

Formalization of People and Crowd Detection and Tracking for Smart Video Surveillance

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Abstract

One of the promising areas of development and implementation of artificial intelligence is the automatic detection and tracking of moving objects in video sequence. The paper presents a formalization of the problem of detection and tracking of people and crowd in video. At first, we defined person, group of persons and crowd motion detection types and formalized them. For crowd, we defined three main types of its motion: direct motion, aggregation and dispersion. Then, we formalised the task of tracking for these three groups of people (single person, group of persons and crowd). Based on these formalizations, we developed algorithms for detection and tracking people and crowd in video sequences for indoor and outdoor environment. The results of experiments for video sequences obtained using a stationary and moving video camera are presented.

Keywords

Video surveillance Moving object Tracking by detection Motion trajectory

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