

# “ALERT GENERATION ON DETECTION OF SUSPICIOUS ACTIVITY USING DEEP LEARNING”

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## ABSTRACT:

Video Surveillance plays a pivotal role in today's world. The technologies have been advanced too much when Deep Learning pitched into the system. Using above combinations, different systems are in place which helps to differentiate various suspicious behaviors from the live tracking of footages. The most unpredictable one is human behavior and it is very difficult to find whether it is suspicious or normal. Deep learning approach is used to detect suspicious or normal activity in an academic environment, and which sends an alert message to the corresponding authority, in case of predicting a suspicious activity. Monitoring is often performed through consecutive frames which are extracted from the video.

**KEYWORDS:** Human Behaviors, Suspicious Activity, Normal Activity.

## I. INTRODUCTION

Human behavior detection in the real-world environment finds plenty of applications including intelligent video surveillance, shopping behavior analysis. Video surveillance has huge application areas especially for indoor outdoor and places. Surveillance is an integral part of security. Today security camera becomes part of life for the safety and security purposes. E-surveillance is one of the main agendas in Digital India, development program of Indian government. Video surveillance remains as a part of it. This model will then be deployed as a desktop app which will take CCTV footage as input and send an alert on the administrator's device if some suspicious pose is found. Human suspicious activity is related to identifying human body parts and possibly tracking their movements.

## II. MOTIVATION

In this project we detect person behavior as suspicious or not. now a day's everywhere CCTV cameras are installed which capture videos and store at centralized server and manually scanning those videos to detect suspicious activity for that human required lots of efforts and time. To overcome this issue, we automate such process using Deep Learning Algorithms. In this study, convolutional neural networks will be used to identify possible suspicious activity.

## III. PROBLEM DEFINITION

Suspicious human activity recognition from surveillance video is an active research area of image processing and computer vision. Through the video surveillance, human activities can be monitored in sensitive and public areas. This project will entail detecting suspicious human activity from Video dataset using neural networks.

## IV. LITURATURE SURVAY

1. Alert generation on detection of suspicious activity using transfer learning. (IEEE)Om M.Rajpurkar, Siddesh S. Kamble, Jayram P. Nandagiri and Anant V. Nimkar The goal of this paper is to identify suspicious activity for Surveillance and alert the shop owners when suspicious activity is detected.

2. Deep learning approach for suspicious activity detection from surveillance video. (IEEE) Amruta C.V,C. Jyotsn , Amudha J Deep learning approach is used to detect suspicious or normal activity, and sends an alert message to the corresponding authority.

3. Human suspicious activity detection system using CNN model for video surveillance. (IJARIE) Tejashri Subhash Bora, Monika Dhananjay Rokade. The goal of this paper is to identify suspicious activity for Surveillance and alert the shop owners when suspicious activity is detected.

### • NEED:

In this project we detect person behavior as suspicious or not, now a day's everywhere CCTV cameras are installed which capture videos and store at centralized server and manually scanning those videos to detect suspicious activity for that human required lots of efforts and time. To overcome this issue, we are automating this process using Deep Learning Algorithms.

### • PROPOSED METHODOLOGY:

The Proposed system will use video obtained from cameras for monitoring activities in a banks or bus stations and send alert message to

the near by police station when any suspicious event occurs. In this project we detect person behavior as suspicious or not. now a day's everywhere CCTV cameras are installed which capture videos and store at centralized server and manually scanning those videos to detect suspicious activity for that human required lots of efforts and time. To overcome this issue, we automate such process using Deep Learning Algorithms. In this study, convolutional neural networks will be used to identify possible suspicious activity.

### • ALGORITHM:

**CNN:** - CNN utilizes spatial correlations which exist with the input data. Each concurrent layer of the neural network connects some input neurons. This region is called a local receptive field. The localreceptive field focuses on hidden neurons.

A CNN is a kind of network architecture for deep learning algorithms and is specifically used for image recognition and tasks that involve the processing of pixel data. There are other types of neural networks in deep learning, but for identifying and recognizing objects, CNNs are the network architecture of choice.

CNN Algorithm Steps: -

- Convolution layer.
- ReLU layer.
- Pooling layer.
- Fully connected layer.

**Convolution layer:** A convolutional layer is the main building block of a CNN. It contains a set of filters (or kernels), the parameters of which are to be learned throughout the training. The size of the filters is usually smaller than the actual image. Each filter convolves with the image and creates an activation map.

**ReLU layer:** Consequently, the usage of ReLU helps to prevent the exponential growth in the computation required to operate the neural network. If the CNN scales in size, the computational cost of adding extra ReLUs increases linearly.

**Pooling layers:** are used to reduce the dimensions of the feature maps. Thus, it reduces the number of parameters to learn, and the amount of computation performed in the network. The pooling layer summarises the features present in a region of the feature map generated by a convolution layer.

**Fully Connected layer:** A fully connected layer refers to a neural network in which each neuron applies a linear transformation to the input vector through a weight matrix. As a result, all possible connections layer-to-layer are present, meaning every input of the input vector influences every output of the output vector.

### IMAGE PREPROCESSING

Image preprocessing is the steps taken to format images before they are used by model training. To prepare picture data for model input, preprocessing is necessary.

## FEATURE EXTRACTION

Feature extraction refers it can extracts only the required features of an image and generate the output by removing any noise or unnecessary interruption.

## IMAGE CLASSIFICATION

Image classification is a fundamental computer vision task that attempts to comprehend an entire image as whole. The goal is to class the image whether it is suspicious or not.

## DATASET COLLECTION

In dataset is video dataset and their type is mp4. In our dataset the videos are in suspicious form and normal form. The videos are like fighting, fire, attack etc.

## TRAINING AND TESTING MODEL

Training and Testing are the methods to calculate accuracy of the model it is called Train/Test. Training data is the subset of the original data that is used to training the model whereas testing data is the is used to check the accuracy of model.

## FUTURE SCOPE

Detect the suspicious activity in public areas such as bus station, banks. Anyone can use this application easy. Our model currently targets only 5 suspicious activities. It can further be improved by targeting a greater number of suspicious activities. More images can be added to the current dataset, especially images extracted from the CCTV footage of the

suspicious activity. Such footage is currently difficult to obtain as students but if this project is supported by the civic administration, they can surely provide the footage of criminal activities which have happened over this past. This will vastly help in improving the model.

## V. CONCLUSION

The human suspicious activities can be detected using this system. Further, this system can be extended to detect and understand the activities of people in various places. The result of the proposed system will be able to detect whether any suspicious activity is taking place or not.

In present world, almost all the people are aware of the importance of CCTV footages, but most of the cases these footages are being used for the investigation purposes after acrime/incident have been happened. The proposed model has the benefit of stopping the crime before it happens. The real time CCTV footages are being tracked and analyzed. The result of the analysis is a command to the respective authority to take an action if in case the result indicates an untoward incident is going to happen. Hence this can be stopped.

The proposed system is a machine approach to detect real-world criminal Activity identification in surveillance videos. The necessity to develop such a security system is increasing with the increasing number of crimes that are happening everyday. The result of the proposed system will be able to detect whether any anomaly action is taking place or not.

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