MOVEMENT BASED INTELLIGENT VIDEO SURVEILLANCE SYSTEM

Dhakshanamoorthy V[1] ,Harish S[2], Ajit kumar V[3], Samydurai A[4]

[1] *Student, Computer Science and Engineering, SRM Valliammai Engineering College, Tamilnadu, India*
[2] *Student, Computer Science and Engineering, SRM Valliammai Engineering College, Tamilnadu, India*
[3] *Student, Computer Science and Engineering, SRM Valliammai Engineering College, Tamilnadu, India*
[4]*Associate Professor, Computer Science and Engineering, SRM Valliammai Engineering College, Tamilnadu, India*

ABSTRACT

In this modern world, everyone are susceptible and situations are unpredictable. So, 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. on account of this systems, we proposed methods helps to minimize the recording data to store. we also proposed cryptographic security mechanisms for converting the visual into data. In the proposed system 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. The deep learning technique CNN(Convolution Neural Network) is used to detect anomaly and object at the initial stage from the input video. The Main work is converting the video storage into text and retrieving the original video from the text with help of Block chain.

Keyword: - *Human Motion Detection, Image processing, Cryptography, Block chain.*

1. INTRODUCTION

Modern cities are usually exposed to emergency situations, such as traffic accidents, terrorist attacks and crimes [7]. As a typical example, American terror attacks in 2017 left at least 80 people dead. In order to terminate criminals and control security dangers, a maximum number of smart monitoring cameras and surveillance systems have been widely deployed in urban areas. The recorded voice and video data are useful for investigation when crimes actually happen. Video surveillance systems have been playing more and more essential roles in crime prevention and forensic investigation.

In the aspect of detecting abnormal behaviors [1], the author proposed to identify unusual behaviors by using behavior templates. He specifies that if a series of behaviors cannot be recreated by continuous clips in video database, they belonged to unknown behaviors, and otherwise they belonged to normal behaviors.This [2] provides the solid performance and can classify moving persons and vehicles accurately. we address the problem of efficient coding of moving cameras-captured surveillance videos [3], which also works well for stationary cameras-captured surveillance videos.

1.1 LITERATURE SURVEY

Recent development in the processing capabilities of smart devices has showed in intelligent internet of things (IOT) environments, enabling the connecting nodes to collect, perceive, and analyze required data from their environments and react accordingly [4]. This [6],[7] estimates a motion vector of the object in the image. The estimated motion vector formed in 8 directions, which occurs the object's movement irregularly. calibration framework requires the depth sensor to be coupled with a calibrated RGB camera that frames approximately the same scene. To solve this problem, [5] able to provide depth information.

In the aspect of security purpose, videos stored in the video surveillance system must be managed safely, but the videos are leaked out to unauthorized persons or viewed, resulting in the infringement of personal information. To solve this problem [9], PDC(Private Data Collection) that can collect, commit and query private data without creating individual channels, consists of hash of private data. [12], [15] helps to encrypting the entire video stream, removes its format compliance with the video standard.

2. RELATED WORKS

The role of video streams from CCTV camera is most equally important to all other sources like social media, sensor data, agriculture, medical and data evolved from space research. CCTV cameras are mounted in all form of places where security having much important. Manual surveillance looks tedious and time consuming. Security can be defined in various terms in various contexts like theft identification, violence detection, etc. In crowded public places the term security covers almost all type of anomaly events. Among them violence detection is difficult to handle since it involves crowd activity. The abnormal activity analysis in a crowd video frame is very critical due to several real world constraints. The project includes a deep rooted project which starts from object recognition, action recognition, crowd analysis and finally violence detection in a crowd environment. Majority of the project s reviewed in this project are based on deep learning technique. Many deep learning techniques are compared in terms of their algorithms and models. The main focus of this project is application of deep learning techniques in detecting the exact count number, involved humans and the happened activity in a crowd at all climate conditions.
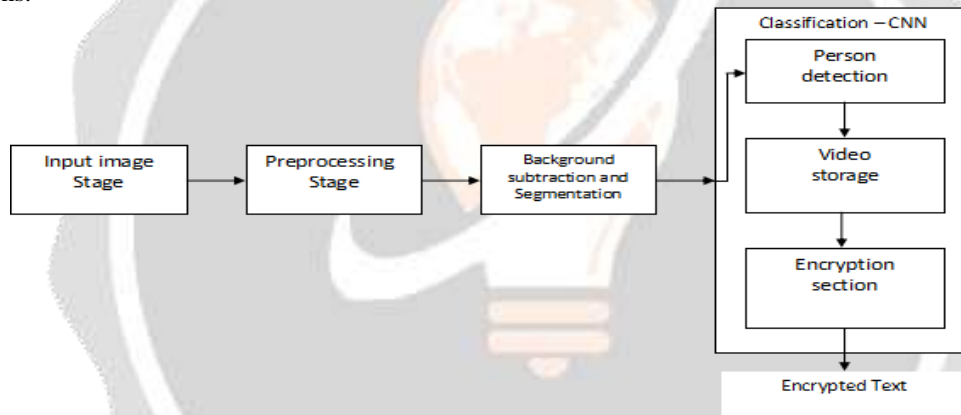

Fig -1: Step by step process of proposed system

2.1 MODULE DESCRIPTION
we discussed the use of multiple cameras to capture the video and create a video data set. The different modules will be explained in follows,

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.

