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Suspicious Activity Detection using AI under Surveillance Video

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Abstract
The idea that we got to do the project on the suspicious activity detection using AI under surveillance video is that nowadays most of the indiscriminate activities are taking place in the college premises. So, in each time it is very difficult to monitor the activities during the college premises, so we had developed a project in which a surveillance video is attached, and an alarm sound is produced which is connected to the device of the user. It marks all the illegal activities such as disputes, fighting and any clearance of the work. Many CCTV cameras are used for constant monitoring of the activities happening around the world. It generates a 720*1080p quality of motion of the picture. This video is converted into frames where in each frame a sound is produced.

Keywords: Convolutional Neural Networks, Surveillance Video

INTRODUCTION

The face and behaviour of human pattern can be a very important person identification. Surveillance videos are those which are used for constant monitoring of videos in which we can generate using machine learning where it is used and analyse the training samples but also they are used to compare with the given data. This visual information is used for such identifications. The video automation has a great impact on the video quality analytics. This video analytics have a great influence of motion detection, live video capturing, vehicle counting, human activity detection, abnormal activities at grouped places etc. In this sector, the two factors used for face recognition and live capturing with video frames.

Among these two techniques, face recognition is of great influence which are used for Automated identification of people through surveillance video. Face identification which is used to predict the orientation of a person's head, which in turn can predict the behaviour of the person. Motion recognition with face recognition is used for running of constant applications such as identification and verification details of the person, and also detecting the person presence or absence with surveillance video. Finally, in simple words it is used for hand gestures Recognizing and estimating x are used for a system which can identify and analyse the suspicious activity behaviour among pupil in an examination hall. This project paper will help us in detecting the methodology of human suspicious activity detections.

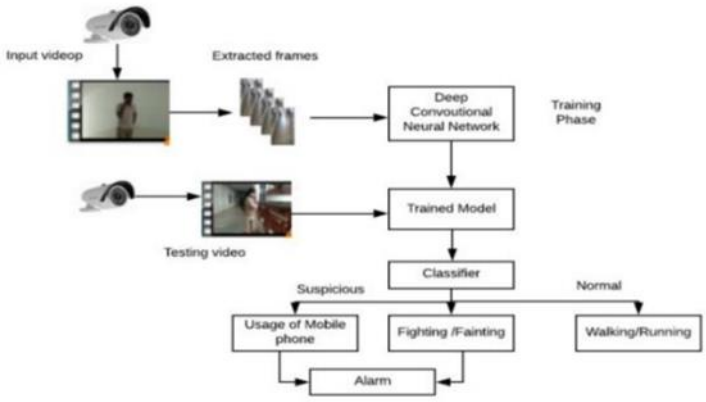
Moreover, using this the probability of getting lesser will be rapidly decreased. This surveillance video system will be useful with very wide specifications. This technology described the real time videos

analyzing and also for human activity detection in an examination hall, thus helping to classify whether they are coping or not. It is also used whether a person is moving away from his/her place and also whether they are wondering about or swapping their positions with other students. Thus, the system is useful in detecting the contact with a person's and Therefore, students are not entitled to incriminating material from a system that will intellectually process live video processing during examination centers. In this research it works with the intelligent algorithm which can monitor and analyse the activities of students in examinations and can alert the lectures of avoid the malpractice of the students.
The suspicious activity detections using AI under surveillance videos aim to identify whether a student is indulged during an examination, this system automatically determines and sends alert messages to connect devices.

