Guest Editorial
Wireless Video Transmission

Efficient and robust wireless video transmission is one of the key enabling technologies pushing the development and usage of current and future mobile wireless networks. With applications such as video phone, mobile TV, video-on-demand, and video gaming, wireless video presents some major research and business opportunities with great potential to support the needs of our increasingly mobile daily life. There are a number of important challenges that arise when transmitting video over wireless networks:

· Wireless video transmission is extremely delay-sensitive for almost all relevant applications.

· Both the average and variance of its data rate tend to be significantly higher than that of voice traffic. This makes the timely delivery of video data more difficult to be dealt with compared to low-delay low rate traffic such as voice.

· Digital video streams may consist of multiple layers or descriptions each with different QoS requirements. Encoding, protecting, scheduling and adapting the video content along the transmission path from the sender to one or more mobile users have to be carefully designed.

· Wireless video transmission will typically compete with other traffic for the available wireless network resources. Efficiently allocating these resources and providing fairness among different users is a major issue.

To realize an efficient and robust wireless video transmission, recent technological developments and advancements have to be incorporated. The challenge of optimally allocating the resources for the wireless video traffic is still to be solved. The goal of this JSAC issue is to bring together research contributions that describe original and unpublished work addressing wireless video transmission.

The Call for Papers attracted 50 submissions worldwide. After a rigorous review process, twenty papers have been selected for publication. The twenty accepted papers are divided into four categories. The first category contains eleven papers, dealing with wireless video streaming, modelling and resource allocation, cross layer optimization and scheduling. The second category has four papers, addressing wireless video broadcast and multicast. The third category has three papers, discussing advanced retransmission techniques for wireless video. Finally, the last category contains two papers, addressing video quality assessment in wireless transmissions.

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Mingxi Fan received his Bachelor, Master and Ph.D degrees in Electrical Engineering in 1999 and 2002, respectively, from the Massachusetts Institute of Technology, Cambridge, MA, where he also received the Ernst A. Guillemin Master's thesis award. He joined Qualcomm, Inc. in July 2002 and has been working on research, standardization and product enhancement on mobile radio technologies in cdma2000 and UMTS families. He is currently leading the Qualcomm Corporate R&D China group in Beijing. His research interests include topics in interference cancellation, adaptive antenna array, interference management and radio resource allocation.

Xiaohu You received his Master Degree and Ph.D. Degree from Southeast University, Nanjing, China, in Electrical Engineering in 1985 and 1988, respectively. He is currently a Professor and the Director of National Mobile Communications Laboratory at Southeast University, Nanjing, China. His research interests include mobile communication systems, signal processing and its applications. From 1999 to 2002, he was the Principal Expert of the C3G Project, responsible for organizing Chinese 3G mobile communications R&D activities. From 2001-2006, he was the Principal Expert of the national "863" beyond 3G FuTURE Project. He has contributed over 40 IEEE journal papers and 2 books in the areas of adaptive signal processing, neural networks and their applications to communication systems.

Xi Zhang received the Ph.D. degree in electrical engineering and computer science (Electrical Engineering-Systems) from The University of Michigan, Ann Arbor. He is an Associate Professor and the Founding Director of the Networking and Information Systems Laboratory, Department of Electrical and Computer Engineering, Texas A&M University, College Station. Prof. Zhang has published more than 170 research papers. He received the U.S. National Science Foundation CAREER Award in 2004. He received the Best Paper Awards from IEEE Globecom 2009 and IEEE Globecom 2007, respectively. He is currently serving as an Editor for IEEE TRANSACTIONS ON COMMUNICATIONS, IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, an Associate Editor for IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, an Associate Editor for IEEE COMMUNICATIONS LETTERS and a Guest Editor for IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS and a Guest Editor for IEEE WIRELESS COMMUNICATIONS MAGAZINE. Prof. Zhang is the TPC Chair for IEEE Globecom 2011 and the TPC Vice-Chair for IEEE INFOCOM 2010.
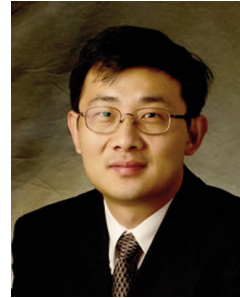
Hui Liu received his Ph.D. from University of Texas at Austin in 1995 and is currently a Professor at the Department of Electrical Engineering, University of Washington, Seattle. He was one of the principal designers of the TD-SCDMA 3G standard and the winner of the National Gold Prize Patent Award for his contributions to 3G. In 2000, he founded Broadstorm and pioneered the development of the world first OFDMA-based mobile broadband network. He is also the chief architect of the CMMB mobile TV standard. Professor Liu has published more than 40 journal articles and has twenty awarded patents. He is the author of two textbooks: "OFDM-based broadband wireless networks: design and optimization," John Wiley & Sons, 2005, and "Signal Processing Applications in CDMA Communications," Artech House, 2000. He is a recipient of 1997 National Science Foundation (NSF) CAREER Award and 2000 Office of Naval Research (ONR) Young Investigator Award.

Eckehard Steinbach is a Professor for Media Technology at Technische Universität München, Germany. He received the Engineering Doctorate in 1999. From 2000 to 2001 he was a Postdoctoral Fellow with the Information Systems Laboratory of Stanford University. Dr. Steinbach served as a conference co-chair of several conferences. He has been a program vice co-chair of ISM'07 and the program co-chair for the systems track at ACM Multimedia 2009. He has been a guest editor of two Special Issues of the EURASIP Journal on Applied Signal Processing and the IEEE Transactions on Multimedia Special Issue on Multimedia Applications in Mobile/Wireless Context. Since 2006, Dr. Steinbach serves as an Associate Editor for the IEEE Trans. on Circuits and Systems for Video Technology (CSVT). From 2008-2011 Dr. Steinbach serves as a member of the IEEE Multimedia and Signal Processing (MMSP) Technical Committee.