Suspicious Object Detection At Public Places

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ABSTRACT

Suspicious object detection is practically useful in areas of computer vision due to its application in automatic video surveillance systems for the detection of suspicious activities that might endanger public safety, especially in crowded places like airports, railway stations, shopping malls, movie theatres and the like. A suspicious object is defined as one that has been lying stationary at a certain place with unattended by human for an extended period of time. Such objects are usually inconspicuous common place objects that people often carry around including backpacks,suitcases and boxes.The present work is try to make a flexible and modular framework that can be used to experiment with several different methods for each stage of the overall task of detecting abandoned and removed objects in a video stream. Many existing methods have been implemented for each of these stages and integrated into the system in a way that makes it possible to switch between them in real time. This enables the user to observe and compare the performance of different methods of solving the same problem. We are using Netbeans to develop this system.

Keyword:- *Suspicious Object,Greyscale,Threshold, Background Subtraction, Image Acquisition etc....*

I.INTRODUCTION:

As it is the crucial task to have a public safety all over public places many bomb attacks are held all over country so as the main motive of a bomber is to place the bomb in public places so this technique helps us to detect the placed object and providing an alarm to the CCTV monitor which can help to avoid this situation hence we are using background subtraction technique which is suitable for object detection and recognizing the static foreground, the pre-processing involves a dual-time background removal algorithm which vigorously updates two sets of background, one after a very short intervals (less than a half seconds) and the other relatively longer duration.[1] The pre-processing involves a dual-time background subtraction algorithm which dynamically updates two sets of background, one after a very short interval (less than half a second) and the other after a relatively longer duration.[2] A huge amount of loss to the society in terms of property and life happens in the case of a bomb blast. all of these places are well equipped with CCTV's are not able to make the best use of these cameras and the recorded video footages.[3] The existing device is not a proactive and is not efficient to alarm the security personnel who immediately can check the incident. So, a system is being presented which is smart enough to detect a suspicious object and requires no manual monitoring.In this paper, different techniques utilized in image processing are observed and a better system is visioned as the outcome .Which help ensure the suspicious object detection in the public vicinity without any human intervention.

II.OBJECTIVES

1.The project should successfully process the real time feed and detect suspicious object without human intervention.
2.The security of public vicinities can be ensured.
3.The accuracy level to be achieved will be higher .

III.AIM

To develop smart realtime surveillance system to dominate traditional surveillance system which guarantee to make world a lot more safer place than it used to be for human welfare.

IV.RELATED WORK

1. Suspicious Object Detection Using Back-Tracing Technique[3]

This paper presents an technique that is enhanced for the basic CCTV cameras which can automatically detect the abandoned luggage through the pre used CCTV camera, for detection we are using background subtraction technique and foreground object extraction .where all the image extracted from the CCTV surveillance is classified as 2 bit code and identify static foreground region, and identifying the abandoned object. This technique is basically introduced for making the public places safe and secure where abandoned object may have weapons bombs and many other harmful equipments.

2.Abandoned Object Detection in Public Areas[4]

This system introduces a general framework to detect the abandoned objects in public areas. The main features of this algorithm are simplicity & it is easily understood. It can detect abandoned objects easily in presence of occlusion, noise & distortion[2]. This system can also be applied for detecting special events such as recording a theft, robbery or monitoring school zone safety problems, for school children, there by contributing to the safety of people in the home and schools. Due to its simplicity the computational effort is kept low and no training steps are required. In this project a new approach for unattended object detection is presented[2]. The considered video surveillance system aims at supporting a human operator in guarding indoor environments, such waiting rooms of railing stations or metro stations, by providing him with an alarm signal whenever a dangerous situation is detected. There is tremendous scope for refinement & experimentation of current system. This system is a step towards the effective and efficient monitoring of objects in public areas. The fire detection algorithm can be added to this system which is based on an existing method but contains novel extensions[2].

3. Suspicious Object Detection[1]

This paper presents a method for automatic detection of a suspicious object in public places (like railway station, airports, bus stand etc). The suspicious object will be carried by a person in the scene. An object area is extracted using background subtraction. For selecting an object of interest a unique label has been assigned to all the objects.For labeling of objects, connected component labeling algorithm has been used. A suspicious object is any object that is unattended for a specific time period. An object can be declared as suspicious on the basis of the distance of the object from its owner for a specific time period. We are using Matlab to develop this system.

4. Quantifying Contextual Information for Object Detection[11]

Context is critical for minimising ambiguity in object de-tection. In this work, a novel context modelling framework is proposed without the need of any prior scene segmentation or context annotation. This is achieved by exploring a new polar geometric histogram descriptor for context representation. In order to quantify context, we formulate a new context risk function and a maximum margin context (MMC) model to solve the minimization problem of the risk function. Crucially, the usefulness and goodness of contextual information is evaluated directly and explicitly through a discriminant context inference method and
a context confidence function, so that only reliable contextual information that is relevant to object detection is utilised. Experiments on PASCAL VOC2005 and i-LIDS datasets demonstrate that the proposed context modelling approach improves object detection significantly and out performs a state-of-the-art alternative context model.

