AT&T Research Laboratories for five years and at the Jet Propulsion Laboratory for seven years. His research encompasses developing fundamental theories, designing algorithms, and conducting experimentation for a broad range of real-world problems. His current research topics include location-aware networks, time-varying channels, multiple antenna systems, ultra-wide bandwidth systems, optical transmission systems, and space communications systems.

Professor Win is an IEEE Distinguished Lecturer and elected Fellow of the IEEE, cited for “contributions to wideband wireless transmission.” He was honored with the IEEE Eric E. Sumner Award (2006), an IEEE Technical Field Award for “pioneering contributions to ultra-wide band communications science and technology.” Together with students and colleagues, his papers have received several awards including the IEEE Communications Society’s Guglielmo Marconi Best Paper Award (2008) and the IEEE Antennas and Propagation Society’s Sergei A. Schelkunoff Transactions Prize Paper Award (2003). His other recognitions include the Laurea Honoris Causa from the University of Ferrara, Italy (2008), the Technical Recognition Award of the IEEE ComSoc Radio Communications Committee (2008), Wireless Educator of the Year Award (2007), the Fulbright Foundation Senior Scholar Lecturing and Research Fellowship (2004), the U.S. Presidential Early Career Award for Scientists and Engineers (2004), the AIAA Young Aerospace Engineer of the Year (2004), and the Office of Naval Research Young Investigator Award (2003).

Professor Win has been actively involved in organizing and chairing a number of international conferences. Most recently, he served as the Technical Program Chair for the IEEE Wireless Communications and Networking Conference in 2009. He was the chair (2004-2006) and secretary (2002-2004) for the Radio Communications Committee of the IEEE Communications Society. Dr. Win is currently an Editor for IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS. He served as Area Editor for Modulation and Signal Design (2003-2006), Editor for Wideband Wireless and Diversity (2003-2006), and Editor for Equalization and Diversity (1998-2003), all for the IEEE TRANSACTIONS ON COMMUNICATIONS. He was Guest-Editor for the PROCEEDINGS OF THE IEEE (Special Issue on UWB Technology & Emerging Applications) in 2009 and the IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS (Special Issue on Ultra-Wideband Radio in Multiaccess Wireless Communications) in 2002.

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