Social Behavior Recognition at a Distance
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Abstract: A real time stand-off end-to-end social interaction analysis system has been instantiated. Groups of individuals can move freely while being tracked by a set of fixed RGB+D cameras, which produce estimates of location and articulated body motion. A ring of PTZ cameras are tasked based on such tracking results to capture high resolution facial imagery. Facial landmark fitting and tracking is performed so as to extract facial expressions and gaze directions. The real-time social interaction system distills streams of person specific cues into a set of site-level aggregate statistics which are independent of the configuration and number of observed individuals. Such measures include: emotional affect, (derived from observed facial expressions), proximity (derived from tracked positions), activity/motion (derived from body motions) and engagement (derived from position and gaze direction). The system continuously produces these statistics resulting in a time-series representation of site level activity. Sets of graphical models operate over these measures resulting in a continuous estimate of various group-level social states such as rapport and hostility.

8 PTZ Cameras are automatically targeted on to tracked individuals resulting in expression and gaze estimates. Expressions include: joy, frustration, anger, surprise and fear.

Multi-view tracking and articulated motion analysis
Automatic PTZ assignment and control
Time series representation of various social signals as well as an estimation of group level social states such as rapport and hostility.

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