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EVENT DETECTION USING BACKGROUND SUBTRACTION FOR SURVEILLANCE SYSTEMS

Komal Rahangdale
Dept. of Electronics & Telecommunication Engg.
K.K.Wagh Institute of Engineering Education & Research
Nasik 422003, INDIA

Dr. Mahadev Kokate
Dept. of Electronics & Telecommunication Engg.
K.K.Wagh Institute of Engineering Education & Research
Nasik 422003, INDIA

***Abstract* - In surveillance area the detecting human beings accurately in a visual surveillance system is crucial for diverse application areas including abnormal event detection. Detect an object which is in abnormal motion and classify it. Object detection could be performed using background subtraction in this system. It is automated video surveillance application for abnormal event detection which is suspicious human behavior is of most practically importance in detection. when random nature of any person movements, classification of suspicious movements which is reliable so it will explain in this time it will more difficult .so overcome to this problem this approach for automatically track peoples and detect unusual or suspicious movements in CCTV videos is our primary aim. The proposed system is for indoor surveillance system like corridors colleges, building, of entrance or exit.**

Our proposed work present the framework which is processes input video data obtain from CCTV camera which is fixed in particular location here we first obtained background Subtraction which is find foreground objects. These foreground objects are then classified into people and suspicious object. These objects are tracked using a blob matching technique. Using temporal and spatial properties of these blobs, activities are classified using semantics-based approach. For most of background subtraction use of the gray level intensity is a common practice this algorithms due to speed matters in real time applications, this algorithm could increase the efficiency of object detection thus the accuracy increases

Key Words: Image processing, Background subtraction, Tracking, Color histogram, Classify event.

I. INTRODUCTION

The surveillance system is a collection of electronics components and wireless component, videos. Here we records videos for purpose of using monitoring in important locations which is indoor, now a days crime rate increases around world so, hence many organization system using CCTV cameras for security system purpose or for monitoring this type of activities which is illegal or suspicious event.it is also become good in forensic evidence for identifying criminals after crime occurs so the video is taken from CCTV cameras in surveillances area to monitor multiple screens at a time for searching it for suspicious event occurring.

This technique is expensive and more time consuming so, the operator role in monitoring section is costly for organization because by mistake human have error and the operator cannot observe multiple screens simultaneously so overcome this problem. We have proposed to automatic video surveillance system for monitoring this multiple screens which operate simultaneously which having any errors

II. SCOPE OF WORK

Proposed system is operates in indoor surrounding like entrances or exits of corridors, organizations, buildings, etc. The operating system for these locations is usually in artificial; with constant features .the location of camera is important in suspicious activity. The ideal position to capture the complete human shape and suspicious movements in real life scenarios.so when suspicious activity movement or suspicious object is captured and extracted it and classify using background estimated in proposed system. This is one of method to overcome this problem we use automatic video surveillance systems. Normally in background subtraction for suspicious movement detection the time consuming is more for detected event, so in the proposed approach less reliable.

III. LITRATURE REVIEW

Sandesh Patil, Kiran Talele [1], in automated video surveil-lance applications, detection suspicious human behavior is of practically importance. When we have random movements of human behavior taking is more difficult so in this paper our new approach is to find suspicious object identify automatically is primary aim in this paper from CCTV camera.

Mohamed bachir boubekeur, SenLin Luo, Tarek benlefki, and Hocine Labidi [2], here we use a non-parametric method for back- ground subtraction and moving object detection based

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on adaptive threshold using successive squared differences and including frame differencing process is proposed.
The presented scheme focused on the case of adaptive threshold and dependent distance calculation using a weighted estimation procedure. An intuitive update policy to the background model based on associated decreasing weights.

Martin D. Levine, and Mohannad Elhamod [4], in this research to detect suspicious activities in public places as a using of surveillance of video it is attracted and increase the level of a attention .here we introduced to work on raw video which is taken from CCTV cameras which is fixed on particular location . Firstly, the proposed system obtains 3D level object information by using detecting and tracking blob matching algorithm which is based on the temporal properties of blobs, events and behaviors are recognized by semantically to employing objects and motion features. The no of types of behaviour of human activity is demonstrate.so, for examples of these are abandoned and stolen objects, loitering, fainting, and fighting.

