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Advances in Systems Science and Applications
Volume 16, Issue 2, 2016, Pages 54-69

Adaptive background modeling for dynamics background (Article)

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Abstract

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An increasing number of CCTV have been deployed in public and crime-prone areas as demand for automatic monitoring system is increasing to counterbalance the limitation of human monitoring. To have a good monitoring system in such places, a good background model is needed in order to reduce amount of the video processing needed for tracking, classification, counting and etc. This paper proposes an adaptive background modeling that is able to model a scene under review at real-time. The proposed modeling system is also expected to be able to handle dynamic backgrounds and common problems in detection methods. A novel patch-based background reconstruction based on highest frequency of occurrences assumption and past pixel observation is proposed. Contrast adjusting method is used to reduce the problem of incorrectly classified foreground which is shadow problem. The proposed algorithm is focused to be tested and analytically compared with the dynamic background at the indoor and outdoor environment. The main challenges of background subtraction such as illumination changes, geometrical changes, stationary moving object problem and high speed object problem are taken care of and extensively discussed in this paper. The experimental results show that the algorithm is able to reconstruct a background model and produce accurate and precise foreground that can be used for other processing stages.

Author keywords

Adaptive background modeling | Background subtraction | Dynamic background | Foreground segmentation | Surveillance

ISSN: 10786236
Source Type: Journal
Original language: English
Document Type: Article
Publisher: International Institute for General Systems Studies

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