AN EFFICIENT METHOD FOR SUSPICIOUS ACTIVITY DETECTION

ABSTRACT:

This idea contributes on suspicious activity detection from length of video with less complex processing algorithm.

Harr Cascade is a Machine Learning object detection algorithm used to identify object in an video.

The results obtained in terms of tracking window and detection capability are satisfactory.
It is area of image processing and computer vision.

INTRODUCTION:

- The increasing demand of the cameras for surveillance systems.
- Provide reliability
- Time analysis will be with security personal for further activities to be carried out.
- Video summarization
- This system contributes to concentrate

  -Sudden change in object such as their gestures,

  -motions or objectionable actions

  -Illegal, improper behavior

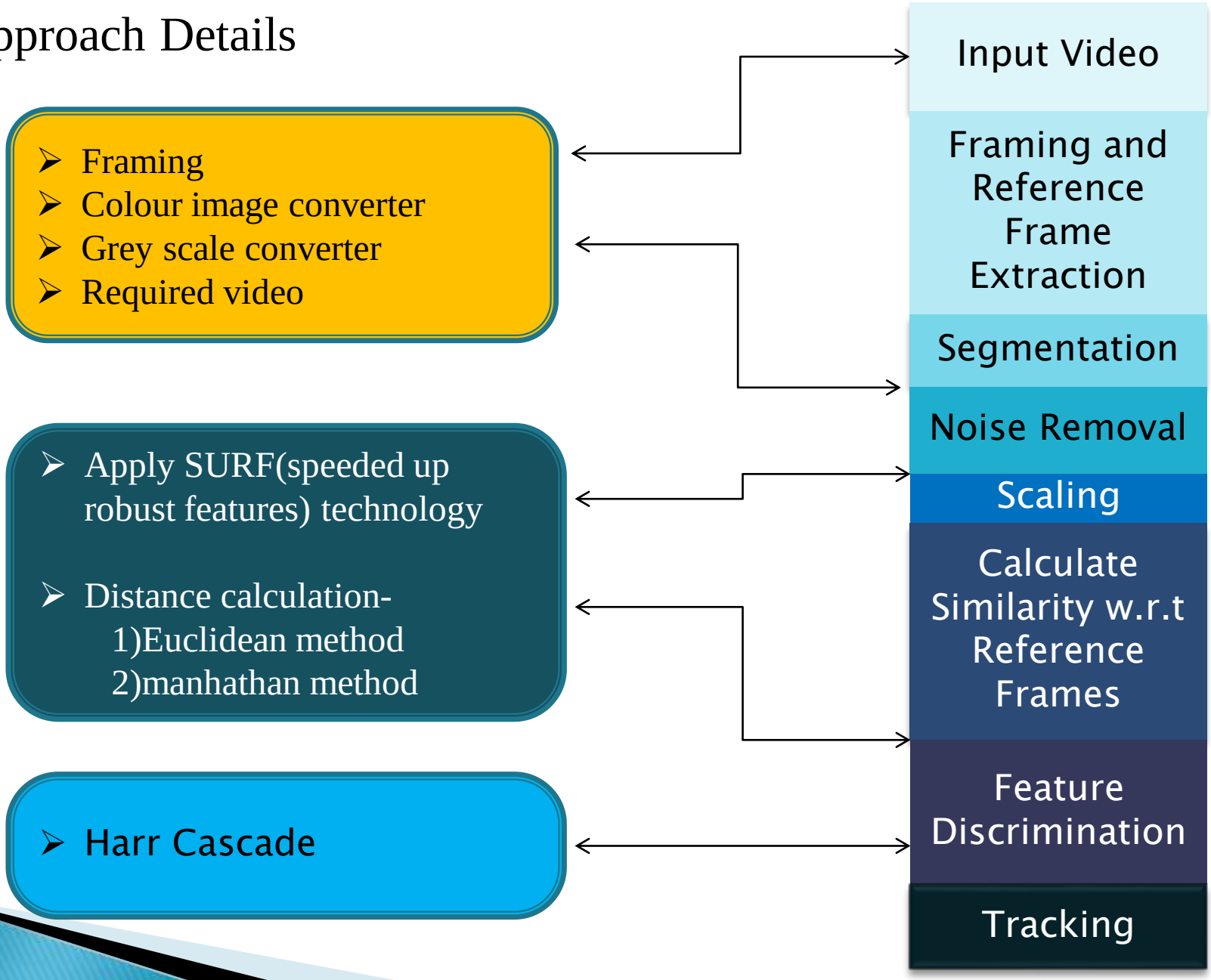
- Two main inter dependent aspects-

  -Implementation feasibility

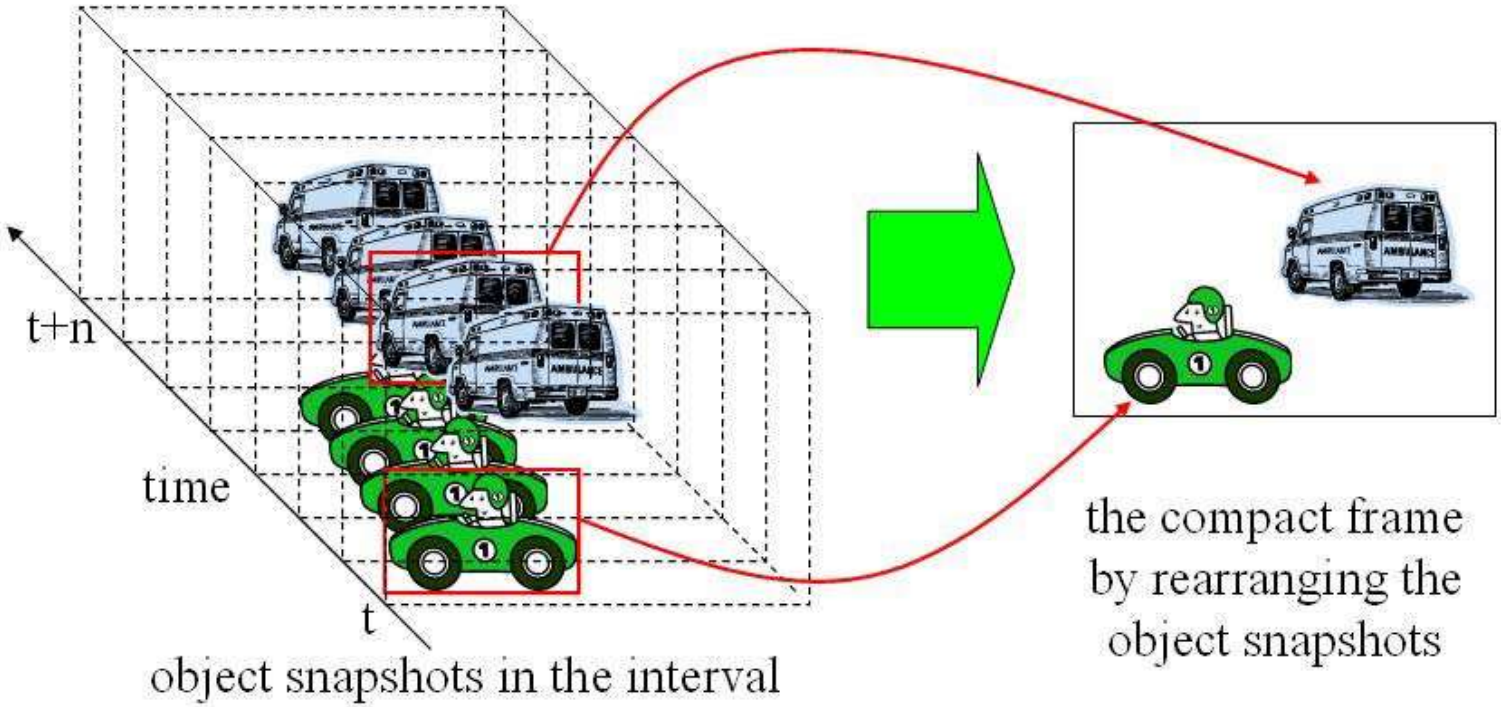
  -complexity

- This idea focuses on simple but effective suspicious activity monitoring method useful for surveillance video systems .