PRE-PROCESSING
The pre-processing is to prepare the video for the next stage. The preprocessing neglect image errors, noise introduced while scanning and reading image, improving the quality of an image. These steps involve color normalization, statistical method, and convolution method.

CONVERSION TO GRAYSCALE
After the frame extracted from a video is to converted into grayscale for the purpose of image processing. The image is a collection of each and every pixel specified by three different colors, Red, Green, and Blue.

BACKGROUND SUBTRACTION

The background subtraction, is the method of neglecting the background image from the real image for the purpose of video frames processing become simple. It is also known as foreground extraction and [8] used for detecting the moving or waving object. After the background subtraction output image pixel is represented by H(x,y) and the input image represented by A(x,y) and B(x,y) is used to shows for the background image.

IMAGE SEGMENTATION

Image segmentation is the one type of computer vision techniques in which groups sharing the same properties, for example, a group having similar color pixels or border and a common structure such as a line, circle or ellipses or polygon. Image segmentation further consisted as edge detection, region-based classification, thresholding, or any combination of these methods.

CLASSIFICATION

This process gets the data i.e. CCTV video from the surveillance camera. Apply moving object detection algorithm based on Convolutional neural network method Extract the moving object and store it in database. This below figure2 showing the process of classification to implementing the image processing techniques. Identify types of climatic conditions like night, noon time and heavily congested area and also bad condition such as fog and rain. 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.
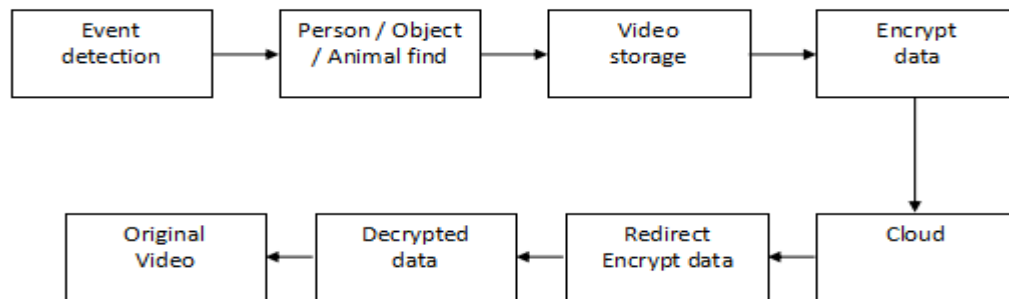

Fig -1: Illustrating the process of classification method

3. EXPERIMENTAL RESULTS

This below figures 3,4 shows that how the video is observe and record. After recording the video, it will converts into a number of frames [8] and finds the feature points of every frames. Using CNN algorithm [10] ,the frames could be differentiate each other by an detection methods.
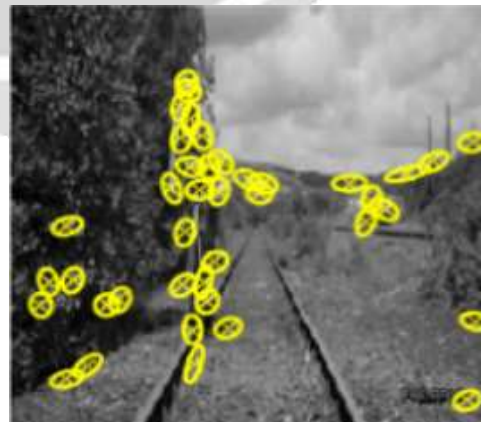

Fig -3: Input video   **Fig -4**: Feature points

A fast, accurate and person judgment method is proposed for the rapid and accurate identification of anomaly types in the case of emergency transfusion. In the incident of a crime occurring infront of your home, having a CCTV system really provides a way of collecting evidences to help 'suss out' exactly what happened. Criminal activities can be solved far more easily with given evidence from a CCTV camera, helps to owners for known the details of place times, locations and, most importantly, suspects.It is always a better idea to keep records of when your professors are coming into and checking out of your looks, as well as when deliveries are made or visitors enter the block, so you can ensure everything is running safely.

4. CONCLUSIONS

Here we have proposed an approach for multiple camera object detection and tracking in video. We have compared four different methods of object detection and proposed a converted frame differencing approach which deals with the less wrong detection rate. 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 future plan includes speed up the executing 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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