



SMART SURVEILLANCE WITH ARTIFICIAL INTELLIGENCE: ROBBERY/THEFT MOTION DETECTION

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Abstract: The traditional is the art image processing algorithms available for occluded and covered face detection, illegal activities, human abnormal activities and behavior may not work for BANK the environment like abnormal behavior, and crime devices. The previous research work on the based-on image processing in BANK surveillance camera. The aim of categorizing the studies, where the weakness and strength are analyzed for significant research findings and providing future scope to the research. The knowledge supports the sample specification, project funding, performance analysis, abnormality detection, features, system framework and methodology and image acquisition. Furthermore, the survey evaluates the studies and their view in the suitability, applicability in dynamic environment like BANK. Viewing as an entire, instead of having a full-fledged video closed-circuit television where the image processing is integrated with huge potential has not found in the BANK surveillance systems. The dynamic and multipurpose algorithms are also used for finding the system which may help to develop for longer term researchers for closed-circuit television which will detect and stop BANK crime.

Index Terms - face detection, abnormal gestures, system framework, and closed circuit television.

I. INTRODUCTION

The planet scenario witnesses extensive usage of automatic live streaming video surveillance systems which plays an important role in our day to day lives so as to reinforce protection and security for people and infrastructure. Tracking is an important component in various traffic monitoring systems and detection of various web applications, security infrastructures, safety monitoring, and recognition of objects for mobile devices etc. One major application area of this process is that the detection of robbery. During this system the first focus are going to be within the field of detection of suspicious activities or crime in a BANK which is essentially a profitable bank services. The financial transactions enables the publicly spaces. The bank clerks and tellers are changed of the lack of efficiency is scarcely observed by crime detection system and lack of efficiency within the existing systems. Hence the thought of making such an automatic system was conserved in and round the globe by after relative observations of the important life incidents that are happening. The increasing in BANK frauds which involves activities like Money grabbing inside BANK Center, covering a camera, damaging the BANK Machine, Risky Voice may be tackled in the proposed system to enable a safe and secure transaction in bank at any time.

II. OBJECTIVE

This project was done to achieve some objective

- To Develop a Security system to bank and ATM to safeguard from robberies/thefts.
- To demonstrate and apply the computational program by means of identifying the objects which they have.
- Once any input object or movement is done inside bank or ATM the involving person is identified by their movements.
- The alerts were send to the police station or authenticated user.

III. SYSTEM ANALYSIS

Deep learning is the segment of artificial intelligence which is involved with imitating the learning approach that human beings utilize to get some different types of knowledge. There are some concepts which is also used in Deep learning as a basic problems of computer vision and multi-media content analysis in video analyzing. The challenge of the video contains a large differences and difficulties and lot of information also present in it. Surveillance systems must requires a human supervision. The new method in computer vision and trend in video surveillance leads to important dramatic efficiency methods. A CCTV based tracking of thieves with the theft detection methods. The CCTV footage by image processing technique without sensors used to detect theft and motion of thieves. The Real-time analysis of the

movement and behavior of any human from CCTV footage can be monitored by security personnel and notified about the suspicious individual involved in burglary using and thus gives a chance to alert the same.

Abbreviations and Acronyms

- CCTV- Closed Circuit Television
- ATM – Automated Teller Machine

Equations

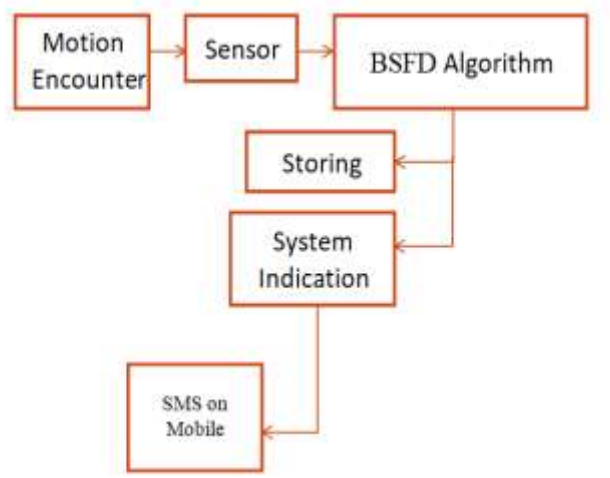
The threshold segmentation is used in the image which is used to identify a range of the image and also compared the gray scale image segmentation with the threshold and the corresponding pixel which is divided into two types,

- foreground
- background.