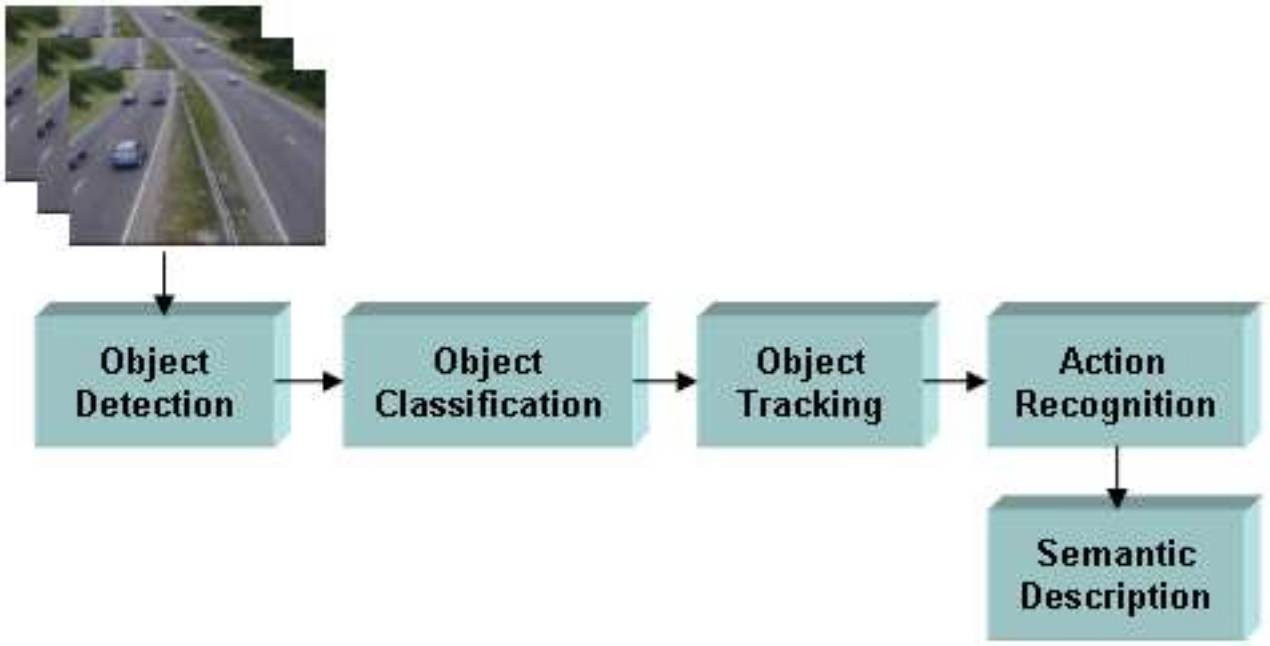
Idea/Approach Details



Compact Video-

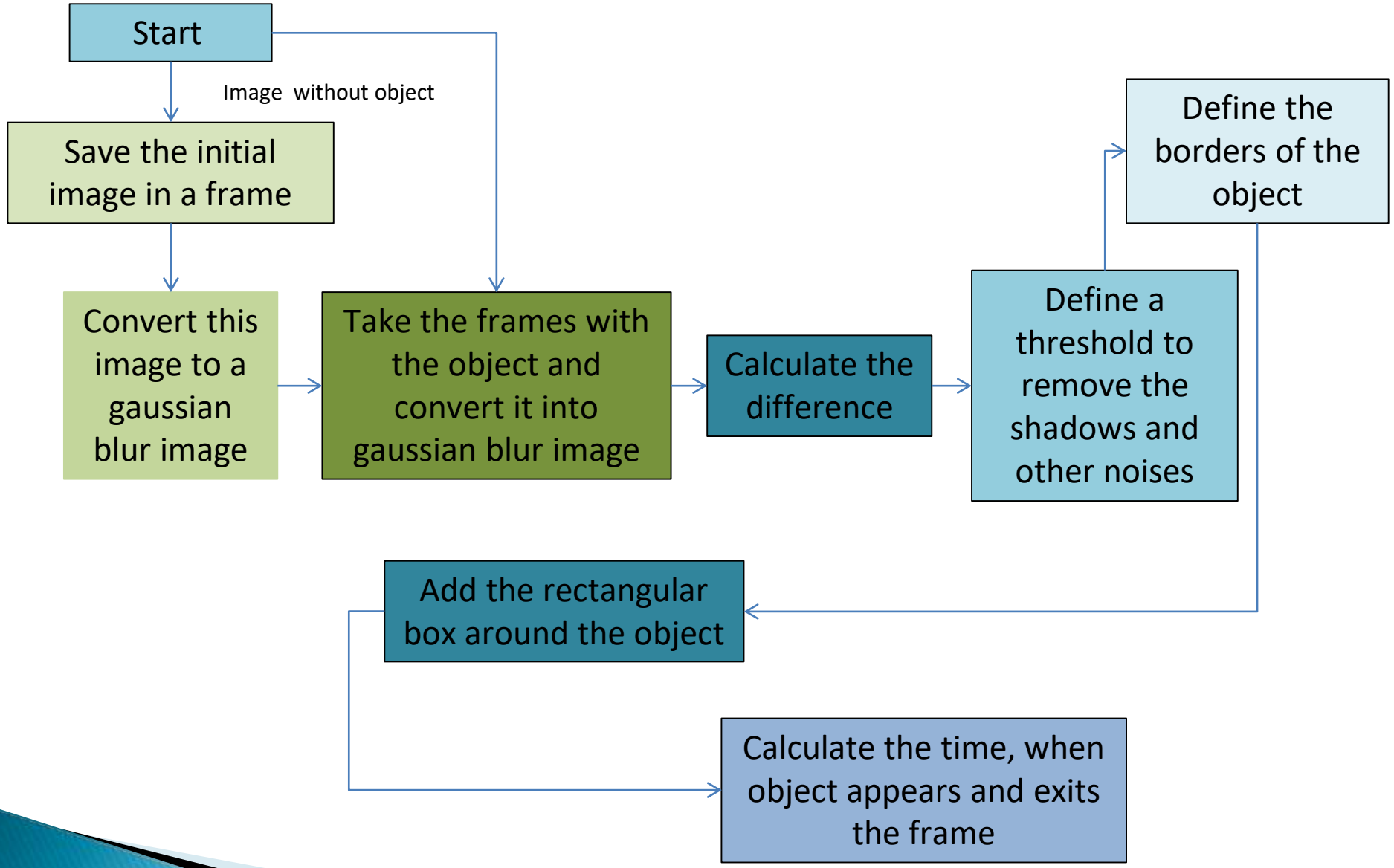


Smart Video Processing-



- The moving parts appearing in video frames. If we can collect all, or at least most, of moving objects and compact them in a very short video, the users may be more easily look for what they want.
- It is similar to a movie trailer: the user can roughly understand the contents of a movie by watching the trailer and then determine whether to watch the movie or not.

Block Diagram of Motion Detection-



PROPOSED METHOD-

1. Video Framing and Video Reduction

2. Detection of human and objects in particular frame should not degrade the performance of the tracking

3. After detection Recognition of person takes place

4.The tracking should be less complex such that execution time of tracking should be optimum

RESULT

- Original video is converted into number of frames for video processing purpose (fig.1)
- Original video time is reduced (fig.2)

- We put bounding box on suspicious person in the frame (fig.3)
- Face recognition of that suspicious person takes place (fig.4)