5. Approach for Object Detection in Android Device

Object detection is achieved using OpenCv and Java language and implemented on android device by using image processing algorithms. Larger objects got detected and indicated by marking their boundary. The extracted objects are stored in array list which can be used for further processing[6]. It is observed that if opening and closing operators are successively used on binary images, then an image is obtained showing only the major objects in the scene. Contours drawn on the objects included all the major objects present in the scene or preview. It can be seen that complexity of the images is not the matter. Objects are efficiently identified and extracted in any situation. Foreground and background objects are effectively detected.

V.Definitions

a)Image Acquisition[1]

The fundamental step of every computer vision application is image acquisition which is defined as the action of retrieving an image from some source, generally a hardware-based source. The image which is acquired by hardware source is completely unprocessed. Various processing techniques are applied to this unprocessed image to get some useful information from it. In the
proposed system, the first step is to acquire a real-time video from a camera. The video captured by a camera is in the form of a sequence of frames. A frame contains still image acquired at time t.

b)Suspicious Object Detection[1]

A suspicious object could be any static unattended object for a specific time period. The suspicious object will be any non living thing (like bag, box, etc.) which is carried by a person in the scene. The person holding an object will be considered as one object. As soon as the person will left an object it will be considered that there is a split of an object into two. An object can be declared as suspicious depending on the distance of the object from the nearest person.

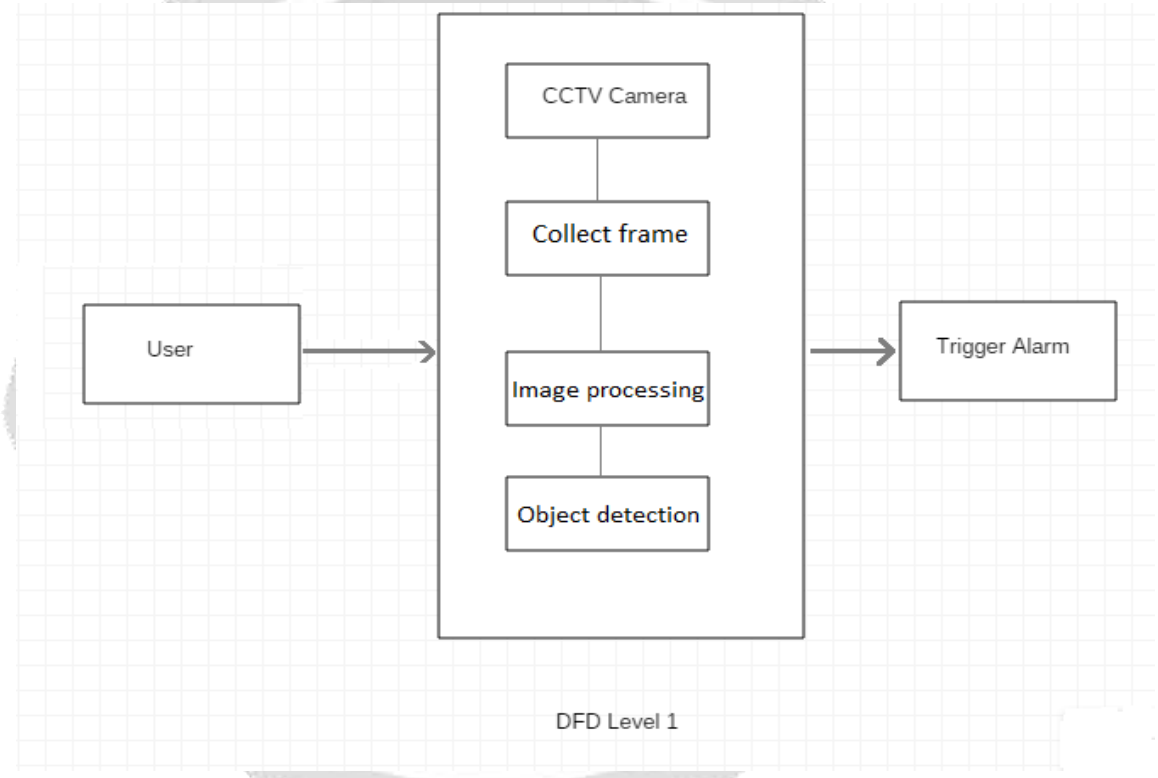

Fig.1. Representing flow diagram for object detection

VI.SYSTEM ARCHITECTURE

1. User will take input from live video feed that is captured by any camera
2. This live video feed is comprised of many frames. And we do the different image processing techniques on these frames.
3. By applying various techniques like threshold and background subtraction technique.
4. The desired unattended object is detected.
5. When the object is detected as unattended the system will raise an alarm and email alert.

