

Proactive Camera Control for Collaborative Sensing

Faisal Z. Qureshi

Faculty of Science, University of Ontario Institute of Technology, Oshawa, ON, Canada

Faisal.Qureshi@uoit.ca

Abstract

Camera networks that combine passive wide field-of-view (FOV) cameras with active pan/tilt/zoom (PTZ) cameras are becoming increasingly popular. Passive wide FOV cameras can track multiple pedestrians and provide low-resolution coverage of the entire scene; where as, active PTZ cameras can capture closeup video of selected pedestrians. Intelligent, goal-directed control of PTZ cameras to capture high-resolution video of events of interest is a challenging problem. For example, proactive camera control is required to record seamless, high quality, video of individuals meandering through the FOVs of multiple PTZ cameras. Unlike a purely reactive camera control strategy, a proactive camera control strategy considers the *long-term* effects of camera assignments when deciding how to task individual cameras to observe selected pedestrians. Planning ahead prevents future problems that might arise due to a poor camera assignment that is optimal with respect to the current state of the world. We describe a proactive camera control strategy by formulating PTZ camera assignment and handoff as a planning problem whose solution achieves optimal camera assignments for the purposes of capturing seamless, high-resolution videos of selected subjects roaming in the scene.