- Then started live tracking of that suspected person

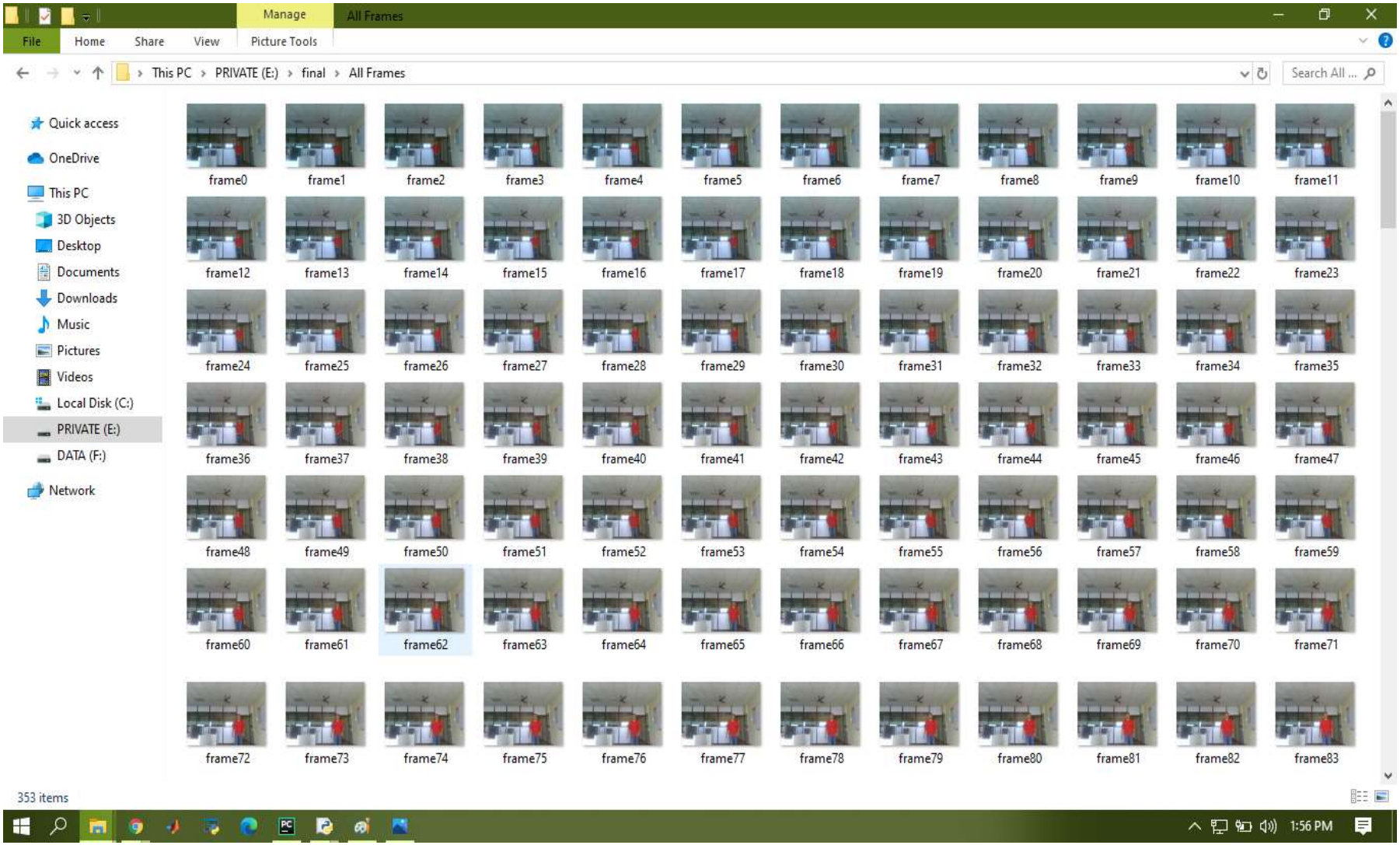
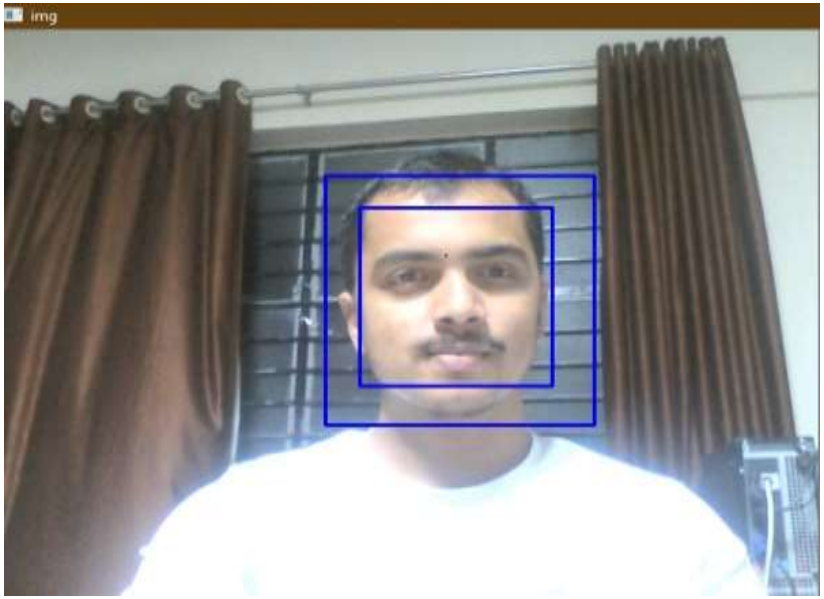


