Pervasive Broadband: Opportunities for Signal Processing

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Abstract

With the emergence of broadband telecommunications, we are moving in well-measured steps from nearly universal telephony to increasingly pervasive multimedia services. In this talk, I shall describe some of the fundamental opportunities that this context presents to the practitioners of advanced signal processing. These opportunities span conventional media processing disciplines such as signal capture, compression, synthesis, recognition and information retrieval, as well as a rich collection of technologies that has come to be known as communications signal processing. I shall remark particularly on opportunities for enhancing lifestyle in the broadband-enabled home of the future.

About the presenter:

Dr. Nikil Jayant joined the faculty of the Electrical and Computer Engineering Department at Georgia Tech in July 1998, as a Georgia Research Alliance Eminent Scholar, as the John Pippin Chair in Wireless Systems, and as the Director of the Georgia Tech Wireless Institute. In April 1999, he created and became the first Director of the Georgia Tech Broadband Institute, with cross-campus responsibilities in research and industry partnership in broadband access, lifestyle computing, and ubiquitous multimedia. In October 2000, he was named Executive Director of the Georgia Centers for Advanced Telecommunication Technology (GCATT).

Earlier at Bell Laboratories, Dr. Jayant created and managed the Signal Processing Research Department, the Advanced Audio Technology Department and the Multimedia Communications Research Laboratory. He also initiated several new ventures for AT&T and Lucent Technologies, including businesses in Internet Multimedia, Wireless Communications and Digital Audio Broadcasting. His personal research has been in the field of digital coding and transmission of information signals. He has published over a hundred papers and several books, including a fundamental textbook, *Digital Coding of Waveforms* (Prentice Hall) co-authored with Peter Noll. He has been granted thirty patents. Technologies created by Dr. Jayant's research and leadership span several aspects of audiovisual communications.

Dr. Jayant received his PhD in Electrical Communication Engineering from the Indian Institute of Science, Bangalore, India. As part of this doctoral program, he was a research associate at Stanford University for one year prior to joining Bell Labs, Murray Hill, in 1968. Dr. Jayant has received several honors, including the IEEE Browder J. Thompson Memorial Prize Award (for the best IEEE publication by an author under thirty years of age, 1974), the IEEE Donald G. Fink Prize Paper Award (for the best tutorial in an IEEE publication, 1995), and the 1997 Lucent Patent Recognition Award. In 1998, he was inducted into the New Jersey Inventors Hall of Fame. Dr. Jayant was the Founding Editor-in-Chief of the IEEE ASSP Magazine. He is a Fellow of the IEEE, a recipient of the IEEE Third Millennium Medal, and a member of the National Academy of Engineering.

Dr. Jayant served as the Chairperson of the National Academies Committee on Broadband Last Mile Technologies. This work resulted in a recent report of the National Research Council-- *Broadband: Bringing Home the Bits*. Most recently, Dr. Jayant co-founded EGTechnology, an Atlanta-based startup engaged in creating broadband platforms, with initial focus on software for advanced television. Dr. Jayant is also the Founder and President of a consulting company, MediaFlow, and he serves on the Advisory Boards of Silkroad Venture Partners, NTT-DoCoMo (USA), and the Singapore Institute for Infocomm Research.