## *ISVC 2005: International Symposium on Visual Computing*
Lake Tahoe, December 5-7 2005

Observing Humans and Their Activities:
A Perspective on Promises and Challenges

Mohan M. Trivedi
Computer Vision and Robotics Research Laboratory
University of California at San Diego

Abstract

Computer vision is recognized as a core technology for observing humans and their activities. Vision, or in general perceptual systems, needs to derive multilevel semantic information about human presence, movement, body, body parts, identity, gestures, affective states, behaviors and intentions. In this presentation we will highlight the role of using multiple perspective vision systems for capture and analysis of a wide range of human movement, body, gesture and activities. Multiple perspectives allow for range and volume data to be captured and offer advantages of redundancy and occlusion mitigation. Some of the noteworthy concepts involve real-time capture of volumetric information, 3D tracking of persons, modeling and tracking of articulated body parts at multiple levels of resolution, and gesture and activity analysis. Progress, utility and promise of such systems will be illustrated with a range of experimental studies conducted in the context of intelligent rooms, public spaces, and intelligent vehicles related projects. The presentation will also attempt to highlight important, outstanding issues which need consideration.
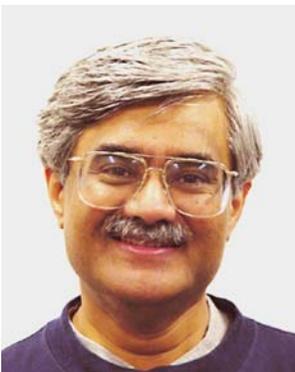
Speaker Bio-Sketch: Mohan Manubhai Trivedi serves on the faculty of the University of California at San Diego, as a Professor of Engineering and Director of the Computer Vision and Robotics Research Laboratory (cvrr.ucsd.edu). Mohan has a broad range of research interests in the computer vision systems, "active" perception, intelligent ("smart") environments, intelligent vehicles and transportation systems and human-machine interfaces fields. Mohan serves regularly as a consultant to industry and government agencies in the USA and abroad. Recently, he served on panels which considered privacy, individual freedoms and technology issues surrounding video surveillance. Mohan has received the Distinguished Alumnus Award from the Utah State University, Pioneer Award (Technical Activities) and Meritorious Service Award from the IEEE Computer Society. Mohan has served on several administrative positions, including, Founding Executive Committee Member of the University of California System wide Digital Media Innovation Program, Executive Committee member of the UCSD Cal-IT2 Institute, and Chairman of the IEEE Computer Society's Robotics Technical Committee.

KEYNOTE TALK
Tuesday, December 6, 2005
9AM-10AM / Sand Harbor II

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TITLE: Ordinary Measures in Pattern Recognition
Tieniu Tan
National Lab for Pattern Recognition
Institute of Automation
Chinese Academy of Sciences

Abstract

TBA

Speaker Bio-Sketch: Tieniu Tan graduated with a BSc from Xi'an Jiaotong University in 1984, and obtained his MSc (in 1986) and PhD (in 1989) degrees from Imperial College of Science,Technology and Medicine, London, UK. Prior to his return to China in 1998, He worked at the University of Reading, UK as Research Fellow, Senior Research Fellow and Lecturer. He currently serve as the President of the Institute of Automation as well as the Director of the NLPR. He lead the Intelligent Recognition & Digital Security Group of the NLPR. His current research focuses on the visual surveillance and monitoring of dynamic scenes (for example, the detection and recognition of abnormal behaviors or other specific events), personal identification based on multiple biometric features such as face, iris, fingerprint, handwriting and gait, and watermarking of digital multimedia data such as digital static images and digital video. He also have research projects on image and video databases, invariant visual perception and mobilerobot navigation (especially for intelligent wheelchairs).

KEYNOTE TALK
Monday, December 5, 2005
2:00PM-3:30PM / Sand Harbor II

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Visualization of Vector Field Data for Scientific Computing

Dr. Anil Deane
Department of Energy
& University of Maryland, College Park

Abstract

In his talk, Prof. Deane will survey some relevant techniques, describe some of his own work, and discuss DOE's involvement in visualization.

Speaker Bio-Sketch: Dr. Anil Deane is currently a Program Manager in the Mathematical, Information, and Computational Sciences division of the Office of Advanced Scientific Computing Research at the Department of Energy. He earned his Ph.D. in Astrophysics from University of Colorado, Boulder in 1987. With post-doctoral work at Brown and Princeton Universities in Applied Mathematics, he joined NASA Goddard Space Flight Center in 1992. There he was a member of the High Performance Computing Project and also directed the annual NASA Summer School in High Performance Computational Earth and Space Sciences. Concurrently he was a member of the faculty at George Mason University, and following that, in 1997 he joined the Institute for Physical Science and Technology at the University of Maryland, College Park, where he holds a position of Associate Research Professor. He has served as Director for the Institute's Laboratory for Computation and Visualization. His scientific interests range in the high performance computing of fluid dynamics, space plasmas, numerical methods and visualization.

BANQUET TALK
Tuesday, December 6, 2005
8:00PM-9:00PM / Sand Harbor III

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Saliency-Guided Graphics and Visualization

Amitabh Varshney

Department of Computer Science and UMIACS
University of Maryland

Abstract

With increase in data sizes and display complexities it has become more important to explore new visual representations that help ease the burden of rendered detail and are comprehension friendly. In this talk I shall review how various other disciplines have used saliency to improve depiction and discuss some of the beginnings we have recently made in this direction in visualization and graphics.

Speaker Bio-Sketch: Amitabh Varshney is an Associate Professor of Computer Science at the University of Maryland. His research has addressed challenges in 3D interactive graphics and visualization for large graphics datasets by reconciling realism with interactivity through multiresolution techniques and high-performance computing. He has served as the papers chair for IEEE Visualization 2000 and 2001, program chair for IEEE Visualization 2005 and is the Conference Chair for IEEE Visualization 2006. In addition, he has served on several program and conference committees and journal editorial boards. Varshney received the NSF CAREER award in 1995 and the first IEEE Visualization Technical Achievement Award in 2004. Varshney received a B.Tech. in Computer Science from the Indian Institute of Technology Delhi in 1989 and a M.S. and PhD in Computer Science from the University of North Carolina at Chapel Hill in 1991 and 1994.

KEYNOTE TALK
Wednesday, December 7, 2005
9AM-10AM / Sand Harbor II

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Virtual Reality as a Tool for Scientific Visualization and Other Pursuits

William R. Sherman
Desert Research Institute (DRI)

Abstract

Scientific visualizations are techniques designed to clarify patterns that exist within a scientific dataset. Virtual reality is a tool for communication designed to physically put a human user in some imagined or simulated world. We will look at how virtual reality displays have been used with scientific visualization techniques with the hope of providing a truly insightful experience. But insight doesn't just come from science, therefore we will also look at how virtual reality has been employed in other fields.

Speaker Bio-Sketch: William R. Sherman is the Technical and Acting Director Center for Advanced Visualization, Computation and Modeling Desert Research Institute (DRI). He has been working in the field of scientific visualization for 17 years (15 of those years at the National Center for Supercomputing Applications). He was the NCSA technical lead for virtual reality for 12 years (10 of which included a CAVE VR display). He has co-authored a book on virtual reality ("Understanding Virtual Reality"). Currently, he has been working on a 2nd book focusing on applied virtual reality. He is the primary author of an open-source VR library (for all types of VR displays). He came to DRI last year to start a new VR lab which now has a 4-sided CAVE display, and is making plans for a building to house a 6-sided display.