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Intelligent Video Surveillance System

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Abstract: ***Intelligent video recognition with in-depth learning concept will create a self-paced video analytics program. CCTV cameras are used in all areas where safety is paramount. Manual monitoring seems tedious and time-consuming. Security can be defined by different words in different contexts such as identity theft, violence, explosions etc. Security monitoring is a tedious and time-consuming task. In this project we will analyse video feeds in real time and identify any unusual items such as violence or theft. The concept of in-depth learning simulates the functioning of the human brain in processing data for use in acquisition, speech recognition, decision making, etc. This will depend without human guidance, from unstructured and unlabelled data.***
Keywords: video recognition, CCTV cameras, Security, video, violence.

I. INTRODUCTION

Artificial intelligence paves the way for computers to think like human. Machine learning makes the far more even by adding training and learning components. The availability of giant dataset and high performance computers lead the sunshine to deep learning concept, which extract automatically features or the factors of variation that distinguishes objects from each other . Among the numerous data sources which contribute to terabytes of massive data, video surveillance data has much social relevance in today's world. The widespread availability of surveillance data from cameras installed in residential areas, industrial plants, educational institutions and commercial firms contribute towards private data while the cameras placed publicly places like city centres, public conveyances and non secular places contribute to public data. Analysis of surveillance videos involves a series of modules like visual perception , action recognition and classification of identified actions into categories like anomalous or normal. This survey giving specific specialise in solutions supported deep learning architectures. Among the varied architectures in deep learning, commonly used models for surveillance analysis are CNN, DNN, auto-encoders and their combination.

II. RELATED WORK

Many of these unusual conditions are not known in advance, as this may require predicting all the way to something that might be unusual. Therefore it is impossible to read the model of all that is unusual or unusual. However How can we find something unusual without what we need? As it is easy to get video data when the scene is generally different to find unusual, we can focus on the situation where the training data contains only standard viewing patterns. Popular method adopted by researchers in this area begin to learn common patterns from training videos, in which case something is wrong as events move away from normal patterns [13, 2, 32, 12]. Most anomaly detection work depends on the release of local features from the videos, which are used for general training model[9]. Non-tracking methods that focus on temporary instability on videos and they are. This is highly dependent on extracting and analysing low-level local visibility features, such as histogram of targeted gradients , histogram direct flow and light flow , using spatio temporal video volumes (compressed sample or selective interest point) . These are local features and then grouped together, i.e., visual word bags (BOV), according to metrics matched. Their popularity is due to their low calculation costs, as and their ability to focus on unusual behaviours, or extremes scenes . Another similar process is minor reconstruction [2, 32]. The basic assumption of these methods is that any new feature Representation of a common / unpopular event can be estimated by a combination of a line (minor) for feature presentations (previews events) In a professional dictionary. This assumes all previously seen events it's normal events[9].

III.PROPOSED WORK

The proposed approach begins by dividing the viewed videos into a fixed number of parts during training. These parts create conditions in the bag. Both good (bad) and bad are used (standard) bags, we train the model for different findings using deep loss of MIL level.

A. Multiple Instance Learning

In standard supervised classification problems using support vector machine, the labels of all positive and negative examples are available and the classifier is learned using the following optimization function: min w 1 k Xk i=1 1 z }| { max(0, 1 − yi(w.φ(x) − b))? + 1 2 kwk 2 , (1)

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IV. MODULE DESCRIPTION

1) *Admin:* Admin has a provision to load the recorded videos of surveillance cameras. It is the sole responsibility of admin to maintain the data in a secured way. Admin is mainly responsible for notifying the activity whether the event is abnormal or not. Admin is head of the maintenance and management of application.
2) *Video surveillance module:* The Surveillance model is responsible for detecting the abnormal activities from the real time video feed. The pre-processing task will generate the frames and then features are extracted in order to convert the images into greyscale format. The Surveillance module uses Mean squared loss method to calculate the loss value of frames and abnormal event is notified if the value exceeds the threshold loss value. This module is responsible overall to perform detection and identify the events accordingly. This module notifies the admin about the result of detected event.
3) *User module:* Users are the main aspect whose features will be extracted and detected. The person whose activity performed is captured by camera/Recorded videos is subjected to be detect whether the event. If the activity is detected as Value loss and abnormal event then the result is notified to the admin, if not the streaming of the video continues.

V. WORKING MODEL

The data Collection set process is the first process. Based on usage cases, the system will be trained. This includes identification of object value, overcrowding, etc. The system will operate with caution. Each item on file video will be tagged. These tags will be used in the future recognition of such things. Any new thing that has been there the experience in the system will be divided first and then so given the mark. For crowd analysis, the program will list people in the frame and the limit number of the figure will be provided. If this limit is exceeded, the warning will remain the same done. Areas where the limit is not yet reached, will be indicated by a green LED light, and areas with-skips will be shown in red. Security the system will continue to perform checks on any suspicious items things. If there is anything suspicious like a knife or a gun received, a notification will be sent immediately to security employees thus avoiding any unpleasant events.