Fig 1:Video to Frame Conversion

Video Reduction Process-

Fig.2.Original video of 23 sec

Fig2.1 Reduced video of 8 sec



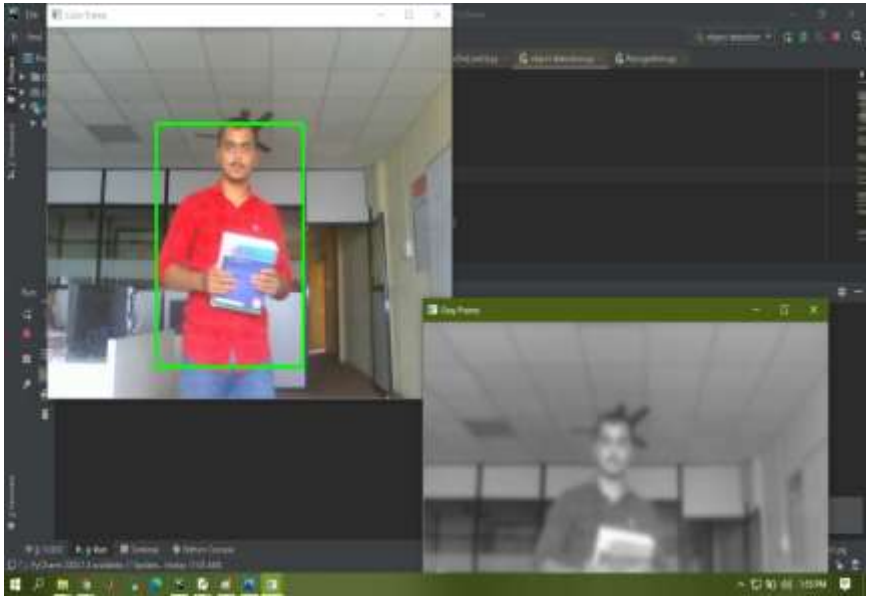


Figure 3: Identification of suspect

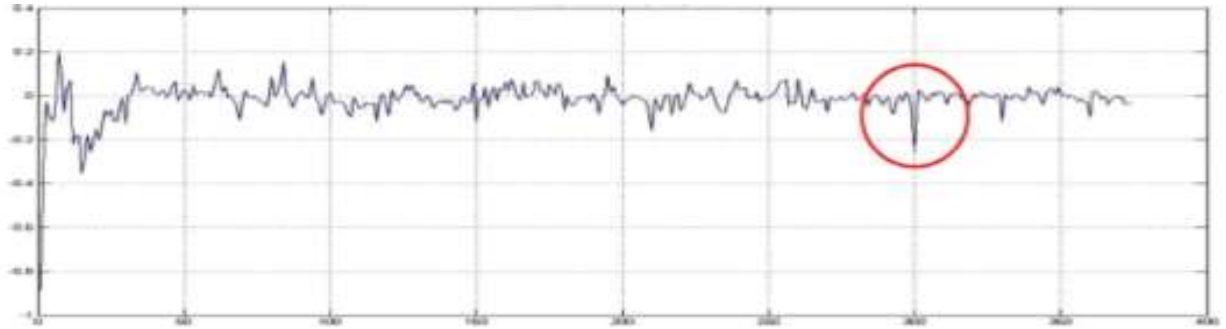


Figure 3.1: Graph of vector in equation (5) indicating suspicious activity frames region in video

