

Tutorial

Session: Tutorial 5
Time: Wednesday December 16, 14:00-17:20
Place: Room Y301

Depth-based Video Processing Techniques for 3D Contents Generation

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Abstract

With the emerging market of 3D imaging products, 3D video has become an active area of research and development in recent years. 3D video is the key to provide more realistic and immersive perceptual experiences than the existing 2D counterpart. There are many applications of 3D video, such as 3D movie and 3DTV, which are considered the main drive of the next-generation technical revolution. Stereoscopic display is the current mainstream technology for 3DTV, while auto-stereoscopic multi-view display is a more promising solution that requires more research endeavors to resolve the associated technical difficulties. In this tutorial lecture, we are going to cover the current state-of-the-art technologies for 3D contents generation. After defining the basic requirements for 3D realistic multimedia services, we will cover various multi-modal immersive media processing technologies. We also address the depth estimation problem for natural 3D scenes and discuss several challenging issues of 3D video processing, such as camera calibration, image rectification, illumination compensation and color correction. In addition, we are going to discuss the MPEG activities for 3D video coding, including depth map estimation, prediction structure for multi-view video coding, multi-view video-plus-depth coding, and intermediate view synthesis for multi-view video display applications.

Biography

Dr. Yo-Sung Ho received the B.S. and M.S. degrees in electronic engineering from Seoul National University, Seoul, Korea, in 1981 and 1983, respectively, and the Ph.D. degree in electrical and computer engineering from the University of California, Santa Barbara, in 1990. He joined ETRI (Electronics and Telecommunications Research Institute), Daejeon, Korea, in 1983. From 1990 to 1993, he was with North America Philips Laboratories, Briarcliff Manor, New York, where he was involved in development of the Advanced Digital High-Definition Television (AD-HDTV) system. In 1993, he rejoined the technical staff of ETRI and was involved in development of the Korean DBS Digital Television and High-Definition Television systems. Since 1995, he has been with Gwangju Institute of Science and Technology (GIST), where he is currently Professor of Information and Communications Department. Since August 2003, he has been Director of Realistic Broadcasting Research Center at GIST in Korea. He has been serving as an Associate Editor of IEEE Transactions on Circuits and Systems Video Technology (T-CSVT). His research interests include Digital Image and Video Coding, Image Analysis and Image Restoration, Three-dimensional Image Modeling and Representation, Advanced Source Coding Techniques, Three-dimensional Television (3DTV) and Realistic Broadcasting Technologies.