VI. RESULTS AND DISCUSIION

Reducing the burden of personal observation. Old: Imagine supermarkets, we can see a network of CCTV cameras in the living room. In the event of any unusual activity identifying such activities on a single camera will not be so easy. This indicates a warning message as long as an unusual action occurs. There will be no approval if the video flows normally. In the below figures there is a example provided with respect to a public place like Metro Station, Figure 1 shows that a man holding a bag in his hand, Figure 2 shows that the man is continuously playing with the bag in the public place where it is unusual activity performed. Figure 3 shows that if the similar activity is performed again and again then an abnormal event is detected. Figure 4 shows the warning of Abnormal event at a particular point, Figure 5 describes the mean_square_value whether the values are with in range or no, if not abnormal event is detected.



Fig.1 Error message showing as abnormal event

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Fig 2: Mean_loss_Values are disclosed here and based on those values events are detected.

VII. CONCLUSION

This project gives us the feature to get an unusual photography job on installed CCTV cameras. This smart feature needs to be installed on public location cameras as it is most needed in these areas which reduces the tracking function of all cameras. We suggest an in-depth learning method to discover the real world differences in surveillance videos. Because of the complexity of this inconsistency, using only general data may not be good for finding unusual tasks. We are trying to exploit both standard surveillance videos. Avoid hard-working temporary annotations of unwanted parts in training videos. In order to validate the proposed approach, a new database of new anomaly variants containing real world variants is introduced. Test results from this database show that our unintended event identification method works much better than basic methods.

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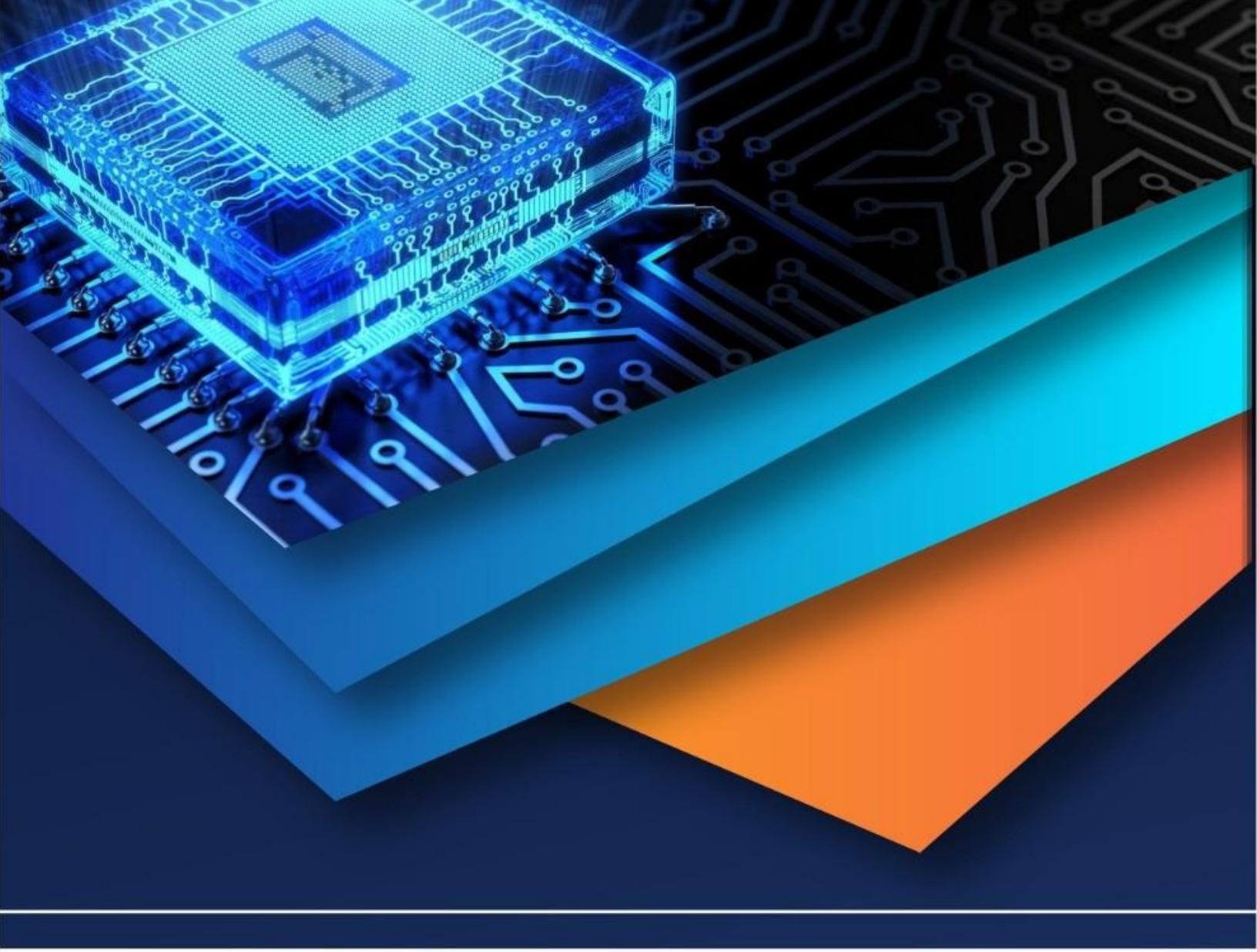
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