

SPECIAL SEMINAR

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"Visual Estimation Techniques and Applications"

Abstract

Recent advances in computer and telecommunication technologies and the advent of the Internet make image and video data more accessible. The abundance of such visual data has created many new exciting research and development opportunities in the fields of image and video processing, computer vision, computer graphics, and human-computer interaction. This talk will present some of our recent work on estimating 2D motion and 3D structure from visual data and demonstrate a wide range of real-world

applications enabled by these techniques. The talk will concentrate on the following three topics:

(1) A new global matching framework for accurate 3D scene structure recovery from videos or multiple images with applications in image-based rendering, 3D video manipulation, and immersive telepresence.

(2) Two-dimensional dynamic motion layer analysis with applications in video surveillance, video summarization, and video coding. (3) A method for non-rigid motion modeling and estimation and its

applications in face modeling, photo-realistic face animation, human emotion recognition, and very-low-bit-rate video coding.

The material presented in this talk is joint work with Prof. Thomas S. Huang, Dr. Harpreet S. Sawhney, and Dr. Rakesh Kumar.

Bio

Hai Tao received the BS and MS degrees in Automation from Tsinghua University in 1991 and 1993, respectively. He received the MS degree in Electrical Engineering from the Mississippi State Univ. in 1995. He received the PhD degree in Electrical Engineering from the University of Illinois at Urbana-Champaign in November 1998. From 1999 to 2001, he was a member of technical staff in the Vision Technology Laboratory at Sarnoff Corporation, NJ. Since July 2001, he joined the Department of Computer Engineering at the University of California at Santa Cruz where he is now an assistant professor. Dr. Hai Tao's research interests include image and video processing, computer vision, vision-based computer graphics, and human-computer interaction. He has published more than thirty technical

papers and two book chapters. He holds two US patents.