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Background Construction and Optimisation for Surveillance Video Processing Using IOT

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ABSTRACT: In video surveillance, detection of moving objects from a video is important for object detection, target tracking, and behavior understanding. Detection of moving objects in video streams is the first relevant step of information and background subtraction is a very popular approach for foreground segmentation.. Nowadays CCTVs are installed at many places like banks safe. But the CCTV cameras continuously record the situations.

Hence there is an unnecessary memory wastage if there is nothing happening in front of the camera. Also the CCTV system does not provide alerts of burglary happening at particular time. So there is a need of a system which will record the situation only if there is some movement happening in front of the camera.. By implementing the system in real time and testing the system on large number of long sequences, authenticated person can stop alert for fix time to enter into secured. Human motion Detection System is developed from the security point of view.

The objective of Real Time Security System using Human Motion Detection is to develop a system that monitors the area in which it is being deployed. In Human motion detection System, web camera is applicable in the area where no one is permissible to enter, also where we need to detect if any motion has been done. We can use web camera for Human Motion Detection.

The Camera is used to catch the live images of the area in which it is being implemented, if any object is moving. The captured images are stored for further work. The captured images are stored for further work. If motion is found in this video, the computer will start recording, buzz an alarm.

Keywords:SVM,Classification,IOT,HumanMotion Detection.

I. INTRODUCTION

In this modern world everyone are susceptible and situations are unpredictable and the necessity for security system has become inevitable. But the difficulty in maintaining the data is increasing due to its size. A huge number of drives are used for this data storage in olden days.

The field of computer vision is concerned with problems that involve interfacing computers with their surrounding environment through visual means. One such problem, object recognition, involves detecting the presence of a known object in an image, given some knowledge about what that object should look like. As humans, we take this ability for granted, as our brains are extraordinarily proficient at both learning new objects and recognizing them later. However, in computer vision, this same problem has proven to be one of the most difficult and computationally intensive of the field. Given the current state of the art, a successful algorithm for object recognition requires one to define the problem with a more specific focus.

In this thesis, we consider a sub-problem of object recognition: human motion detection, in which we are interested in recognizing humans based solely on the characteristic patterns of motion that they exhibit. This approach differs from other techniques for human detection, such as those that recognize humans based on shape, color, texture, or surface features. This thesis presents a fully realized system for human motion detection that can be deployed in the field. Its characteristics include real-time performance, insensitivity to background clutter and movement, and a modular design that can be generalized to other types of motion

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II. LITERATURE SURVEY

Ali Quershi [3]proposed an approach namely multi-scale Retinex method, to improve the video quality, and this paper helps to focus on the illumination issue occurred in video survilleance. The pros of this paper gives you the significant performance, improvement in face detection and recognition

Muhammed Asim, [5] proposed an approach, a video summarization method to detect shot boundaries, based on color features extracted from a video instead of whole video.This approach more robust to the type of video transitions by accurately detetcting the video shots.The advantages of this paper, a keyframe are compared to remove redundant frames and confirm its effectiveness.

M.Murgan [4] proposed an approach, a system for low cost less computation automatic identifying and tracking of objects and it is presented in low resolution. The pros of this paper, provides you best solutions for video analyzing system using BGS algorithm, image skeletonization and SVM and this system is optimal for real time application.

Narumol Chumuang [3] proposed the image enhancement method using the data matching with histogram shaping technique.This paper also explained experiment on railway station surveillance system based on CCTV showed the satisfied performance of image detection under light condition.

III. PROPOSED SYSTEM

The current security system, specifically, the well-known CCTV, consumes a lot of resources such as memory, due to nonstop recording. Verily, they are efficient but it takes a while before one gets back to locate the precise time where an event happened in the area under surveillance. One has to rewind and fast forward, going back and forth to search a particular scene and that takes a lot of time and effort.

Furthermore, time is needed to keep watch on the activities going on via the screen. Something may be happening but due to negligence and human errors it may pass by without been noticed, until something happens. Then the search will begin without any idea of where to start searching with lots of videos to go through. As such, much attention and concentration is required to avoid missing important and significant activities.The fundamental steps that should be followed to accomplish our goal are:

INPUT IMAGE STAGE

Image Acquisition The first stage of any vision system is the image acquiring stage.
After the image has been obtained, different methods of processing can be put into the image to carry out the many vision tasks be in need of today.
If the image has not been obtained satisfactory, then the awful tasks may not be achievable, even with the subvention of some form of image enhancement.

ANALYSIS

PRE-PROCESSING

The pre-processing is the first step to prepare the video for the next stage.
The preprocessingremove image errors, noise introduced during the scanning and reading image, improving the quality of an image.

Pre-processing is a common name for operations with images at the lowest levelof abstraction -- both input and output are intensity images.