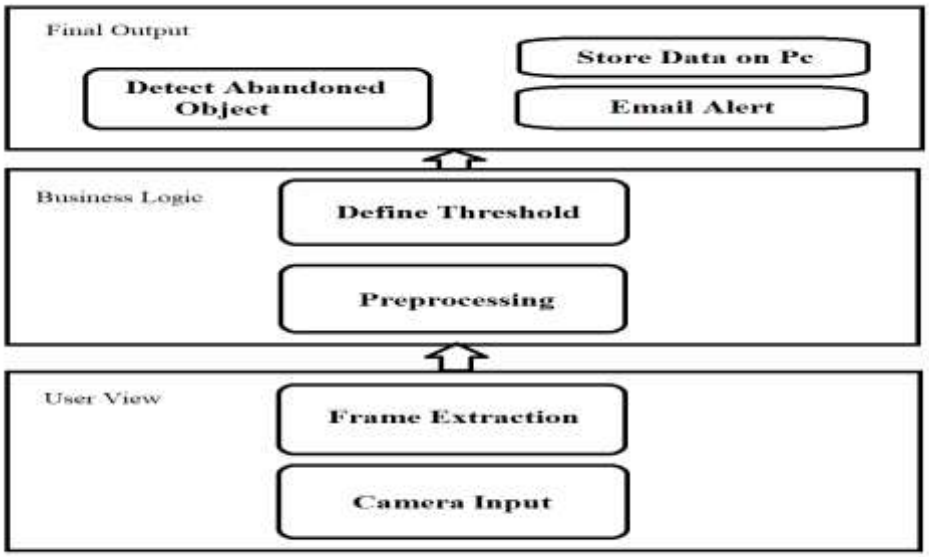

Fig.2.Representing architectural diagram

VII.TECHNIQUES

1.Thresholding

Image Thresholding is a simple, yet effective, way of partitioning an image into a foreground and background. This image analysis technique is a type of image segmentation that isolates objects by converting grayscale images into binary images.

Fig.3.Image representing Thresholding Process.

2.Gussian Blur

In image processing, a Gaussian blur (also known as Gaussian smoothing) is the result of blurring an image by a Gaussian function (named after mathematician and scientist Carl Friedrich Gauss). It is a widely used effect in graphics software, typically to reduce image noise and reduce detail.

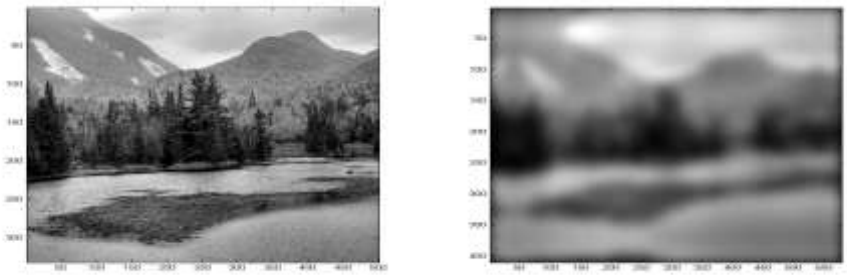

Fig.4.Image representing Gussian Blur .

3.Blob Detection

Blob detection. In computer vision, blob detection methods are aimed at detecting regions in a digital image that differ in properties, such as brightness or color, compared to surrounding regions. In early work in the area, blob detection was used to obtain regions of interest for further processing.

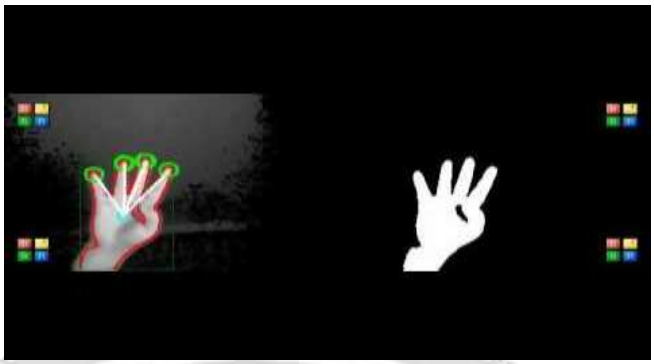

Fig.5.Image representing Blob Detection.

4.Grey Scaling

Gray-scaling is the process of converting continuous-tone image to an image that a computer can manipulate. While gray scaling is an improvement over monochrome, it requires larger amounts of memory because each dot is represented by from 4 to 8 bits.

VIII.CONCLUSION

A Suspicious Object Detection system based on a dual background segmentation scheme. The background segmentation is adaptive in nature and based on the Approximate Median Model. It consists of two types of reference backgrounds, Current and Buffered background, each with a different time interval. Blob analysis is done on the segmented background. Detection results show that the system is robust to variations in lighting conditions and the number of people in the scene. In addition, the system is simple and computationally less intensive as it avoids the use of expensive filters while achieving better detection results.

IX.REFERENCES

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