Mohamed Bachir Boubekeur, SenLin Luo, Hocine Labidi, and Tarek Benlefki [5], here we counting people in surveillance applications. So solution to bidirectional people counting which based on information provided by an overhead stereo system. So for this new approach we have 4 aspects can be identify, the tracking and detection of human activity using Extended article filter ,to increase the order of robustness use 3Dmeasurments , K-means algorithm is for to providing the no. of hypothesis at each time and then trajectory generation to counting the people which is in different- different location. the proposed system is for without counting on objects such as bags ,shopping trolleys abundant objects .the ratio of processing is around 30 frames/s is necessary to capture in real time trajectory and tracking people to obtain robust percentage.

Mohamed Bachir Boubekeur, Hocine Labidi, SenLin Luo, and Tarek Benlefki, [6], in this system video understanding and behaviour recognition are the core components of real time applications and surveillance video organizations. Main approach is of this work is find sematic based object identify. These types of activity are most obtained in public sectors, transportation such as stolen objects and abundant luggage loitering, fainting, and fighting. So using standard public datasets, finally when we have experimented results in this case we see complexity is low.

Jong Sun Kim, Young Hoon Joo, and Dong Hae Yeom, [7], in this paper which deals with an image processing which is intelligent method for surveillance area. In this system we classify moving object and tracking which consist of a network video recorder and internet protocol camera. In real time application is to obtain moving object using RGB component modeling with a sensitivity parameter to extract moving regions to estimate noise in that objects is important parameter in this proposed work to track objects which is moving nature in this case predictively of velocity and find the moving object direction . So at last the speed and low complexity is main advantage in this approach.

IV. PROPOSED SYSTEM ON BACKGROUND SUBSTATION AND TRACKING OF STOLEN OBJECT

Stolen Objects- it can defined as a luggage item or abundant object picked up by a unknown person or those person who is not owner of objects.

A. Proposed model

The figure shows the proposed system of the tracking person when any person touch unknown object who not owner of that object.

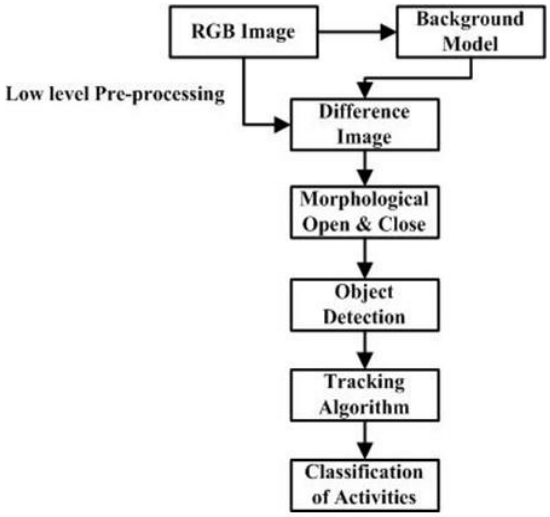

Fig. 1: Proposed block diagram

1) Background Model: in this model the background image is dynamically updated. Here allow small changes in illumination and new static object introducing. This background model is so sensitive when illumination suddenly changes.

Fig. 2: Background picture

2) Low level Pre-processing: he detecting foreground objects and background subtraction, so here we subtracted background image from the selected frame so we have foreground subtraction frame at resulting of this step and also some noise introducing to changing condition in lighting.at last of this step we eliminate the differences due

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to color components in foreground image so threshold is taken out at last of this step. next we perform morphological operation after we have thresholding image in this we have open and close shrink ,open shrink is for small noises to 0 and in close shrink rebuild the area which is lost in open timing

3) Object detection: object are obtained in foreground image which is obtained in low level preprocessing step. These objects are classified into people and inanimate objects. In this stage we have candidate.

