Advances in Networked Media - Theory and Practice

Dr. Ya-Qin Zhang
Managing Director, Microsoft Research
ICASSP 2003 Plenary Talk

Abstract

We have witnessed the increasing convergence of digital media, wireless and networking technologies in the past decade. This has profoundly transformed the way media is being represented, processed, delivered, and presented. For over half a century, Shannon's R-D theory has been the theoretical foundation for information representation. With the emergence of new media, devices and applications in networked environment, the conventional R-D theory needs to be extended to enable more effective representation and processing of connected media. This talk summarizes our recent attempt to develop a 'networked R-D theory' as well as some initial applications. In particular, I'll address the following research initiatives currently undertaken by Microsoft Research Asia:
(a) New sampling and rendering structure for computer graphics and digital ink
(b) Media delivery over a network with errors, congestion, retransmission, and multi-user interaction
(c) Media summarization where maximum information could be extracted for a given time boundary
Some of these technologies have already been transferred into Microsoft's mainstream products, which will help enable a plethora of applications such as high-quality media streaming, intelligent note-taking, networked games, and home audio/photo/video editing.

About the presenter:

Ya-Qin Zhang is the Managing Director of Microsoft Research Asia – Microsoft's basic research arm in Asia-Pacific region. He was previously the Director of Multimedia Technology Laboratory at Sarnoff Corporation in Princeton, NJ. He has been engaged in research and commercialization of DTV, multimedia and user interface technologies. He was with GTE Laboratories Inc. from 1990 to 1994. He has authored and co-authored over 200-refereed papers in leading international conferences and journals. He has been granted over 40 US patents in digital video, Internet, multimedia, wireless and satellite communications. Many of the technologies he and his team developed have become the basis for start-up ventures, commercial products, and international standards. He serves on the
Board of Directors of five high-tech IT companies.

Zhang is a Fellow of IEEE. He served as the Editor-In-Chief for the IEEE Transactions on Circuits and Systems for Video Technology from July 1997 to July 1999. He was the Chairman of Visual Signal Processing and Communications Technical Committee of IEEE Circuits and Systems. He serves on the Editorial boards of seven other professional journals and over a dozen conference committees. He has been a key contributor to the ISO/MPEG and ITU standardization efforts in digital video and multimedia.

Zhang received his B.S. and M.S. in Electrical Engineering from the University of Science and Technology of China (USTC) in 1983 and 1985. He received his Ph.D. in Electrical Engineering from George Washington University, Washington D.C. in 1989. He had executive business training from Harvard University.