**Intelligent Video Surveillance Using Deep Learning**

**ABSTRACT**

Abnormal activity detection plays a very important role in surveillance applications. To capture the abnormal activity of humans without the intervention of the system i.e. automatically captures the video can be implemented. Human fall detection, suddenly jumping down which has an important application in the field of safety and security. Proposed system use for detecting roadside human activities or behaviour by using the Probabilistic Neural Network (PNN) method for classifying activities or behaviour between training dataset and testing videos. The partitions between classes of normal activities have also been learned using multi-PNNs. recognizing human activity has become a trend in smart surveillance that contains several challenges, such as performing effective detection of huge video data streams, while maintaining low computational complexity. Current activity recognition techniques are using convolutional neural network (CNN) model with computationally complex classifiers, creating hurdles in obtaining quick responses for abnormal activity, so this paper proposes a framework for activity detection. First, we detect abnormal activity with humans in the surveillance stream using an effective CNN model. The detected individual is tracked throughout the video stream via an ultrafast object tracker called ‘minimum output sum of squared error’ {MOSSE), Next, for each Tracked individual, pyramidal convolutional features are extracted from two consecutive frames using the efficient LiteFlowNet CNN. Finally, a novel deep skip connection gated recurrent unit is trained to learn different temporal changes in the sequence of frames for activity recognition and detection. We finish by the result indicate the efficiency of the proposed technique.

**EXISTING SYSTEM**

This paper is much work on abnormal behaviour detection took a supervised learning approach. Diverse contributions have been made in the development of behaviour recognizers for smart building surveillance applications. In automatic roaders, human surveillance, the vehicle or human activities and behaviours are detected and recognized for monitoring and warning purposes, for detecting human behaviour. This technique only focuses on updating anomalous human activity detection. The hidden Markov Model (HMM) and Dynamic Bayesian Network Model (DBNM) are using to detect suspicious behaviour. Motion detection, tracking, and classification for automated video surveillance. In the existing system, the video surveillance system is designed for human operators to observe protected Space or to record video data for further detection. But watching surveillance video is a labour-intensive need to be controlled. It is also a very tedious and time-consuming job and human observers can easily lose attention.

Disadvantage

1. Time Consuming process.

2. More Effort.

**PROPOSED SYSTEM**

In the proposed work, Motion detection is performed by using OpenCV and Pandas library. Captured videos are treated as a stack of pictures called frames. Different frames are compared to the static frame which has no movements. We compared two images by comparing the intensity value of each pixel. In this project we have used STAE (Spatial Temporal Auto Encoder) deep learning model to predict abnormal behaviour and this model get trained on normal peoples walking videos frames and then test video will be input to this model which will analyse STAE pattern and then return the event and this event will be compared with test frame using Euclidean distance and if this distance crossed normal behaviour threshold then application will display alert message.

The system will provide an easy way to monitor the traffic and give the appropriate result, parking lots for security purposes also, visible security cameras will help you detect thieves from breaking into cars. and will help in the security field on various platforms like parking lots, home security, it will make it easy to monitor the various abnormal activities and suspicious events.

Advantages

1. More Security.

2. Easy to monitor.

**MODULES**

To implement this project we have designed following modules

**Upload Video Frames Dataset:** Using this module we can upload dataset video frames to application

**Dataset Preprocessing:** Using this module we will read each image and then extract each pixel and then normalize image pixel values between 0 and 1

**Train Spatial Temporal AutoEncoder Model:** In this module we will input process and normalize images to encoder model to generate STAE model

**Test Video Surveillance:** Using this module we will upload test image and then extract each frame from video and then apply STAE model on frame to predict event and this event will be compare with test frame using Euclidean distance and if this distance cross normal behaviour threshold then application will display alert message.

**SYSTEM REQUIREMENTS**

**HARDWARE REQUIREMENTS:**

# Processor - Intel i3 or higher

* Speed - 1.1 Ghz
* RAM - 4 GB(min)
* Hard Disk - 256 GB
* Key Board - Standard Windows Keyboard
* Mouse - Two or Three Button Mouse

**SOFTWARE REQUIREMENTS:**

* Operating System - Windows10 or high

Programming Language - Python