Keynote

Recognizing Human Actions

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Abstract

Recognition of human actions from video sequences is a very active area of research in Computer Vision. An important step in any action recognition approach is the extraction of useful information form a raw video data and its subsequent representation. The representation should account for the variability that arises when arbitrary cameras capture humans performing actions.

UCF Computer Vision group has been very active in action recognition area. In this talk, I will present our action recognition work employing a variety of representations: a single point, anatomical landmarks on the human body, and complete contour of the human body. I will also explicitly identify three important sources of variability: (1) viewpoint, (2) execution rate, and (3) anthropometry of actors, and propose a model of human actions that allows us to address all three. Our hypothesis is that the variability associated with the execution of an action can be closely approximated by a linear combination of action bases in joint spatio-temporal space. We demonstrate that such a model bounds the rank of a matrix of image measurements and that this bound can be used to achieve recognition of actions based only on imaged data..

Bio

Dr. Mubarak Shah, Agere Chair professor of Computer Science, and the founding director of the Computer Vision Laboratory at University of Central Florida (UCF), is a researcher in computer vision. He is a co-author of two books **Video Registration** (2003) and **Motion-Based Recognition** (1997), both by Kluwer Academic Publishers. He has worked in several areas including activity and gesture recognition, violence detection, event ontology, object tracking (fixed camera, moving camera, multiple overlapping and non-overlapping cameras), video segmentation, story and scene segmentation, view morphing, ATR, wide-baseline matching, and video registration. Dr. Shah is a fellow of IEEE, was an IEEE Distinguished Visitor speaker for 1997-2000, and is often invited to present seminars, tutorials and invited talks all over the world. He received the Harris Corporation Engineering Achievement Award in 1999, the TOKTEN awards from UNDP in 1995, 1997, and 2000; Teaching Incentive Program award in 1995 and 2003, Research Incentive Award in 2003, and IEEE Outstanding Engineering Educator Award in 1997. He is an editor of international book series on "Video Computing"; editor in chief of *Machine Vision and Applications* journal, and an associate editor *Pattern Recognition* journal. He was an associate editor of the *IEEE Transactions on PAMI*, and a guest editor of the special issue of *International Journal of Computer Vision* on Video Computing.