

# Storage Optimization of CCTV Footage

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**Abstract**— Video surveillance becomes easier to monitor the premises and also gather information of an incident. Video surveillance is an important component for the protection of infrastructures. As digital and networking technologies have been expanding worldwide and penetrating into many traditional industrial areas during the past years, the video surveillance industry has rapidly adopted these technologies. Now a day Closed-circuit television (CCTV) or video surveillance is the most useful technology used in the field of security purposes. CCTVs can be found at many places. The proposed idea is to reduce the storage space. We are proposing a method to optimize the storage space occupied by the CCTV footage. The approach will optimize the storage space occupied by unnecessary data, as well as it maintains quality of the video.

**Keywords:** Storage, Optimization, CCTV, Compression

## I. INTRODUCTION

Video surveillance is the most useful technology used in the field of security. One of the most challenging problems in installing the cameras at large scale is storage space occupied by the footage. Because each day, the camera captured a large amount of data and stored it. But some of these data may be useless when there is no activity is performed. So, to reduce the storage space compression techniques are used. And optimized video will be stored on hard disk.

System will provide face detection facility in which, whose faces are regularly occurred in the video their count will be detected by reports generation. The notifications of movement after official time will send to the administrator for security purpose.



Fig. 1: CCTV

## II. PROBLEM IDENTIFICATION

The most challenging problem in camera is large storage space occupied by the footage. Because each day, the camera captured large amount of data and stored it, but some of these data may be useless. Hence image processing techniques and compression techniques will be used to overcome this problem.

## III. OBJECTIVES

- To reduce storage space occupied by the unnecessary data.
- To reduce the time required to access any footage.
- To provide E-mail notification for security purpose.
- To provide face detection facility for analytical purpose.

## IV. LITERATURE SURVEY

“Storage optimization of video surveillance from CCTV camera” by Shikhar Arora, Karan Bhatia, V Amit. IEEE.

“An Efficient Image Compression Algorithm Based on Histogram Based Block Optimization and Arithmetic Coding” by Subarna Dutta, Aditya Abhinav, Partha Dutta, Purushottam Kumar, and Amiya Halder.

“Storage Optimization of Video Surveillance from CCTV Camera” by D.Suganya, R.Shyla, V.Jayasudha, S. Marirajan.

“A New Algorithm for Data Compression Optimization” by Agus Dwi Suarjaya.

## V. PROPOSED SYSTEM

The main objective is to propose a method to optimize a size on disk of video clip obtained from a camera. In this optimization process camera is active all the time but it only captures the video if there is any occurrence of movement. It stores the video in the form of frames and system will check the difference among the frames by images processing algorithms.

System contains threshold value. If the difference between two frames is above threshold value then camera will start the recording until it comes to below threshold value. For security purpose system provide E-mail notification facility in which if any unauthorized movement will happen then it capture the snapshot of that movement and send through e-mail to the administrator. Also, the system will provide face detection facility in which the number of faces are detected and their reports are get generated.

