

Event modeling and recognition in camera networks

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This talk will discuss two important challenges to building robust event modeling and recognition systems for camera networks. The first problem is identity maintenance – how can a camera network know that a person (vehicle, object) seen in one camera at one time is the same as another person (vehicle, object) seen in another camera at another time. Whenever there are gaps in observation, due to occlusion or incomplete camera coverage (or track loss), identity maintenance becomes a critical problem. The problem can be attacked at two levels – first, designing appearance descriptors that can be transferred across viewing conditions, and second, identifying additional self-identifying properties (based, for example on knowledge, possession, and closed worlds) that can augment appearance matching. The second problem is how to integrate uncertainty in detection, tracking, movement and identity with event modeling and recognition. Distributed implementations of simple pattern matching algorithms will be insufficient for event recognition in camera networks, just as the single camera versions are insufficient for single camera surveillance. I will describe recent work on applying Markov Logic Networks to event modeling and recognition in single camera surveillance, and discuss the challenges of generalizing this to camera networks.