عنوان مقاله:

A Novel Approach for Anomaly Detection and Localization in Crowded Scenes based on Convolutional Neural Networks

محل انتشار:

چهارمین کنفرانس بین المللی پژوهش های کاربردی درمهندسی کامپیوتر و پردازش سیگنال (سال: 1395)

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خلاصه مقاله:

Nowadays, surveillance cameras are widely used in the world which results in huge amount of video. Due to the amount of videos, analyzing and having supervision on these data are extremely difficult or impossible. So the need to an autonomous and intelligent video analysis system is very crucial. We have developed an intelligence autonomous anomaly detection and localization system to solve this problem. Our system architecture is based on deep learning methods. We have proposed a new convolutional neural network (CNN) architecture based on state-of-the-art CNN architectures for anomaly detection and localization in video. We have two main modules in our system: Feature extractor and Classifier. For feature extractor module, we have trained an unsupervised fully convolutional-deconvolutional neural network to have a spatial-temporal regional representation of shallow time batches of frames. To be able to represent deeper time batches of frames, we have used an autoencoder for better analysis of video. In classifier module, we have used a Gaussian classifier to classify regions as anomaly or normal. To evaluate our proposed system, we have used UCSD and UMN standard benchmarks. Results of the evaluations showed improvement in EER of our proposed system. We achievd EER of 18% for pixel-level and 11% frame-level evaluation on UCSD Ped2

کلمات کلیدی:

Anomaly Detection, Deep Learning, Fully Convolutional Neural Network, Sparse Auto Encoder