Literature Review

In the face of growing number of shootings ,knives, attacks, terrorist attacks etc. occurring in public places around the world, it has become more important to detect suspicious activity in different places Analysing different CNN architectures and comparing their accuracy, this paper presents a deep learning approach to detect suspicious activities from images and videos Also important are the systems we use in this field, which can process footage from cameras in real-time and predict if the activity is suspicious or not.
For activity recognition, the human face will play a key role based on the activities we perform. This research has developed various techniques in which we can observe a behavioural pattern of the person's based on the various signatures they perform. This can also seen by observing the facial movements of the person in the relative position and velocity of trajectory information.
In this using hidden Markov model, human activity recognition is observed. This activity can be based on the sequence of the actions. They explain actions by extracting features by passing the trajectory information. These trajectories can be efficiently performed without building.
Activity recognition can be obtained by probabilistic research of images where frames are generated based on the performed actions. They learn from the previous experiences and Bayesian networks are used for estimating for probabilistic research.

EXISTING FRAMEWORK



Advance motion detection (AMD) is an algorithm which is used for unauthorized activities which are done in primitive or restricted zones. Using this algorithm, the video which is captured from the specified area can subtract the background image and maintains the only required frame from the video. And then the suspicious activity is found in the second phase.

A. Limitations

This AMD Algorithm takes a long time for video processing and always requires huge data storage centers are required.

It requires man power for identification of whether suspicious activity detection has taken place or not.

PROPOSED FRAMEWORK

A. Machine Learning

Machine learning which is a part of computer science which is used to learn from the training examples of machines, and they are used to adjust from previous datasets and can analyze with the samples. These illustrations which are created by the nature or by the people or produced by the previous algorithm.

The method of solving a real-world sample by accumulating a dataset and analyze with the training samples by creating a statistical model based on dataset is sometimes called machine learning. It is used for solving real world issues. The machine learning and learning is very important.

B. Deep Learning

Deep learning origin is happening which is a subpart of machine learning which is officially part of artificial intelligence. This neural network just as human brain which is used to imitate in deep learning will do. In deep learning, nothing is programmed inbuilt. Basically, it is a part of machine learning algorithm that makes use of innumerous neurons of processing such as feature extraction as well as transformation. The output is taken from the preceding layers from the input samples by each one of the successive layers interconnected.

C. Convolutional Neural Network

Deep learning algorithms are based on neural networks which are part of machine learning and these are at the heart of deep learning algorithms. There are node layers that contain an input layer and a layer of hidden layers.

D.SURVEILLANCE VIDEO

Video surveillance is an important application which utilizes a storage shared resource. Currently, this surveillance video is used for live monitoring of the system with a high-quality image. This surveillance has been used for a wide variety of video content for a couple of days.

FIGURES AND FLOW CHART

IMPLEMENTATION AND RESULTS

The following graph in figure 1, displays the framework of suspicious activity detection in which we can upload a video where it generates frames and produce a beep sound.

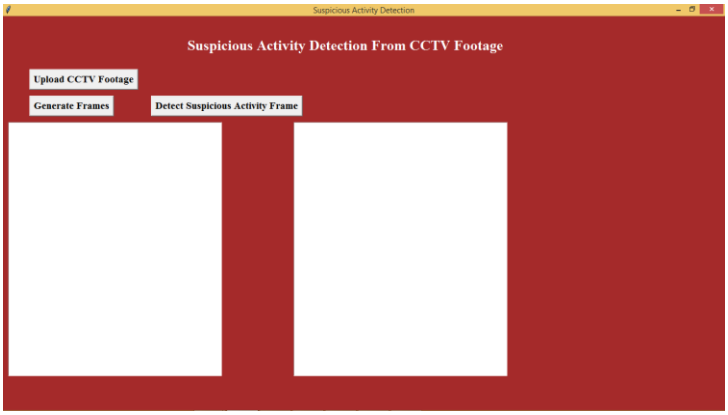


Fig.1. Framework of suspicious activity Detection

The following graphs in figure 2 is the updation of file in the webpage where a suspicious activity detection was found where suspicious activity is found.

