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Suspicious Activity Detection

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Abstract - Suspicious activity is forecasting the body part or joint locations of a person from an image or a video. This project will number detecting suspicious human activity from real- time CCTV footage using neural networks. human suspicious exertion is one of the pivotal problems in computer vision that has been studied for further than 15 times. It's important because of the sheer number of operations which can benefit from exertion discovery. For illustration, mortal disguise estimation is used in operations including video surveillance, beast shadowing and behaviour understanding, subscribe language discovery, advanced mortal- computer commerce, and marker lower stir capturing. Low cost depth sensors have limitations like limited to inner use, and their low resolution and noisy depth information make it delicate to estimate mortal acts from depth images. Hence, we plan to use neural networks to control these problems.

Suspicious human exertion recognition from surveillance video is an active disquisition area of image processing and computer vision. Through the visual surveillance, mortal exertion can be covered in sensitive and public areas analogous as machine stations, road stations, fields, banks, shopping malls, academe and sodalities, parking lots, roads, etc. to help terrorism, theft, accidents and illegal parking, vandalism, fighting, chain snatching, offence and other suspicious exertion. It's truly delicate to watch public places continuously, therefore an intelligent video surveillance is demanded that can cover the human activity in real- time and classify them as usual and unusual activity; and can induce an alert. mainly, of the disquisition being carried out is on images and not videos. Also, none of the papers published tries to use CNNs to descry suspicious activities.

Key Words: Video Surveillance, Anomaly detection, Machine learning, Convolutional neural networks, Image processing, Background elimination, Face detection, Person recognition.

1. INTRODUCTION

Detecting suspicious shows exertion suggested in crowded veritably important as it can help us in precluding journals. numerous of the felonious conditioning. This can be by using videotape analytics. videotape analytics can be in person identification, exertion recognition, counting objects and people, etc. Suspicious conditioning are the unwanted conditioning performed by humans in certain places.
illustration for similar exertion includes talking in test hall, sleeping in classrooms, etc. similar unwanted conditioning can be detected by assaying the hand gestures, head movement of the person.

This paper addresses about the discovery of the suspicious conditioning by assaying the frames from the videotape input. First of all, the videotape has to be converted into frames and stored. These frames must be pre-processed to remove the noise in the frames. After pre-processing, the area of interest has to be abated from its background. This can be done by detecting the edges of the objects of interest and abating it from the background. After background elimination the image must be post reused to remove the noises in it. After noise junking the exertion the algorithm for face discovery has to be used to descry the faces in the image. also, the persons in the image have to be linked. Once the persons are linked the exertion done by them must be linked. This can be done by matching the pattern with the database. If the exertion done by the person is set up to be suspicious, the concerned advanced officers must be advised and the details of the persons involved in the exertion must be transferred to them

2. PROPOSED SYSTEM

2.1 PROBLEM STATEMENT:

Problem in video surveillance has moved to complex scene analysis to detect human and other object behaviours for analyzing patterns of activities or events, for standoff threat. detection and prevention that ends up in recognition of the criminal and preventing suspicious activities likewise as very helpful for healthcare domain for tracking patients activity.

2.2 SYSTEM ARCHITECTURE

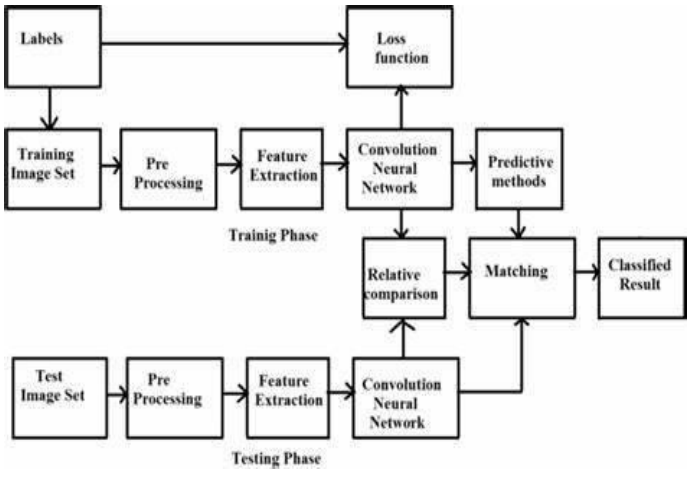

Fig -1: System Architecture

2.3 MATEMATICAL MODULE

Relevant mathematics associated with the Project:

Let S be the Whole system S= I, P, O

I-input

P-procedure

O-output

Input (Video)

I=Input as Image

Where ,

Dataset Image

Procedure (P),

P=I,

Using I System perform operations and calculate the prediction

Output(O)-

O = System detect suspicious activity or not

2.4 ALGORITHM

Step 1: Input is given as image / video. Step 2: Then many different filters are applied to the Input to create a feature map.

Step 3: Next a ReLU function is applied to increase non linearity.

Step 4: Then applies a pooling layer to each and Every feature map.

Step 5: The algorithm compresses the pooled images into one long vector.

Step 6: In next step, inputs the vector to the algorithm into a fully connected artificial neural network. Step 7: Processes the features via the network. At the end fully connected layer delivers the "voting" of the classes.

Step 8: This repetition occurs until we have a well-defined neural network with trained weights and feature detectors.

2.5 SYSTEM REQUIRMENTS

2.5.1 SOFTWARE REQUIRMENTS

- Operating System - Windows
- Front End - HTML, Bootstarp,CSS
- Language - Python.
- IDE - Annaconda,Pycharm

2.5.2 HARDAWRE REQUIRMENTS

- Processor - Intel i3/i5/i7
- Speed - 2.80 GHz
- RAM - 8 GB
- Hard Disk - 40 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse

2.6 ADVANTAGES

- Crime Prevention.
- Improve Public Safety.
- Reduce Cost and Increased Efficiency.
- Enhanced Security.
- Traffic Management.

2.7 APPLICATIONS

1. **Banks and Financial Institutions:** Suspicious Activity Detection systems can be used to identify fraudulent transactions and money laundering activities.
2. **Public Transport and Airports:** These systems can be deployed to detect suspicious behavior in public transport systems, airports, and other public places to prevent potential terrorist attacks.
3. **Law Enforcement:** Suspicious Activity Detection systems can assist law enforcement agencies in identifying potential criminal activities.
4. **Retail stores:** These systems can help retailers to detect shoplifting activities and prevent theft.

3. CONCLUSIONS

A system to process real-time CCTV footage to detect any suspicious activity will help to create better security and less human intervention. Great strides have been made in the field of human suspicious Activity, which enables us to better serve the diverse applications that are possible with it. Moreover, research in related fields such as Activity Tracking can greatly enhance its productive utilization in several fields.

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