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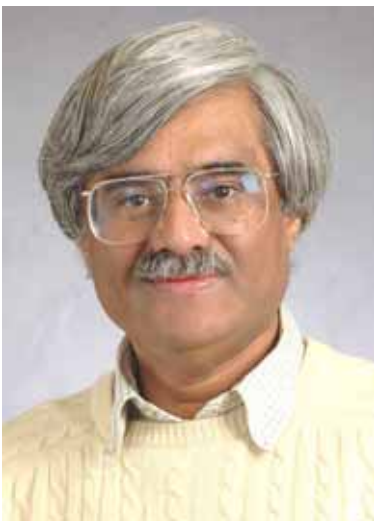
In conjunction with IEEE CVPR'05

Observing Humans in Smart Spaces: A Multi Perspective and Multi Modal Approach

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Abstract: “Smart” (or Intelligent) spaces are supposed to assist humans to accomplish their goals, with enhanced safety, efficiency, effectiveness, and convenience. Such spaces need to capture and maintain an awareness of the static and dynamic states of the space and its inhabitants. In general the perceptual system should provide multilevel semantic information about human presence, movement, body, body parts, identity, gestures, affective states, behaviors and intentions. Computer vision is recognized as a core discipline to realize such capabilities for observing humans in smart spaces so that appropriate actions can be taken in a reliable, efficient, and robust manner. Constraints imposed by the “real-world” make development of such systems a challenging task. 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. We consider color video arrays as well as thermal infrared video arrays in our development. 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 vehicles as well as surveillance related projects. The presentation will also attempt to highlight important, outstanding issues which need consideration and resolution.



Speaker Bio-Sketch: Mohan Trivedi was introduced to multispectral image processing field as a graduate student. Since then he has stayed active in the machine vision and intelligent systems areas as an academician and a researcher. Trivedi 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 areas. Mohan 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). In partnership with several automobile companies, he established the Laboratory for Intelligent and Safe Automobiles (“LISA”) at UCSD to pursue a multidisciplinary research agenda. Mohan has also served on several administrative positions, including Director of the NSF-DARPA sponsored Program in Advanced Manufacturing, 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. 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. Trivedi was the Editor-in-Chief of the Machine Vision and Applications Journal. 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.

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