The single-threshold segmentation can be defined as

$$(X, Y) = \begin{cases} 1 & f(x, y) > T \\ 0 & f(x, y) \leq T \end{cases}$$

Fig. 1. Overall System Architecture



Capturing Phase

For the human detection or the motion detection the capture live images through the live streaming of the area to be monitored and kept under surveillance at the initial stage. The web camera can provide a continuous sequence of images at a speed of Frame per Seconds.

Comparing Phase

The currently captured frames are used to captured and monitored with the previous frames to check any of the motion of the human behavior is detected or not. To check whether the motion is present in the ongoing live streaming images, the live images sent by the web camera that can easily changes in the frames are detected and predict the occurrence and frames of some motion.

Storage Phase

The storing the captured images on the memory when motion is detected: when the motion is detected, the require storing such motion and user can view it in the near future. The user can help by providing a legal statement of some illegal activity. A video streaming and coverage's can be used as a proof in the court of law.

System Indication Phase

Intimation is provided to the user through an SMS when the human behavior is detected: the user want to be check immediately that there was any intrusion detected by the software, the alarm system is also placed in the software. The alarm system will immediately activates some kind of sound when motion or the human behavior is detected on the live streaming by web camera. When the motion is detected the location containing the images of the intruder or theft are sent to the authenticated user with an SMS will be sent to the user's cell phone.

Image Segmentation

The images, are interested in certain regions, which are application and researches. These are represented as a foreground. To identify and analyse in the image target. The image segmentation which refers to the images and also divided into many forms with characteristics and also to get the extract target of other regions.

Background Subtraction Method

Background subtraction method is a technique using the difference between the current image and background image to detect moving targets. The basic idea is the first frame image stored as a background image. Then the current image f_k with the pre stored background image B subtraction, and if the pixel difference is larger than the bound threshold, then it determines that the pixel to pixel on the moving target, or as the background pixel. The choice of threshold of the background subtraction to achieve the success of motion detection is very important. The success of motion detection is very important. The threshold value is too small will produce a lot of false change points; the threshold choice is too large will reduce the scope of changes in movement.

The scenes and camera which causes impact when there is light conditions are changed, wavelength of the color, the light conditions changes and the choice of the threshold is taken into the action and the method formula can be written as

$$R(x, y) = f_k(x, y) - B(x, y)$$

$$D(x, y) = \begin{cases} 1 & \text{background } R(x, y) > T \\ 0 & \text{target } R(x, y) \leq T \end{cases}$$

IV. PROPOSED SYSTEM

Most of the video system and security systems in the market do not issue alarms in real time, manual monitoring system are costly in term of manpower. The real time motion detection system with the ability to automatically recognize the video images and the images with moving objects. The existing surveillance and security system can be overcome by a real time detection system with motion. The ability is to automatically analyse the video images and the images with moving or colliding objects once the object is detected alerts are automatically noted or send to the user. A digital surveillance system where the CCTV camera and target for small-scale user is developed.

The latest technologies is to find the thefts activities and destruction used by video surveillance system. By using this, it is possible to capture and monitor by the user at each and every moment and each and every second of the area coverage. The up-to date technologies used are user-friendly for the environment, for example the monitoring systems which is to identify the human behavior in detecting the crime not to actively participate in stopping the crime.