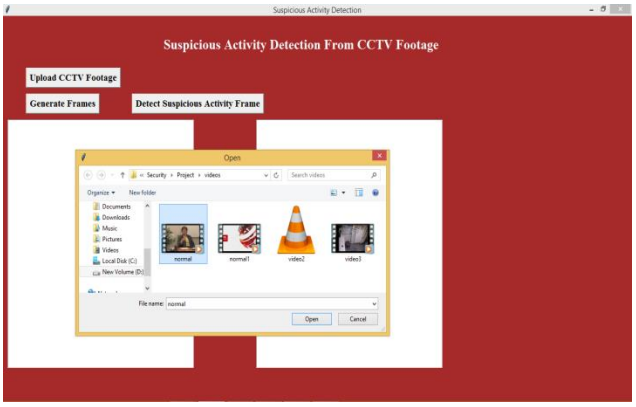


Fig 2. The uploading of Files using the videos

The following figure 3, shows the video which is processed into frames wherever the suspicious activity is found a beep sound is produced.

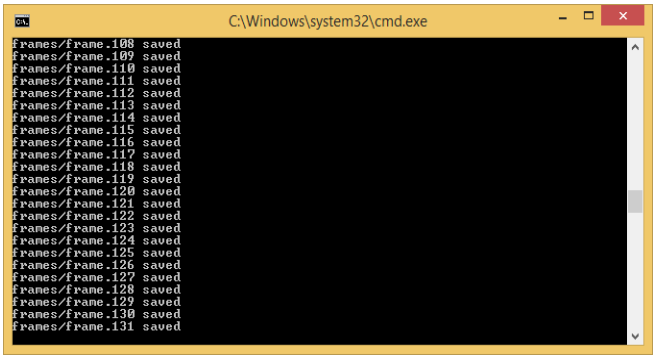


Fig 3.The frames are generated

The following graphs in figure 4, are a visual representation of the effect where a suspicious activity detection was found where suspicious activity is found.

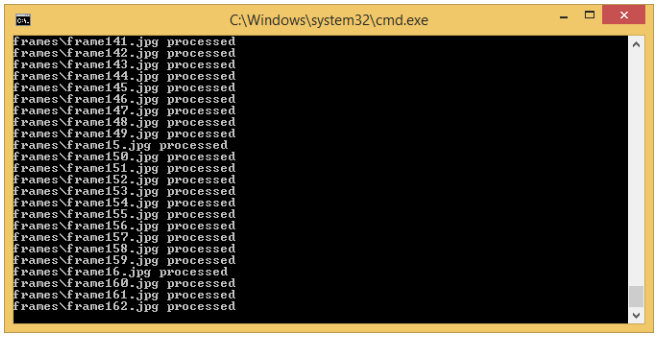


Fig.4. A Beep frame sound is produced

If no suspicious activity is found,then in surveillance video it does not produce sound and if activity is found then an alarm is generated where for every frame with respect to the activity gets to the recognized person.

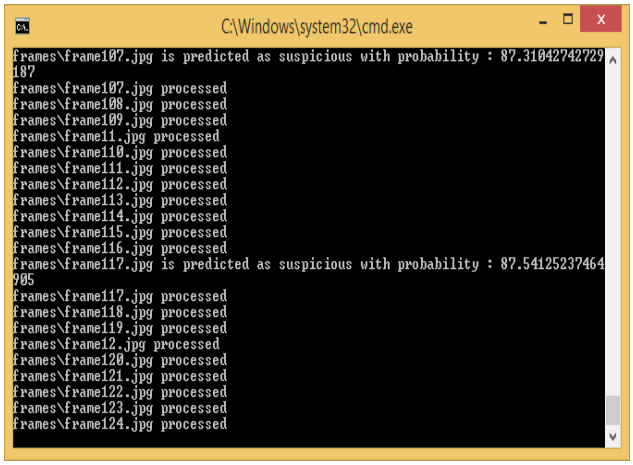
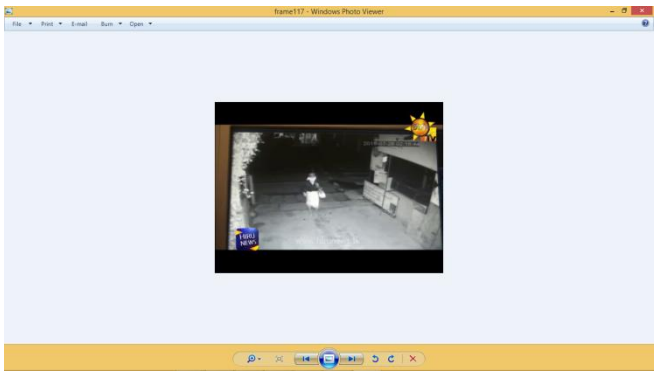