## VI. SYSTEM ARCHITECTURE

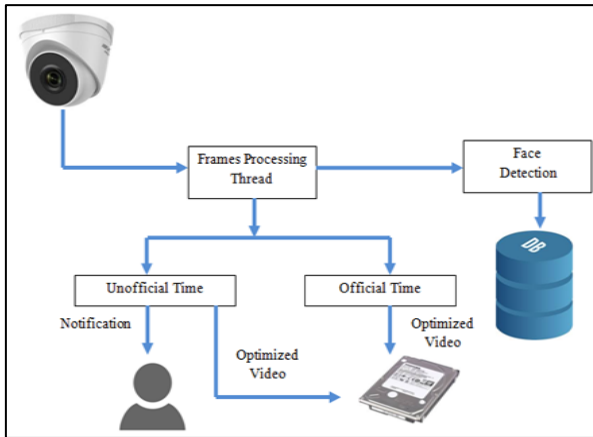


Fig. 2: System Architecture

## VII. FLOW CHART

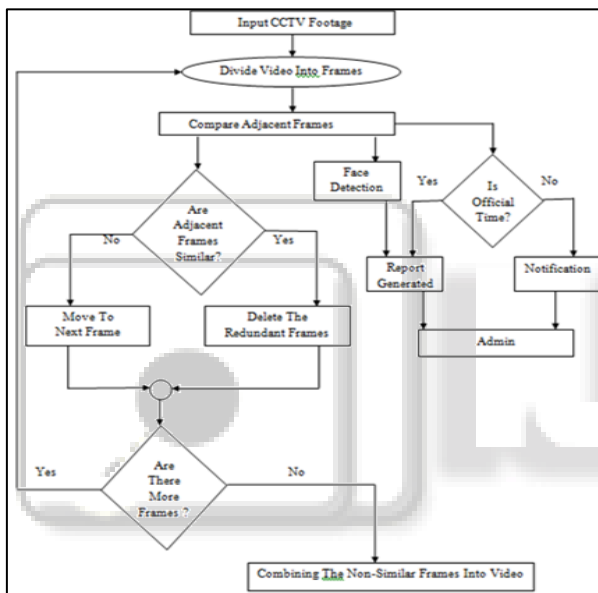


Fig. 3: Flow Chart

## VIII. DATA FLOW DIAGRAM

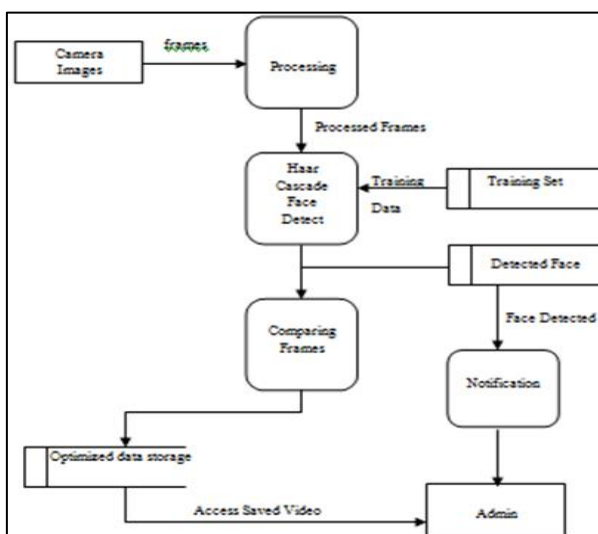


Fig. 4

## IX. MODULE

### A. Project Consists of Four Modules

- Getting frames from camera.
- Comparing adjacent frames of video.
  - a) Comparing frames with threshold value.
  - b) Deleting frames having value less than threshold value.
  - c) Combining remaining frames into the video.
- Face detection method.
- Sending notification to administrator.

## X. ALGORITHM

- 1) Step 1: Input CCTV footage.
- 2) Step 2: Extract frames from video.
- 3) Step 3: Calculate the MSE value for previous frame and current frame.
- 4) Step 4: Set previous frame = 1<sup>st</sup> frame and current frame = 2<sup>nd</sup> frame.
- 5) Step 5: if  $MSE \geq Threshold$ , then previous frame = current frame current frame = previous frame + 1 save the previous frame  
else  
current frame = current frame + 1
- 6) Step 6: if there are more frames  
Repeat Step 5  
else  
Combine the resulted frame to get optimized video with same frame per second (fps).  
Delete original video and frames of both videos.
- 7) Step 7: if face is detected during the video then reports are get generated.
- 8) Step 8: Set official time  
If any movement is happen within unofficial time then notification is send to the admin.

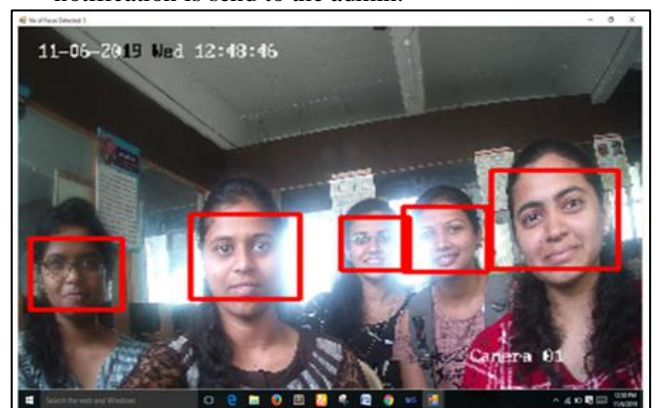


Fig. 5:

## XI. EXPECTED OUTCOME

Instead of storing video of unnecessary data system should allow to store an optimized video on hard disk, due to this space required to store any footage can be reduced. Face detection of people should be done and reports of face count should be generated, this face detection facility provides security. After official time if any moment will happen then its email notification should send to the administrator, which

will help in gain the security. Also the time required to access any footage should be reduced.

## XII. FUTURE SCOPE

- Face detection facility can be implemented with face recognition.
- This optimized technique can be implemented in hardware like CCTV camera.

## XIII. CONCLUSION

The system is design for storage optimization especially for CCTV. As a storage is a real challenge with installation of CCTV. With the same motive system is giving satisfactory result by reducing average storage space required for any footage.

Analyzing the regular faces occurs in the video and reports will be generated. The notification of movement after official time will send to the administrator.

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