Figure 4: Recognition of suspect

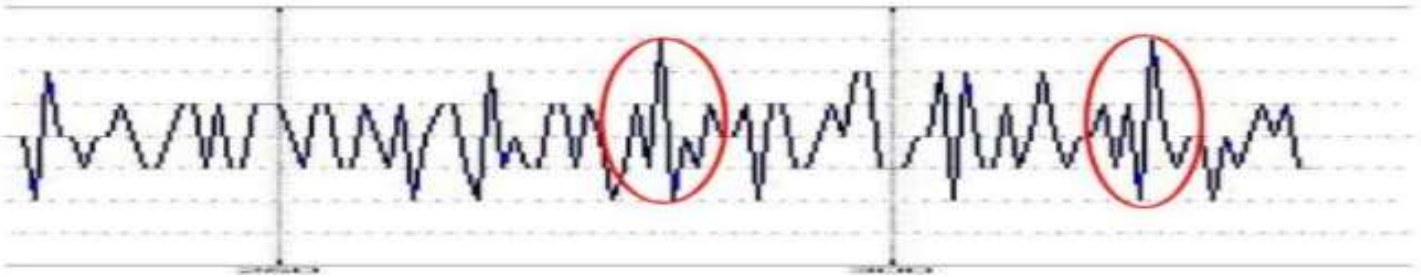
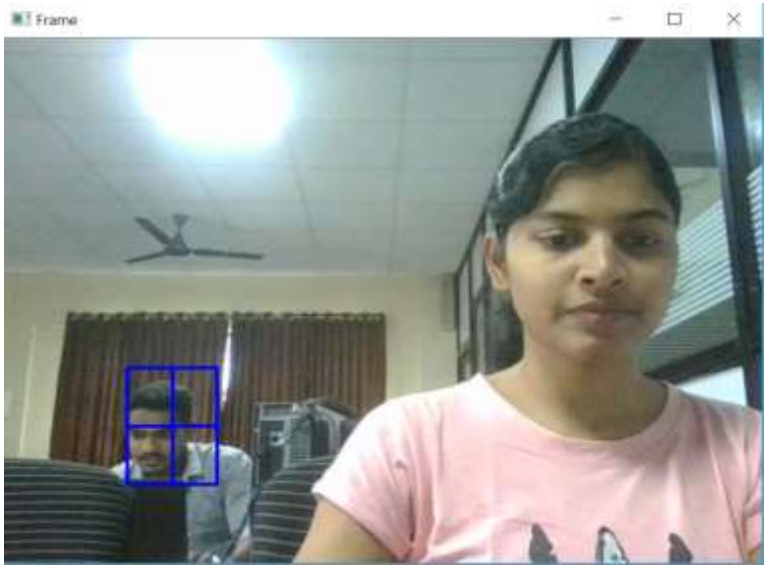
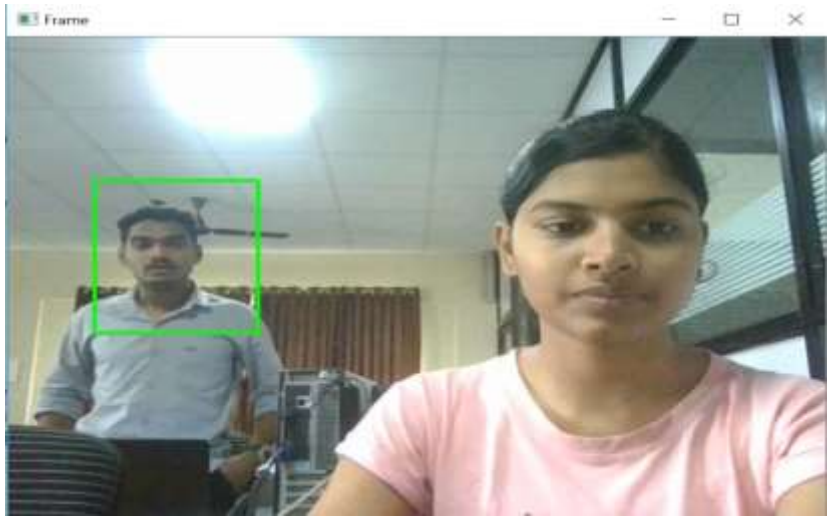


Figure 4: Two peak SURF matching points set vector differences marked where suspicious activity starts and ends

