International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056
Volume: 04 Issue: 05 | May -2017 www.irjet.net p-ISSN: 2395-0072

Suspicious Object Detection System

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Abstract - Nowadays, security of society is major problems for concern. Public place ought to stay secured so as to keep up peace in society. Image capturing capability has contributed to the recognition of image knowledge. CCTV is one in all the necessary half in image capturing devices. We have a tendency to area unit mistreatment image process technique through CCTV to implement this application. If person is found with some suspicious activity, this activity is captured by CCTV, therefore alert is generated. If some suspicious issue is stay untouched for specific fundamental quantity that set by system, then it'll generate notification and tuned in to authority. Hence, we have a tendency to projected video retrieval systems mistreatment pictures or videos because the inputs. during this paper, we have a tendency to propose methodology to retrieve video retrieval of a desired object through the inputs as look. we have a tendency to firmly believe that such a framework may function the inspiration for behavior analysis utilized in several police investigation systems so that accidents is avoided. [7]

Key Words: Abandoned luggage detection, abandoned object detection, object detection and tracking.

1 .INTRODUCTION

The increase of assorted types of opposing Social activities like stealing, bomb attacks, different terrorist attacks has really semiconductor diode to the requirement for Video police investigation systems. Suspicious behaviour detection is one in every of the preponderating goals in police investigation systems together with abandoned object detection. These Systems facilitate in observation and alerting regarding the setting upon varied threats at any purpose of your time. In recent the past there area unit heap of analysis that has being wiped out field of abandoned object detection system for the video police investigation systems with correct human controlled or CCTV systems. First, video input is given that is Pre-processed exploitation image process technique. We tend to take into account 2 aspects for this application. We tend to planned amendment detection formula that is employed to capture amendment within the activity of human. This algorithm can reconstruct a picture that retains the element values of the pixels that is that the a the foreground amendment and removing the pixels that may be a part of the background image. Another fact is activity analysis is additionally done that embody detection set of pixels .It represents behaviour of person that is half-track for any variety of anomalies.

1. LITERATURE SURVEY

1] Yuan-Hao Lai and Chuan-Kai Yang, Member, IEEE, "Video Object Retrieval by Trajectory and Appearance", VOL. 25, NO. 6, JUNE 2015.

Here, this paper proposes a video retrieval system that is based on trajectory and appearance. To increase the success rate, all the videos in the database are preprocessed to identify potential moving objects, and their associated motion trajectories.

2] Divya J, "Automatic Video Based Surveillance System for Abnormal Behavior Detection", Index Copernicus Value (2013)

In this paper, Automatic real time Video Based Surveillance system for abnormal behavior is proposed, based on background subtraction, mean shift algorithm and Thresholding. Further, the abnormal activity is detected using Mean-shift algorithm by finding the centroid and velocity. A benefit of this method is that it is time efficient, and it works well in artificial light environment as well.

3] Panqu Wang, Yan Zhang Department of Electronic Engineering, Fudan University," Suspicious Object Recognition Method in Video Stream Based on Visual Attention",2008

A frequency-domain bottom-up attention method-for Channel PFT in acquiring saliency maps from video sequence, then applying IOR process to obtain interested area for object recognition, finally searching for the suspicious target in the video stream. The bottom-up and top-down attention is used respectively in finding salient areas and object recognition.

4] Reena Kumari Behera, Pallavi Kharade, Suresh Yerva, Pranali Dhane, Ankita Jain, and Krishnan Kutty,"Multi-

Camera Based Surveillance System",2011

An intelligent real-time surveillance system that can help in increasing the efficiency of the system. In order to cover a large area, more numbers of cameras are installed that leads to more number of videos that are to be monitored simultaneously.

Our approach

We proposed effective method to detect suspicious thing according to human activity. We proposed an approach for detecting abandoned object in surveillance videos. Here, two main concepts are considered, auspicious change is noted down. It is carried using change detection algorithm. Second important concept is activity analysis. According to activity of user, change is noted. According to changes, conclusion is made. Once an object is detected, tracking is required to estimate its trajectory in the image plane. If person found with suspicious activity then it is informed to authority. [7]

3. PROPOSED SYSTEM

1. System introduction
Change detection is a basic module of any surveillance system. The detected changes can be considered as foreground objects by modelling the background. Generally, background subtraction and its variants are used to extract the foreground objects from the video stream taken from a stationary camera [1, 2]. However, detecting the foreground objects becomes hard when the background includes variations due to light, shadows and insignificant periodic changes of background objects (e.g. swaying trees).