The aim of pre-processing is an improvement of the image data that suppresses unwanted distortions or enhances some image features important for further processing
The pre-processing steps involve color normalization, statistical method, and convolution method

CONVERSION TO GRAYSCALE

After the frame extracted from a video is to modify into grayscale for image processing purpose.
The image is a collection of the pixel and every pixel defined by three different colors, Red, Green, and Blue
.

BACKGROUND SUBTRACTION

The background subtraction, is the method of removing the background image from the real image for the purpose of video sequences processing become simple.

It is also known as foreground extraction (car, text, human) and used for detecting the moving object, the region of interest etc.

After the background subtraction output image pixel is represented by O(x,y) and the input image represented by I(x,y) and B(x,y) is used to represent for the background image.

IMAGE SEGMENTATION

Image segmentation is computer vision techniques in which groups sharing the similar properties, for example, a group having same color pixels or border and a common shape such as a line, circle or ellipse or polygon.

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Image segmentation further classified as edge detection, region-based classification, thresholding, or any combination of these techniques.

Classification

Get the data i.e. CCTV video from the surveillance camera Apply moving object detection algorithm based on Convolutional neural network method SVM has also been widely applied for object detection recently SVM is a patternclassification algorithm which minimizes an upper bound on the generalizationerror, while other classifiers are trying to minimize the training error. And it wastested that SVM can work well even in high dimensional space Extract the moving object and store it in database Based on situation apply different image processing techniques compare the results with the already available algorithm and convert the video into text file to save the best one in a database.

Identify types of situation like night, evening time and heavily congested area and also bad weather condition such as fog and rain.

IV. SYSTEM ARCHITECTURE

Our proposed system makes use of Support Vector Machine algorithm .Support Vector Machine is used as human detection algorithm to detect the patterns of human motion.Here , feature points from two consecutive images in a sequence are compared to the corresponding points on the model of a human

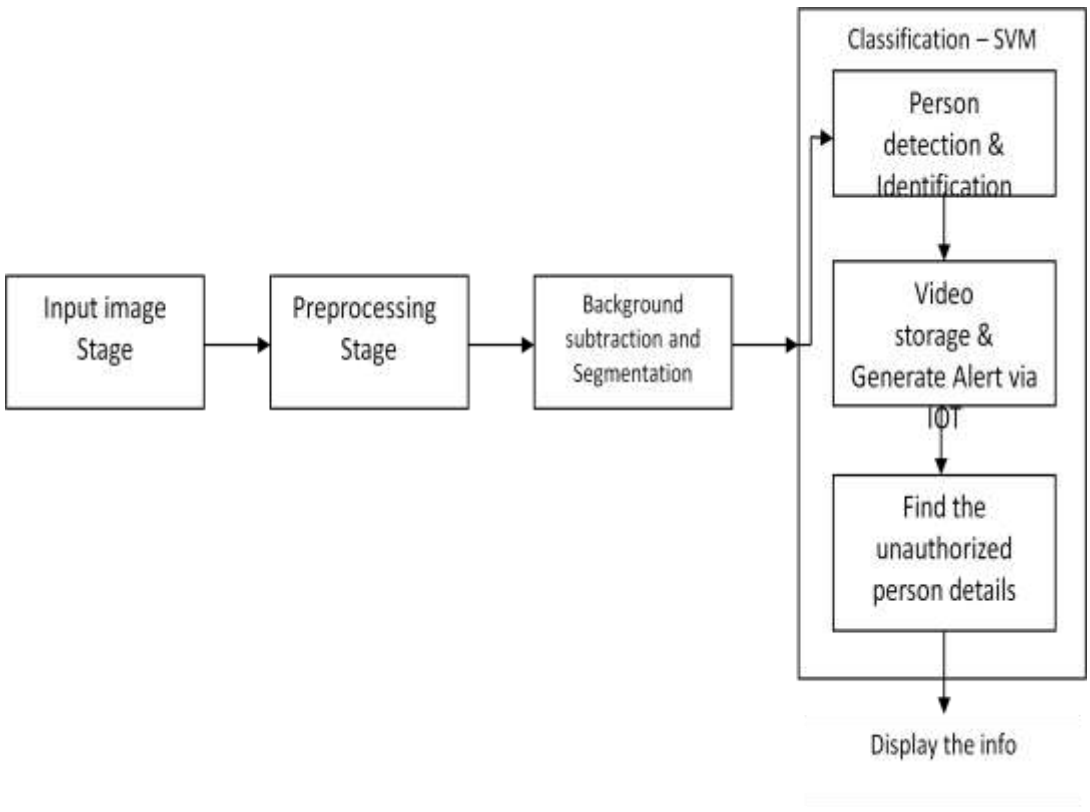
The camera will remain in ON state but will not store the data unless a Human Motion is Detected. Once the human motion is detected and the recording is started. The recording stops when the Human Motion is stopped.

