PLENARY SPEECH #1

Chair: Prof. Qinyu Zhang, Harbin Institute of Technology

Prof. Moe Z. Win
Laboratory for Information and Decision Systems
Massachusetts Institute of Technology
Date: November 3, Tuesday
Time: 10:20-11:00
Room: Venice Ballroom

LOCATION, LOCATION, AND LOCATION !

Abstract: The availability of positional information is of extreme importance in numerous wireless applications. The coming years will see the emergence of location-aware networks with sub-meter localization accuracy, minimal infrastructure, and robustness in harsh (GPS challenged) environments. To reach this goal we advocate network localization and navigation, a new paradigm that exploits a combination of wideband transmission and spatiotemporal cooperation. Our work has addressed this problem from three perspectives: theoretical framework, cooperative algorithms, and network experimentation. We will give an overview of our recent research results in this exciting field.

Biography: Moe Win is a Professor at the Massachusetts Institute of Technology (MIT). Prior to joining MIT, he was with AT&T Research Laboratories for five years and with the Jet Propulsion Laboratory for seven years. His research encompasses fundamental theories, algorithm design, and experimentation for a broad range of real-world problems. His current research topics include network localization and navigation, network interference exploitation, intrinsic wireless network secrecy, adaptive diversity techniques, and ultra-wideband systems. Professor Win is a Fellow of the AAAS, the IEEE, and the IET, and served as an IEEE Distinguished Lecturer. He is an elected Member-at-Large on the IEEE Communications Society Board of Governors (2011–2013). He was the Chair (2004–2006) and Secretary (2002–2004) for the Radio Communications Committee of the IEEE Communications Society. He was honored with two IEEE Technical Field Awards: the IEEE Kiyo Tomiyasu Award and the IEEE Eric E. Sumner Award (jointly with Professor R. A. Scholtz). He received the International Prize for Communications Cristoforo Colombo, the Copernicus Fellowship, the Royal Academy of Engineering Distinguished Visiting Fellowship, the Fulbright Fellowship, the Laurea Honoris Causa from the University of Ferrara, and the U.S. Presidential Early Career Award for Scientists and Engineers.

PLENARY SPEECH #2

Chair: Prof. Yu Cheng, Illinois Institute of Technology

Prof. Andreas F. Molisch
University of Southern California
Date: November 4, Wednesday
Time: 10:20-11:00
Room: Venice Ballroom

Higher, denser, wilder: the road to 5G

Abstract: 5G will be a system that truly builds on the legacy of 4G, but contains a number of additional, innovative, components that will allow to handle the required orders-of-magnitude increase in throughput and data rate. This presentation will discuss three of those components: (i) the move to higher frequencies, namely the mm-wave band, (ii) the densification of simultaneously served users in a cell through the use of massive MIMO, and (iii) the emergence of device-to-device communications as an additional way to communicate in an increasingly heterogeneous network. I will describe the fundamentals of each of these approaches, as well as the main technical challenges both from a theoretical and an implementation perspective. I will also describe the interaction between them - for example, massive MIMO will first be introduced at mm-wave frequencies because it is essential there to achieve sufficient range. A discussion of the standardization of these fundamental technologies will round off the talk.

Biography: Andreas F. Molisch received the Dipl. Ing., Ph.D., and habilitation degrees from the Technical University of Vienna, Vienna, Austria, in 1990, 1994, and 1999, respectively. From 2000-2002 he was with AT&T (Bell) Laboratories Research (USA), and from 2002-2008 with Mitsubishi Electric Research Labs (USA), most recently as Chief Wireless Standards Architect. Concurrently, he was Professor and Chairholder for Radio Systems at Lund University, Lund, Sweden. Since 2009, he is Professor of Electrical Engineering and Head of the Wireless Devices and Systems (WiDeS) group at the University of Southern California (USC), Los Angeles, USA, and since 2011 also the Director of the Communication Sciences Institute at USC. His current research interests are the measurement and modeling of mobile radio channels, ultra-wideband communications and localization, cooperative communications, multiple-input–multiple-output systems, wireless systems for healthcare, and novel cellular architectures. He has authored, coauthored, or edited four books (among them the textbook Wireless Communications, Wiley-IEEE Press; Chinese translation published by PHEI), 18 book chapters, some 180 journal papers, 260 conference papers; which have been widely cited. He also has more than 80 patents and 70 standards contributions, many of which have found their way into widely used products as well as the LTE and 802.11 standards. Dr. Molisch has been an Editor of a number of journals and special issues, General Chair, Technical Program Committee Chair, or Symposium Chair of multiple international conferences, as well as Chairman of various international standardization groups. He has received numerous awards, among them the Donald Fink Prize of the IEEE, and the Eric Sumner Award of the IEEE (the Technical Field Award for communications of the IEEE). He is a Fellow of the IEEE, Fellow of the AAAS (American Association for the Advancement of Science), Fellow of the IET (Institute of Engineering and Technology), an IEEE Distinguished Lecturer, and a member of the Austrian Academy of Sciences.