Fig 5.Frame where activity is found

In above screen for uploaded video we can see suspicious activity found at farme117.jpg. After scanning all images we will get below details screen. Now in below screen we can see frame117.jpg image from frames folder.



In above screen frame117 showing one image of a person with face covering. Similarly we can see all frames details in below screen which has such activities

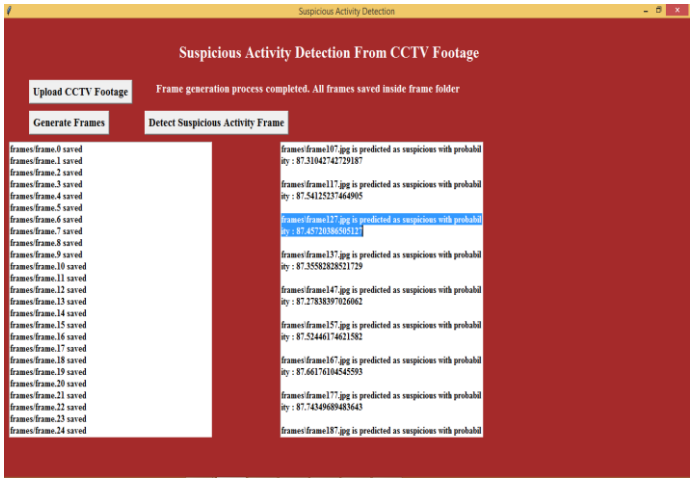


Fig 6. Suspicious activity is found

In the above figure, a suspicious activity is found which can be seen from the above screen.

CONCLUSION

As of the present, almost everybody is aware of the importance of CCTV cameras, although in most cases the footages are used to investigate a crime or suspicious activity. In the proposed model for suspicious activity detection using AI under surveillance video has the benefit of identifying the suspicious activity before it happens and we can stop before it takes place. The result of the research of our project is the perfection of our analysis is with respect to command with respective to the authority to take an action if any misbehavioural pattern occurs. Even though this project is limited to academic area, but we can further develop with the crime activity detection at public or private places which becomes easier to identify the crime and also we can stop from happening. The model can be used by analysing the scenario which has been happening based on the training samples. Using artificial intelligence algorithms, surveillance video can be used to identify the suspicious individual from the suspicious activity detection.

FUTURE SCOPE

We have discussed various methods related to theft detection and object detection in this research paper. So further, we can improve the majority of the work by extending to the various departments such as crime activity detection, intruder detection which is used for the abandoned object detection from surveillance video captured by static cameras. To resolve such problems, the human detection method should be performed efficiently and system should check for the owner presence on the scene for a long duration time. Future work can improve the work efficiency with the video quality and can improve the performance of the owner and also work efficiently with color detection source. Future improvements may be the integration of intensity and depth cues in the form of 3D images. The efficiency in which we can upgrade it to the 2d image source to the 3d or 4d era. This is used for great improvement of object detection method for various parameters. Thresholding based future works can be updated in bringing the performance of the system. Few work shave been also proposed for captured by multiple cameras. Multiple views allow the investigator to detect the object, which are improved. There is a lot of scope to detect large, abandoned objects from videos which are captured using moving cameras.

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