Next the images are obtained and frames are created for the further processing steps.

Apply moving object detection algorithm and extract the moving object and store it in database.

Scene change detection generates an alert via message to authorized person.

Preprocessing is done to make things easier for the classifier. Preprocessing operations includecontrast normalization, and making random modifications to the original images. Our proposed system uses implicit segmentation ,conversion to grayscale process, Background subtraction and the final output is displayed.



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V. RESULTS

INPUT:

Figure 1.1

In the above figure 1.1, the video recording is given as an input.

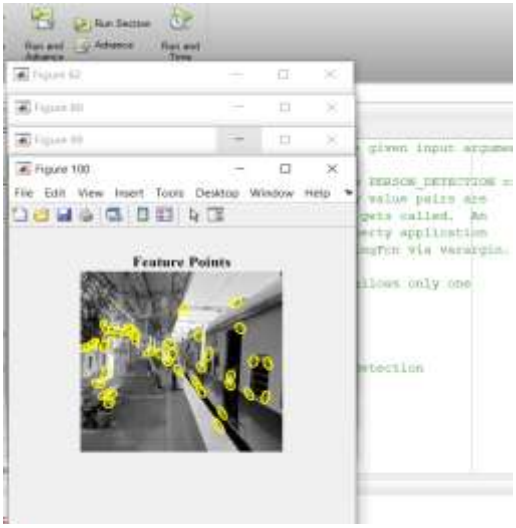

Figure 1.2

In the above figure 1.2, feature points are calculated for the given input.

OUTPUT:

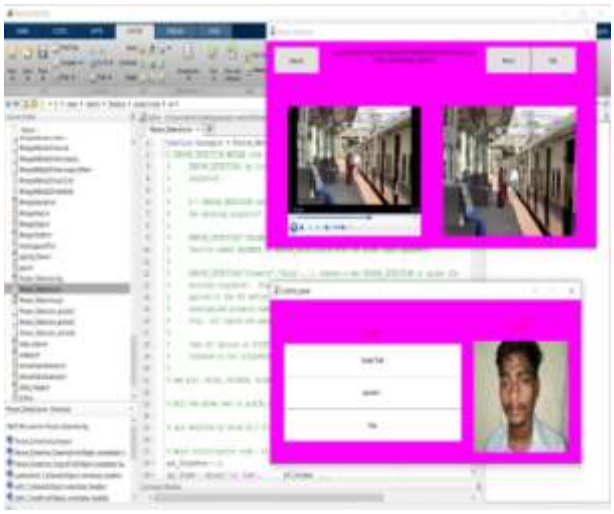

Figure 1.3

In the above figure 8.3, the human motion is detected and that person's details are displayed.

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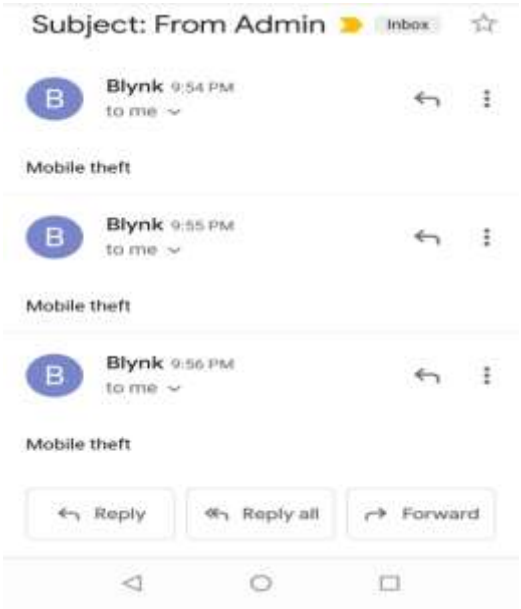

Figure 8.4

In the above figure 8.4, as soon as the human motion is detected, alert message is sent via e-mail.

VI. CONCLUSION

Here we have proposed a novel approach for multi-camera object detection and tracking in video. We have compared four different methods of object detection and proposed a modified frame differencing approach which deals with the less misdetection rate. Non rigid object detection and then its tracking using the multiple cameras was the main purpose of this thesis work. The algorithm is tested for different video data set. The detected object is represented by its centroid and the rectangular shape around the object boundary. This would be helpful in surveillance systems.

The detection then commands the alarm system to alert the nearby police station to notify or until the detected object or unusual behaviour of the human.

A fast, accurate and person judgment method is proposed for the rapid and accurate identification of anomaly types in the case of emergency transfusion.

VII. FUTURE WORK

The future plan involves speed up the processing rate and the analysis of detected object. Future research focuses to concentrate on including other video features such as edges, colour and texture. Further we will try to have a robust tracking algorithm with classifier to classify the object status and their characteristics.

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