EVENT DETECTION BASED ON A PEDESTRIAN INTERACTION GRAPH USING HIDDEN MARKOV MODELS

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ABSTRACT:

In this paper, we present a new approach for event detection of pedestrian interaction in crowded and cluttered scenes. Existing work is focused on the detection of an abnormal event in general or on the detection of specific simple events incorporating only up to two trajectories. In our approach, event detection in large groups of pedestrians is performed by exploiting motion interaction between pairs of pedestrians in a graph-based framework. Event detection is done by analyzing the temporal behaviour of the motion interaction with Hidden Markov Models (HMM). In addition, temporarily unsteady edges in the graph can be compensated by a HMM buffer which internally continues the HMM analysis even if the representing pedestrians depart from each other awhile. Experimental results show the capability of our graph-based approach for event detection by means of an image sequence in which pedestrians approach a soccer stadium.