

## Tactical analysis of Video Imagery

Mary Ann F. Harrison, Fred Bernal, Joseph Hatcher

We present our research to develop a system for the combination of real-time video analysis with sociological metadata analysis for long-term information gathering of human behavior. Our system performs detection of specific actions, such as the crossing a line or perimeter of interest, left objects, and removed objects, and identifies the target. A wide angle camera surveys the entire scene, detecting humans and vehicles and monitoring for specific action events. Once an action is detected, a PTZ camera is tasked to zoom in on this subject to try to obtain a suitable still image for face recognition. These stills are compared against a face recognition database and the identity of the person committing the action event is determined. The system also monitors crowd activities for potentially interesting events, such as the onset of high-density crowds. The system then surveys any individuals in the crowd to detect any affiliation events between the target and others in the scene. These events may include rendezvous, people moving through a scene as a group, or leave-taking. The times, places of occurrences, and durations of these events are logged and used as input into a social network analysis to determine the social behavior patterns of the individuals observed. Statistics on this metadata can then be computed to determine particular behavioral characteristics of the individuals and their social roles. We present our research progress to date, and address military applications.