

From Single Media to Multimedia — Perception, Coding, and Quality

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Abstract

Humans are the ultimate consumers of multimedia information, and effective system design requires a performance metric. While such metrics have been extensively studied for single-media perception for one or more decades, those for multimedia perception and use are still in their relative infancy. In this talk, I will focus on the development of single-media quality metrics for audio and visual information, and contrast it with the development of appropriate metrics for multimedia information. I will describe how humans perceive single-media information, how an understanding of perception has been incorporated into single-media coding and then quality measurement, and I will discuss the current state of understanding of multimedia perception as it has been applied to coding and quality measurement problems

Biography: Sheila S. Hemami (F) received the B.S.E.E. degree from the University of Michigan in 1990, and the M.S.E.E. and Ph.D. degrees from Stanford University in 1992 and 1994, respectively. Her Ph.D. thesis was entitled "Reconstruction of Compressed Images and Video for Lossy Packet Networks" and she was one of the first researchers to work on what we now call "error concealment." She was with Hewlett-Packard Laboratories in Palo Alto, California in 1994 and worked on video-on-demand. She joined the School of Electrical Engineering at Cornell University in 1995, where she holds the title of Professor and directs the Visual Communications Laboratory.



France and at Ecole Polytechnique Federale de Lausanne, Switzerland. She has received numerous college and national teaching awards, including Eta Kappa Nu's C. Holmes MacDonald Award. She is currently Editor-in-Chief, IEEE Transactions on Multimedia (2008-10); Member-at-Large of the IEEE Signal Processing Society Board of Governors (2009-11), and an SPS Distinguished Lecturer (2010-11). She has Chaired the IEEE Image and Multidimensional Signal Processing Technical Committee (2006-07); and served as Associate Editor, IEEE Transactions on Signal Processing (2000-06).

Dr. Hemami's research interests broadly concern communication of visual information, both from a signal processing perspective (signal representation, source coding, and related issues) and from a psychophysical perspective.

Dr. Hemami is an IEEE Fellow and has held various visiting positions, most recently at the University of Nantes,