



Video Surveillance System for Home and Border Security

Prathamesh Kathavate¹, Adwait Deshpande², Chaitrali Lohokare³
BE Student^{1,2,3}

Department of Computer
RMD Sinhgad School of Engineering, Pune, India

Abstract:

In today's world where crime rate is increasing day by day, the security concerns have grown. Security of home and border areas is very important. Increasing military conflicts between nations, illegal immigrants, terrorist activities, burglary and theft, etc. Monitoring such areas is very important and is currently mostly done by using man power and a bit of technology. The purpose of this project is to eliminate the man power and introduce technology in the process completely. The system can detect motion from live video, and alert the user when a motion is detected.

Key words: Motion Detection, Video Surveillance, Security.

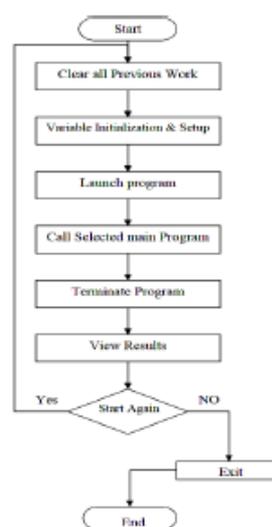
1. INTRODUCTION

Right when video observation thought was shown, CCTV cameras were utilized, where the whole record was secured on the cut-off media. Prior to the point of confinement media was not that capable and energetic. Tapes, VCR were utilized. Their capacity obligation was in like way less. By the by, now with presentation of farthest point medias like HDD, memory card, SSD securing information is fundamental and monetarily clever. In like way beyond what many would consider possible has broadened unquestionably. The VCR tapes or tapes were uncommonly over the top yet hard drives and SSDs about haggard when showed up contrastingly in connection to the measure of point of confinement they offer. In any case, on an extremely fundamental level securing everything recorded isn't possible and basically irrational. Or then again perhaps securing everything, securing from the point where improvement was seen is better. It spares a huge amount of room. The use of the video-duplicating connects with the recognition to be secured on tape as check. This makes the examination of encroachment altogether more effectively, quicker and competently. An entire essential video-perception framework included a camera, screen and VCR. Everything considered, this structure has its own particular containment where the old tube camera was just valuable in sunlight and the VCR could basically store eight hours of film, most perfect circumstance.

Three key fragments accelerated the inescapable use of the modernized video recorder. They are,

1. The advance in weight restraint, enabling more data to be secured on a hard drive.
2. The cost of a hard drive, which has decreased profoundly beginning late.
3. The point of confinement uttermost scopes of a hard drive, which has expanded unquestionably beginning late.

Computerized video observation appeared well and good as the cost of advanced account dropped with the PC upheaval. As opposed to changing tapes every day, the client could dependably record a month of reconnaissance on hard drive.



Standardized Cross Correlation (NCC) calculation depends on finding the cross relationship between two sequential edges in a picture succession. Relationship is fundamentally used to discover the closeness between two casings. On the off chance that the two successive edges are precisely same, at that point the estimation of Normalized cross connection is most extreme. All things considered no moving item is identified. Presently assume there is a moving item in the picture arrangement, implies the two sequential edges are not precisely same, regarding places of the pixel esteems. All things considered the estimation of Normalized cross connection is not as much as greatest esteem got. This idea of Normalized cross connection is utilized for the location of moving article in a picture grouping.

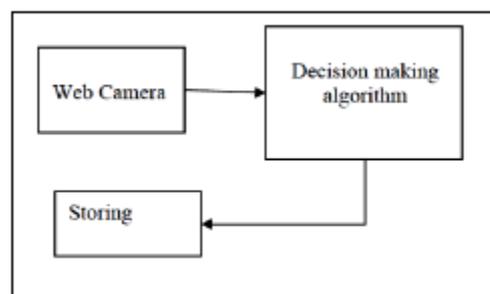


Fig 1 Basic architecture of the system

2. MOTION DETECTION

In this second section Author includes overview of our survey with various types of Motion Detection algorithms.

i) Literature Survey

1. Motion detection based on multi frame video under Surveillance system: In this paper series of algorithm has been formed to track the feature of motion detection under the surveillance system.