The system contains following modules:

I. Background segmentation-
In this module we are processing a live feed of the camera in which if we detect any abandoned object then the system set it as a background object for further processing.

II. Change detection
Suspicious change is observed. Such change is noted down. Alert is generated the notification is sent to authority.

III. Tracking-
In this module the systems focus on area which select in detection and track the persons which are close to that abandoned object.

IV. Alarm and Display –
In this module if person does not come back within that specified time period then alarm event get triggered and this shows that abandoned object detected.

System features

- This system recognizes Suspicious Activity at public places.
- The system will work in real time.
- The CCTV operator should modify region of interest.
- Activity is tracked under occlusion more accurately.

Block diagram:-

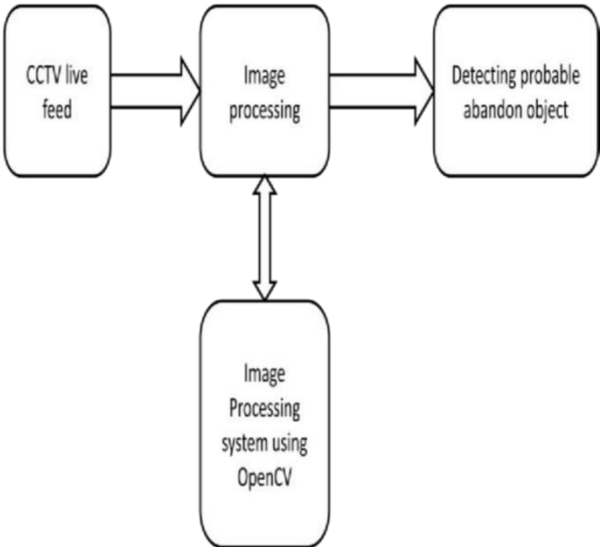


Diagram of video surveillance for detecting suspicious thing .[7]

4. Results

Background subtraction is nothing however an important approach to find the thing in motion among the police work region.

To implement this method of background subtraction there's a requirement to grant the previous information. The previous information could be a pixel-based background model extracted from initial image. Once this previous information is provided the

Frame(n) Frame(n+60) Frame(n+120)

Frame(n) Frame(n+60) Frame(n+120)

change that arrives within the next consecutive pictures are going to be simply known with the assistance of color modifications within the updated image.

4.1 Pixel-based Finite state machine

Instead of pertaining to the standing of every constituent by considering one frame, we have a tendency to implement the temporal transition information to trace the static object reckoning on serial pattern of every constituent. Typically there are unit twenty four frames per second and therefore the every constituent in a very frame is said with just one state at a flash. Supported the future and short term model the state of the constituent i could vary from one state at a time t to a different state at t+1. Supported the on top of theory we are able to build a Finite State Machine (FSM) model we are able to justify the characteristics of every model. Once the blob is tracked it's divided into 2 components. the primary one that's the creature is known as owner blob. The other is known joined is nothing however stationary objects. Consequently, the constituent is portrayed exploitation 2-bit computer code Si by merging the long and short-run foreground, as follows:
Si = Sunshine State (i) FS (i), (1)

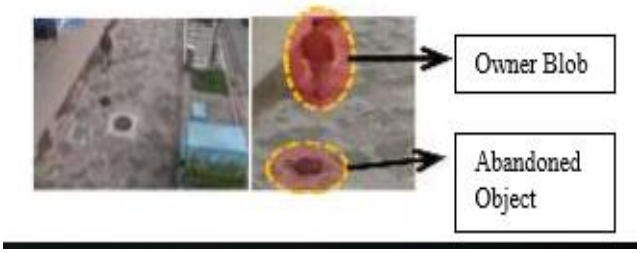
Therefore there are four states with the help of two- bit Code:

- Si = 00 indicates that pixel i is a background pixel,
- Si = 01 implies that pixel I is an uncovered background pixel,
- Si = 10 indicates that pixel I is static foreground,
- Si = 11 indicates that pixel i is a moving object

Frame(n+180) Frame(n+240) Frame(n+300)

Frame(n+180) Frame(n+240) Frame(n+300)

Frame(n+180) Frame(n+240) Frame(n+300)



5. CONCLUSION

We believe our work has great potentials in applying to many other engineering fields such as video surveillance and safety guard. It is necessary to test the model into many other complicated scenes. The principle of defining suspicious can be more delicate, as the model has high potential to be extended.

6. FUTURE SCOPE

We are planning to extend our project for public purpose. We will develop system which will directly notify to police system.

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