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Anomaly Detection Based on Two Global Grid Motion Templates

Shifeng Li^a, Yuqiang Yang^a, Chunxiao Liu^a

^a*Department of Electronic Engineering, Bohai University, JinZhou, CHINA*

Abstract

In this paper, we propose a novel method to detect abnormal events from videos based on two global grid motion templates (GGMTs) which are able to capture the motion distribution, space and scale information. The GGMTs contain the maximum and minimum grid motion templates which can effectively distinguish the anomalies from the normal motion distribution. One GGMT is composed of several non-overlap local grid motion templates with each one corresponding to a special location. Each local grid motion template is represented by a motion histogram obtained by computing the maximum/minimum motion distribution from the training samples. Experiments on the public datasets show that our method can effectively detect abnormal events in complex scenes.

Keywords: Anomaly detection, Grid motion template

1. Introduction

The abnormal events can be identified as irregular events from normal ones. Conventional methods [1, 2, 3] detect testing samples with lower probability as anomalies by fitting a probability model over the training data. Recently sparse coding scheme is applied to the anomaly detection [4, 5, 6, 7] and shows great potential. The mentioned methods usually construct one model or dictionary according to the low-level features, and can not accurately capture the motion distribution for all locations. In fact, the motion distribution should not be the same at different locations or scales. In stead of constructing one model or dictionary for anomaly detection, we capture the motion distribution for each

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