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ABANDONED OBJECT DETECTION USING SVM CLASSIFIER

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ABSTRACT

This project proposes an automatic and robust method to detect and recognize the abandoned objects for video surveillance systems. Two background short term and long term are constructed and updated continuously in real time. For change detection Mean-ratio and Log Ratio operators can be used. To achieve higher accuracy fusion and fuzzy clustering can be applied on both outputs. Motion based criteria needs to be applied for static and moving object detection. We are using SVM classifier to recognize the left-baggage. Proposed method in this project can detect very small abandoned objects within low quality surveillance videos, and it is also robust to the varying illuminations and dynamic background.

The automatic detection of objects that are abandoned or removed in a video scene is an interesting area of computer vision, with key applications in video surveillance. There are various methods to detect abandoned or removed objects. Tracking based approaches for detecting abandoned or removed object often become unreliable in complex surveillance videos due to occlusion, lighting changes and other factors. Therefore some authors present other methods like mixture of three Gaussian or using multiple cues like intensity, motion and shape to detect accurate static region. All of these methods are efficient to run in real time applications.

Keywords: Fuzzy Clustering

I INTRODUCTION

With the rising concern about the security in public places, surveillance cameras are broadly installed. Detection of abandoned objects is currently one of the most promising research topics for public video surveillance systems[1]. The first thing in the task of abandoned objects detection is to localize abandoned object items and the second is to classify the detected items[2]. The approaches of locating the left objects can be grouped into two categories: one is based on the tracking approach and the other is based on the background-subtraction method. Most tracking-based approaches are designed for multiple camera systems, and they need to detect all moving objects accurately[3]. They usually encounter the problem of merging, splitting, occlusion, and identity correspondence. And it is difficult to track all the objects precisely in crowded situations. On the contrary, background-subtraction techniques can work well in these highly-cluttered scenarios[4]. The existing methods can be divided into two categories according to their use of one or more background subtraction models[5]. And for each category, it can also been subdivided into two classes: one based on frame-to-frame analysis and the other based on a sub-sampled analysis.

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II WORKING

In case an object is detected, the timer is initiated and continuously incremented until it is found that the object is static. The incremented timer is consistently compared against a pre-defined *Threshold timer value*. Once the incremented timer value equals or exceeds the threshold value, it is considered that the object is abandoned[6]. The next action would be to raise an alarm and notify about the abandoned object found. Additionally, the system highlights the object by adding a rectangle around it on the screen that helps in identifying it in the monitored area[7].

Here, the threshold value is of significant importance and hence needs to be determined carefully. It forms a basis for deciding whether the object is in a dormant state or not[7]. The lower value may lead to false alarms, while the greater value may result in the object going undetected for a considerably larger amount of time. In case of surveillance systems this may prove fatal, since the abandoned object might contain a timed bomb.

2.1 Block Diagram

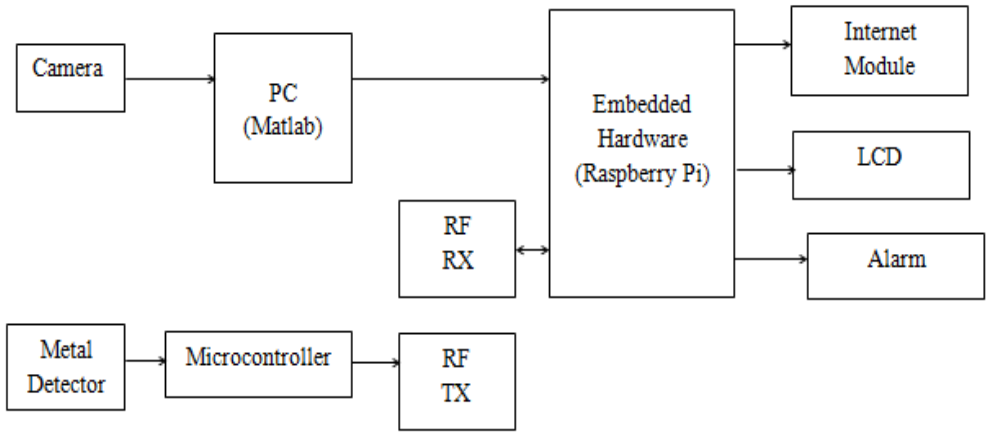

Fig1. System Block Diagram

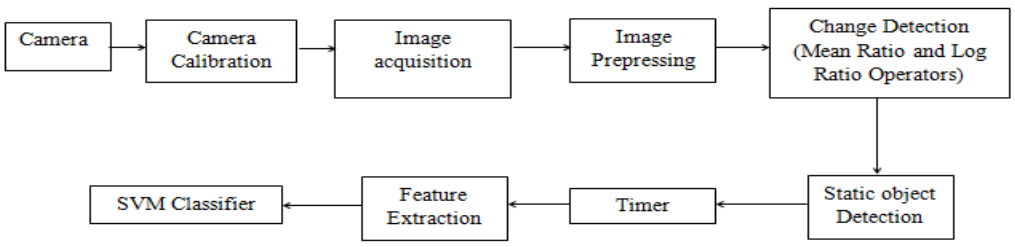

Fig2Image Processing Part

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II CONCLUSION

We discussed various methods of Abandoned object detection. Proposed method favorably compares to other tracking and non-tracking based approaches. The above method can be applied to real-world surveillance applications. We can further have more research in this field. In future we can think about utilize the temporal transition model and back-tracking verification for visual surveillance.

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