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A Survey on Detection of Abnormal Human Activity

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ABSTRACT: Abnormal Human Object Detection is one of the important task in surveillance system. This paper proposes a work related to automatic detection of abnormal human and unknown objects. The aim of the approach is to automatically recognize activities around restricted area to improve safety and security of the servicing area. The system takes sequence of images as a input from the camera, tracking and recognition results and fuses these into object estimation. With the image segmentation all objects in images can be detected whether they are moving or not by using segmentation results of successive frames. Consequently, it can be applied to multiple movements. This approach definitely provides security and detects the moving object in real time image sequence.

KEYWORDS: AHOD-Abnormal Human Object Detection, *action detection*, *suspicious event detection*.

I. INTRODUCTION

The Surveillance can be described as the task of analyzing image sequences to detect abnormal or unusual activities. surveillance activities can be manual, semi-autonomous or fully-autonomous. Manual surveillance involves analysis of the image content by a human.

In general an abnormal human object is an object which is left at a particular place under surveillance and unattended over a period of time. It should remain static in recent frames or for some time. Detecting abnormal activity is a very important in places like airports, railway stations, big shopping malls etc. where there is potentially high security threat. AHOD is one of highly challenging task in surveillance systems, lot of research is carried out to enhance and automate the surveillance system. One of the major and important tasks in surveillance system is to detect abnormal human objects unattended over a period of time. It should remain static in recent. Detecting abnormal object a very important in places like airports, railway stations, big shopping malls etc. where there is potentially high security threat. AHOD is one of highly challenging task in surveillance systems, lot of research is carried out to enhance and automate the surveillance system. One of the major and important tasks in surveillance system is to detect abnormal human activity.

Background subtraction is a critical part of object detection systems as its out come is fed to higher level processes such as object recognition and tracking and these processes rely heavily on the accuracy of background subtraction techniques. This method is particularly a commonly used technique for segmentation in static camera. It attempts to detect moving regions by subtracting the current image pixel -by- pixel from a reference background image. The pixels where difference is threshold are classified as foreground. After getting a foreground object, some morphological post processing operations are performed to reduce the effects of noise and enhance the detected regions.



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II. LITERATURE REVIEW

Jianling et al [1] uses different background modeling technique with GMM for different scene type. In this approach, pixel variance of foreground in recent frames are found and pixels with robust variances lower than threshold is taken as suspected regions and connected component. Human activity recognition has been studied for years and researchers have proposed different solutions to attack the problem. Existing approaches typically use vision sensor, inertial sensor and the mixture of both. Machine learning and threshold-base algorithms are often applied. Machine learning usually produces more accurate and reliable results, while threshold-based algorithms are faster and simpler.

Yingli et al [2] proposed a method that uses more than one GMM to describe the statistics of each pixel. When an abandoned object is detected, GMM model A with high learning rate would show the static object faster than GMM model B with low learning rate. One or multiple cameras have been used to capture and identify body posture is done and the abnormal object is detected using classifiers. All methods for static suspicious object detection are aimed at finding abandoned objects using a static camera in a public place, e.g., commercial center metro station or airport hall. Spengler and propose a tracking / surveillance system to automatically detect abandoned objects and draw the operator's attention to such events .

Gera G [3], texture information is integrated into the foreground mask computation to enhance Mixture of Gaussian method and region growing is used. Another approach is proposed which uses two backgrounds as in [previous] and uses radial reach filter to enhance the foreground mask. The method which doesn't use background modeling is very less. The intelligent surveillance system consists of object detection, object features extraction, tracking and activity detection system is shown in figure.1. The proposed approach of whole system makes use of the observation. This system is able to distinguish moving and stopped foreground objects from the static background scene, track the objects and detect the unusual activity

J. San Miguel [4] in which unattended and stolen object is detected based on the fusion of information derived from three fast detectors. However, it exploits different types of information like shape, similarity, Contour similarity, background similarity. In this paper, we introduce a method to detect the abandoned objects in real time environment. the method for detecting items of luggage left unattended at a busy train station in the UK. In this scenario, if an item of luggage is left unattended for more than 30s, an alarm should be raised. This is a challenging problem for automatic systems, as it requires two key elements: the ability to reliably detect luggage items and the ability to reliably determine the owner of the luggage and if they have left the item unattended.

Suresh.P [5] Almost all current methods for static suspicious object detection are aimed at finding abandoned objects using a static camera in a public place, e.g., commercial centre metro station or airport hall. Spengler and propose a tracking / surveillance system to automatically detect abandoned objects and draw the operator's attention to such events.

K. Smith [6] keeps track of background regions which are stored right before they are covered by an abandoned object. This approach fails when the static objects stays long enough in the scene, which makes the matching more difficult due to differences in Lighting. Video samples which does not fit any model are classified as abnormal. But this approach is limited to only events that are well defined and would require sufficient training data. However, real world video samples would mostly contain events that are not well defined and such events are rare and hence sufficient training samples are not available.

M. Bhargava[7] In this approach, we introduce a method to detect the abandoned objects in real time environment. For detection of object we are using absolute difference method .Tracking of the object is analysed with reference of centroid of foreground object. Numerous attempts have been made in this field to automatize video surveillance but each and every approaches has its own pros and cons.



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III. CONCLUSION

In this paper, the method of moving human detection will help to find the moving object perfectly in the approved manner. It can be achieved with high accuracy and reliability. System is designed for unusual activity detection task for single person in the real time. This system is fast and simple, able to detect moving human body with its behaviour. Also it provides safety and security in public places like railway platform and airlines, etc.

Our system using single camera will be very efficient in recognizing the actions and it will be very useful in the human surveillances applications. In this paper, we recognize the abnormal human bag detection action from images.

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