

Seminar

APSIPA 2012-2013 Distinguished Lecture

Hosted by: Multimedia Compression Lab, Dept of Computer Engineering, Santa Clara University

Date: December 11, 2013 (Wednesday)

Time: 11:30 a.m.

Place: Engineering Conference Room EC 230 (refreshment will be provided)

Title: 3D Video: Some Challenging Topics

Abstract: 3D films have a history of a few decades, but only recently 3D video consumer products are gradually becoming popular. The focus of next-generation 3D research is on the so-called virtual-viewpoint (or free-viewpoint) video system. It is also an on-going standardization item in the international ITU/MPEG Standards. In addition to the movie special effects, one application of virtual-view system is the multi-view auto-stereoscopic (glasses free 3D) display. Typically, a densely arranged camera array is used to acquire input images and a number of virtual view pictures are synthesized at the receiver using the depth-image based rendering (DIBR) technique. Three essential components are needed for building a virtual-view system: depth estimation, data compression, and view synthesis. Another issue is how human being judges the quality of 3D video. There exist a number of 2D image/video quality assessment models, but the 3D perceptual modeling is largely under development. Because depth-assisted view rendering heavily depends on accurate depth maps, depth map acquisition becomes another critical element in this system. We will give a quick overview of these challenging topics and summarize our work on these subjects.

Bio: Hsueh-Ming Hang received the B.S. and M.S. degrees in control engineering and electronics engineering from National Chiao Tung University, Hsinchu, Taiwan, in 1978 and 1980, respectively, and Ph.D. in electrical engineering from Rensselaer Polytechnic Institute, Troy, NY, in 1984.

From 1984 to 1991, he was with AT&T Bell Laboratories, Holmdel, NJ, and then he joined the Electronics Engineering Department of National Chiao Tung University (NCTU), Hsinchu, Taiwan, in December 1991. From 2006 to 2009, he took a leave from NCTU and was appointed as Dean of the EECS College at National Taipei



University of Technology (NTUT). He is currently a Distinguished Professor of the EE Dept at NCTU and an associate dean of the ECE College, NCTU. He has been actively involved in the international MPEG standards since 1984 and his current research interests include multimedia compression, image/signal processing algorithms and architectures, and multimedia communication systems.

Dr. Hang holds 13 patents (Taiwan, US and Japan) and has published over 190 technical papers related to image compression, signal processing, and video codec architecture. He was an associate editor (AE) of the IEEE Transactions on Image Processing (TIP, 1992-1994), the IEEE Transactions on Circuits and Systems for Video Technology (1997-1999), and currently an AE of the IEEE TIP again. He is a co-editor and contributor of the Handbook of Visual Communications published by Academic Press. He is currently a Distinguished Lecturer and Board Member of the Asia-Pacific Signal and Information Processing Association (APSIPA) (2012-2013). He will be a general co-chair of APSIPA ASC 2014. He is a recipient of the IEEE Third Millennium Medal and is a Fellow of IEEE and IET and a member of Sigma Xi.