Step 1.Regular activity

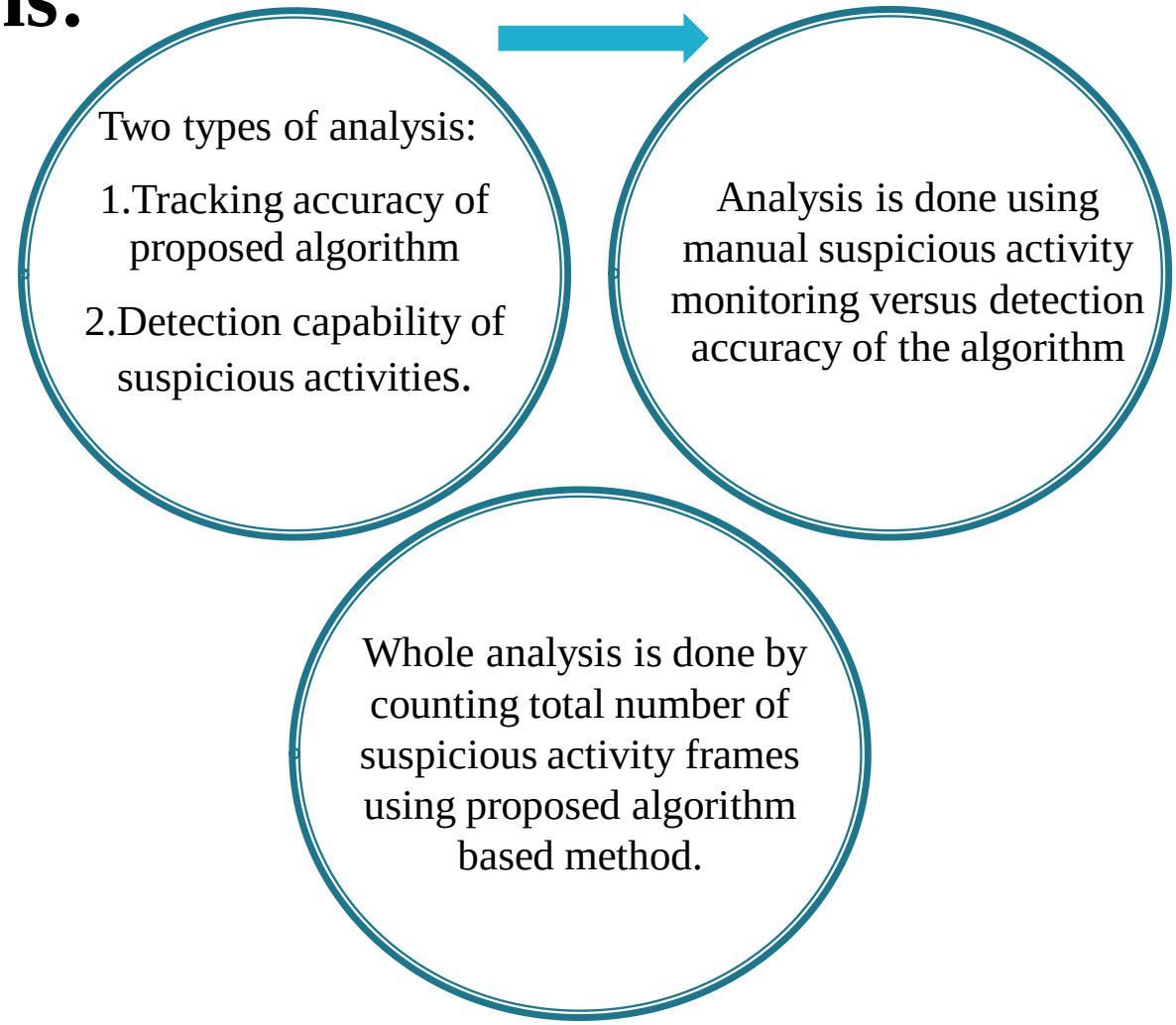


Step 2.Drag box on suspicious person



Step 3.Live tracking of that person

Analysis:


Two types of analysis:
1.Tracking accuracy of proposed algorithm
2.Detection capability of suspicious activities.
Analysis is done using manual suspicious activity monitoring versus detection accuracy of the algorithm
Whole analysis is done by counting total number of suspicious activity frames using proposed algorithm based method.

CONCLUSION-

- Our idea delivers outstanding performance and robustness in suspicious activity detection.
- The detection improves the reliability and performance of the system along with Harr Cascade based more informative descriptor features.
- The predefined dataset eliminates accurate identity of that suspicious person by face recognition process.
- We can collect different activities of that person by live tracking’
- The resulting accuracy obtained is considerable and robust enough for practical applications.

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