Therefore, the proposed methodology is to detect the motion in a live video stream environment and it generate alert by sending alert message to nearest Police station (or) Security service.

V. IMPLEMENTATION

The system is implemented python Language and it consists of two phases of coding for development of the architecture.

- Camera Coding
- Main Coding

Camera Coding

In this coding the capturing of object is done in this Phase. At the initial most step the python library files are included using Computer vision library file where the camera Activation and image write is done by this command. The shape and frame are displayed and store the image. For front face capturing using face cascade object is created. The image is converted into black and white for the capturing face. The scale factor is used to detect the image based on the parameter. The position of the face height and width are captured in X and Y. By this the image is captured with image processing technique.

Main Coding

In this coding is connected to the user interface to the server. Here the user can control the Authenticated users where add or remove the users and cameras. The login and register pages are developed in main coding and the admin home, training, view users and updates are made inside the login pages for systems. The video feed is run in this phase and automatically detect the face or object which is trained by the data sets. The bank and police Authenticated users are added in the admin home and once the face or particular object is detected the alert is sent to the authenticated user.

System Architecture Function

Capturing the live video feed through a web cam: To detect motion we first have to capture live video frames of the area to be monitored and kept under surveillance this is done by using a web cam which continuously provides a sequence of video frames in a particular speed of FPS (frames per second).

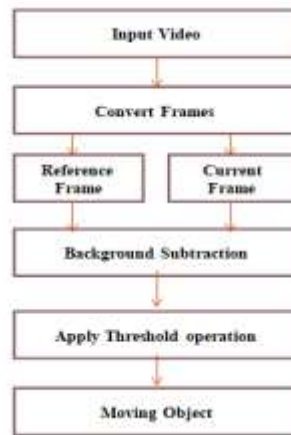
Comparing the current frames captured with previous frames to detect motion: For checking whether any motion is present in the live video feed, we compare the live video frames being provided by the web cam with each other so that we can detect changes in these frames and hence predict the occurrence of some motion.

Storing the frames on the memory if motion is detected: If motion is being detected, we would require storing such motion so that the user can view it in the near future This also helps the user in providing a legal proof of some inappropriate activity since a video coverage can be used as a proof in the court of law.

Indicating through an alarm when the motion is detected: The user may want to be notified immediately that there has been some intrusion detected by the software, hence an alarm system is included in the software. This alarm system immediately activates a WAV file format audio alarm signal if any kind of motion is detected hence. This helps in preventing any kind of breach of security at that moment of time. And the software sends the alert message to the Nearest Police station (or) Security services.

Figures

Fig. 2. Data flow diagram



Background subtractions used to fixed cameras for motion and behaviour detection.

Advantages

- Easy to implement
- Fast
- Effective detection
- Provide the complete feature data of the target.

Module Descriptions

Purpose– The problem of automatic recognition of human activity where the important and challenging areas of research in computer vision because of possible applications, for example surveillance, advanced human-computer interactions, monitoring. This paper presents statistical computer vision approaches to automatically recognize different human activities.

Design/methodology/approach – The human activity approaches can be processed in three steps:

- By motion analysis the human blobs are segmented.
- The posture of human body is estimated
- To identify the activity. A discrete hidden Markov is generated to detect the temporal model of the posture series.

Findings–On a real archaeological site the system is tested with image sequences and some human activities will be done with both illegal and legal actions. Four types of activity were classified with a high percentage of correct detections.

Research limitations/implications – The proposed approach provides efficient solutions to some of the most common problems in human behaviour recognition research field: image requirement with high fields, user interaction and sequence alignment in the training phase. The main framework is to estimate the approach is not completely view independent.

Practical implications – The time performance tests were resulted and encouraging for the use of the needed method and also in real time surveillance system.

Originality/value – The use low cost cameras with large view focal lenses. It does not need any a priori knowledge of the scene and no intensive user interaction is required in the early training phase.

Fig. 3. Motion Detection



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