4) Tracking: here we tracking the people and finding inanimate objects using a new proposed tracking algorithm. Here we use color sample histogram correlation principle and information. We developed this algorithm which can be used for tracking people in our new proposed system. This algorithm employed background subtraction and blob detection for tracking of suspicious activity of people and objects. The algorithm is listed as below.

a) Firstly we get foreground mask from the background model where background illumination image is taken.

b) Cancel noises and fluctuations by taking output image which is threshold image ,

$$dst(x,y) = \begin{cases} maxval & ; if\ src(x,y) > thresh \\ 0 & ; \quad otherwise \end{cases}$$

Where, src (x;y) are input and dst(x; y) output images, respectively; maxval is taken as 255; and thresh is some threshold value. Here we set thresh to 50 which is threshold value of in frame.

c) For open shrink areas in image we perform morphological operation of small noise to 0.

$$P \circ Q = (P \theta Q) \oplus Q$$

This is followed by the morphological operation close to rebuild the area of surviving components which is lost in opening,

$$P \bullet Q = (P \oplus Q) \theta Q$$

Where, $\oplus$ erosion and θ denote dilation, respectively.

d) After this step draw a bounded box for each contour to obtained in the resultant image after step is complete, each and every frame the bounded box is representing an object.

e) Find their color histogram (RGB) for all detected objects.

f) Find the correlation between color histograms of objects in

Previous frames and current frame and their correlation is given as follows,

$$d(H_1, H_2) = \frac{\sum_I \left(H_1(I) - \bar{H}_1\right)\left(H_2(I) - \bar{H}_2\right)}{\sqrt{\sum_I \left(H_1(I) - \bar{H}_1\right)^2 \left(H_2(I) - \bar{H}_2\right)^2}}$$

Where,

$$\bar{H}_k = \frac{1}{N} \sum_J H_k(J);$$

H_i Is histogram of an image; and N is total number of bins.

Using correlation information and distance between objects in current frame and previous frame, we uniquely identify all the objects.

Repeat step a through f for all frames in video which is suspicious video.

Fig. 3: Tracking Object

5) Classification of activities: Here total number of incoming and outgoing people is counted and saved. The activities of the people are classified into normal and suspicious. Suspicious activities detected like stolen object.

Fig.4: Suspicious moment

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Fig. 5: Object Detection

V. CONCLUSION

Here we finally, on human behaviors are finding using semantically and detected by continuously checking screen records. Whenever suspicious object or activity are obtained in this case track object. This approach ensures may be real-time performance, reliable less complexity, easy of interfacing with human operators, and training requirement are elimination by using machine learning-based methods.

VI. REFERENCES

[1] Sandesh Patil, Kiran Talele,"Suspicious Movement Detection and Tracking based on Color Histogram," International Conference on Communication, Information and Computing Technology (ICCICT), Jan. 16-17, Mumbai,India. 2015.

[2] [2] Mohamed bachir boubekeur, SenLin Luo, Tarek benlefki, and Hocine Labidi, "Weighted samples based background modeling for the task of motion detection in video sequences," TELKOMNIKA Indonesian Journal of Electrical Engineering , vol. 12, no. 11, pp. 77787784, 2014.

[3] [3] Jorge Garcia; Ignacio Bravo; Jose Luis Lazaro; Alfredo Gardel; Miguel Martinez; and David Rodriguez; "Directional People Counter Based on Head Tracking," IEEE Transactions On Industrial Electronics, vol. 60, No. 9, September 2013.

[4] [4] Martin D. Levine and Mohannad Elhamod,"Automated Real-Time Detection of Potentially Suspicious Behavior in Public Transport Areas," IEEE Transactions on Intelligent Transportation Systems, vol. 14,No. 2, June 2013.

[5] [5] Jorge Garcia; Ignacio Bravo; Jose Luis Lazaro; Alfredo Gardel; and Miguel Martinez; "Tracking People Motion Based on Extended Conden- sation Algorithm," IEEE Transactions on Systems, Man, and Cybernetics: Systems,Vol. 43, No. 3, May 2013.

[6] [6] Martin D. Levine and Mohannad Elhamod, "Real-Time Semantics-Based Detection of Suspicious Activities in Public Spaces," in Proc. 9th Conf. CRV, Toronto, ,ON, Canada,2012, pp. 268-275.

[7] Jong Sun Kim, Young Hoon Joo, Dong Hae Yeom, and"Fast and Robust Algorithm of Tracking Multiple Moving Objects for Intelligent Video Surveillance Systems," IEEE Transactions on Consumer Electronics, vol. 57, No. 3, August 2011.