2. Image change detection algorithms: A systematic survey: This paper presents a systematic survey of the common processing steps and core decision rules in modern change detection algorithms.

3. Histograms of Oriented Gradients for Human Detection: In this paper the influence of various descriptor parameters is studied for good performance of system.

4. Oriented Histograms for Hand Gesture Recognition: This paper present a method to recognize hand gestures, based on a pattern recognition technique developed by McConnell employing histograms of local orientation.

5. Stereo-based Preprocessing for Human Shape Localization in Unstructured Environment: The paper proposes the application of a stereoscopic technique.

6. Vision based Pedestrian Detection: The Protector system: This paper presents the results of the first large scale field tests on vision-based pedestrian protection from a moving vehicle.

7. Moving object tracking based on Gaussian Kernel and Template Modeling: This paper illustrates the suitability of using this model to detect and track the object for surveillance based application.

8. Foreground segmentation using adaptive mixture models in Color and Depth: This paper describes a new algorithm for background estimation and removal in video.

9. Making large scale SVM (Support vector machine): This paper presents an improved algorithm for training SVM on large scale problems and describes its efficient implementation in SVM.

10. Hardware design and implementation for accelerating motion detection using (System on Chip) SOC: This paper presents a hardware system for accelerating motion detection based on system on chip.

11. Appearance and motion based deep learning architecture for moving object detection in moving camera: In this paper, we propose a novel moving object detection approach using deep learning to achieve a robust performance even in a dynamic background.

12. SOC hardware implementation of Real-Time video segmentation based on the Mixture of Gaussian algorithm: This paper presents a SoC hardware implementation of real-time video segmentation system based on the MoG algorithm.

13. Example based object detection in image: This paper presents a component based person detection system for static Images that is able to detect frontal, rear, slightly rotated (in depth) and partially occluded people.

14. Java2 micro edition wireless automated video surveillance system using motion detection method: A low-cost intelligent wireless security and monitoring solution using motion detection technology is presented in this paper.

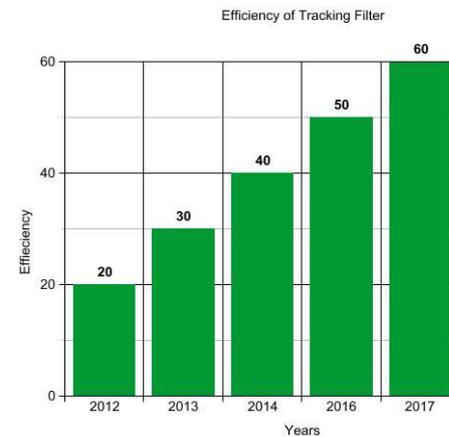
ii) Overview

Until now, several motion detection algorithms and techniques have been proposed, but many of them are slow or unable to detect in low light conditions. In a surveillance system, motion detection is the key aspect and it should be done properly.

But our proposed system does it all. Detects motion in low light conditions and is accurate.

3. COMPARISON

By studying and comparing various papers and algorithms over the years, we have observed that the efficiency of the motion detection algorithms have increased over the years. Various techniques like SoC, Blob Detection, MoG are used to detect motion in low light conditions and are more accurate and efficient.



4. CONCLUSION

Important advantage of these algorithms is that it requires very less pre-processing of the frames from image sequence. The algorithms are robust against changes in illumination and lighting conditions. In poor lighting conditions also the algorithm is giving better results. A video monitoring & detection system was thus developed successfully in this paper. This system mainly provides an efficient method for surveillance purposes and is aimed to be highly beneficial for any person or organization.

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