Surveillance Violence Detection System

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Abstract— Surveillance security may be a terribly tedious and long job. In this project, we build a system to automatize the task of analyzing video. we will analyze the video which we put in our model and the model determine any abnormal activities like violence. There are tons of analysis happening within the trade concerning video. Recent increased adaptation of security cameras. This paper describes a recognition and identify system for abnormal objects. The goal is to design and implement a system which will be able to detect abnormal activity using video sequences. The system uses high level reasoning to infer the existence of abnormal activity. The proposed approach was implemented using existing images, video clips and trained video. Our experiments demonstrate the effectiveness of the approach.

Keywords— Violence detection, deep learning, machine learning, surveillance camera

I. INTRODUCTION

Surveillance security could be a tedious and long job. In that project, we build a system to alter the task of analyzing video police investigations. We will analyze the video put in the period and determine some abnormal activities like violence. There's a great deal of analysis occurring within the trade concerning video police investigation among them; the role of CCTV videos has overgrown. CCTV cameras plays an important role in security. Within the last decade, there are advancements in deep learning algorithms for security purpose. The standard applications of tight security square violence detection, and detection of the possibilities of explosion. Violence detection techniques victimization pc vision, analyze the police investigation camera videos.

C. Dhiman and D. K. Vishwakarma [1] proposed that in recent years, insecurity has been one of the major causes of fights or robbery and can lead to severe physical injuries, deaths, and significant economic losses. Statistics indicate the need for an abnormal event detection system that could alert the admin before a mishap happens. Researchers have attempted to determine abnormal activity using the following measures: behavioral measures and physiological measures.

W. Sultani, C. Chen, and M. Shah [2] proposed that nowadays, there are many systems are available in the market like face detection, warning alarm systems, etc. to make men's (security staff) work easy. Computer vision-based image processing techniques are one of them for tight security. This uses various images of a bad person to detect abnormal things states using his/her eyes states and facial expressions and body movements.

S. Chaudhary, M. A. Khan, and C. Bhatnagar [3] projected that This vision-based intelligent rule detects the human. The projected rule makes use of options learned employing a convolution neural network to expressly capture numerous latent countenances and therefore the complicated non-linear feature interactions.

L. Tian, H. Wang, Y. Zhou, and C. Peng [4] proposed various investigations show that illegal activity is one of the main cause's economic losses or physical injuries. Thus, countermeasure device is currently required in many fields for security-related accident or robbery prevention.

P. Zhou, Q. Ding, H. Luo, and X. Hou [5] proposed the three measures as to the sensors used and discuss the advantages and limitations of each. The various ways through which illegal things have been experimentally manipulated are also discussed. Several injuries and losses might then be avoided if an alert is sent to an admin.

II. METHOD AND MATERIAL

A. *Proposed Work*

In this project, we worked on different modules such as the login module, registration module for accessing our system. In this project first of all we find the latest dataset which is needed for making the project very secure and accurate. When we get a dataset, we need to update it according to the current situation, and based on this we need to train the model for as per security requirement.

1. Human Activity Detection

Human activity detection using deep learning helps to secure the system. We are implementing the system by training model by using of conventional datasets and algorithms.

2. SMTP service

SMTP (Simple Mail Transfer Protocol) is the service which helps to send text message and mail with the date and time of the captured event.

Human detection

The datasets in the model improve the accuracy of the model to predict the situation. The approximate accuracy of the algorithm to predict the situation is around 90% to 95%.

Figure1. Home Screen

3. Training Model

After building the basic model we need to train the model based on deep learning and CNN.

4. Deep Learning

In the module, we will train our machine learning module with a dataset of abnormal events and try to achieve higher accuracy.

5. Live alert system with SMTP service

If in case of any abnormal event activity found from the camera then it will take the current location of the system and take photos of current situations and send along with the photos location and alert message.

6. CUHK Avenue Dataset

This dataset contains sixteen training and twenty-one testing video clips. The training videos contain videos of traditional things. The testing videos contain videos with each normal and abnormal event.

7. UCSD pedestrian Dataset

This dataset contains videos with pedestrians. It includes teams of individuals walking towards, away, and parallel to the camera.

8. Consecutive Neural Network (CNN)

In this project, we must extend deep neural networks to 3-dimensional for learning spatio-temporal features of the video feed.

B. *Modules*

There are Six modules in our project

1. Login Module

By this module user able to access the system features by providing its credentials such as username and password and able to enable the live abnormal event detection module.
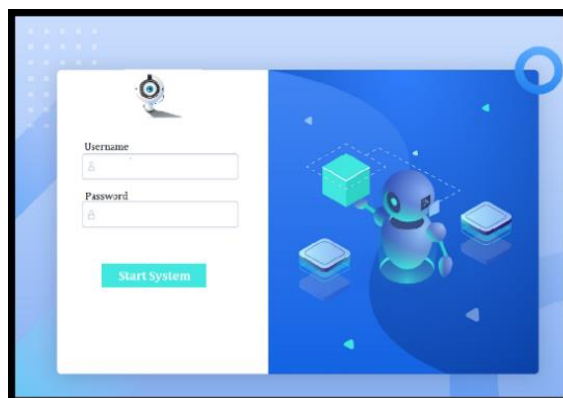

Figure 2. Login Screen

2. Registration Module

By this module user able to create a new user account and once it has done it will be able to log in with the new credential.
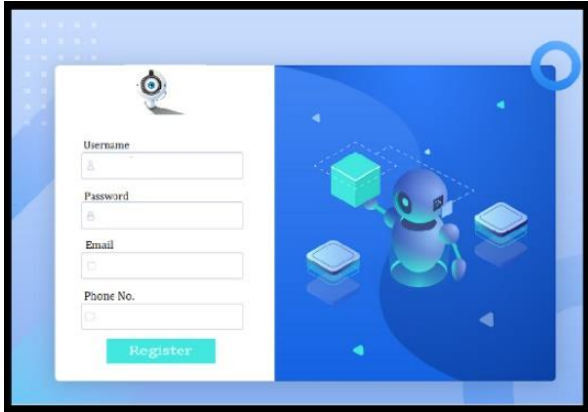

Figure 3. Registration Screen

3. Abnormal event detection through Image

In the module, we will train our machine learning module with a dataset of abnormal events and try to achieve higher accuracy through image.

Figure 4. Image Module

Figure 5. Image Module

4. Abnormal event detection through live webcam

In this module, we will be able to predict the abnormal event from the live webcam of home or public camera and able to identify whether such kind of activity happening or not.

Figure 6. Live Webcam Module

5. Abnormal event detection through Video Module

In this module, we will be able to predict the abnormal movement from the pre-recorded video to identify whether such kind of activity happens in past or not.
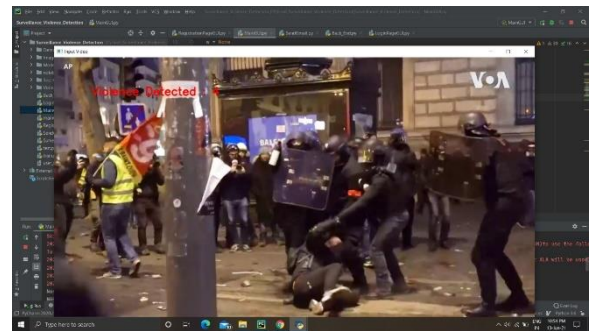

Figure 7. Video Module

6. Live Alert system with SMTP services:

This module is responsible to send the alert message to this owner or police number by email with a screenshot when abnormal event happens.
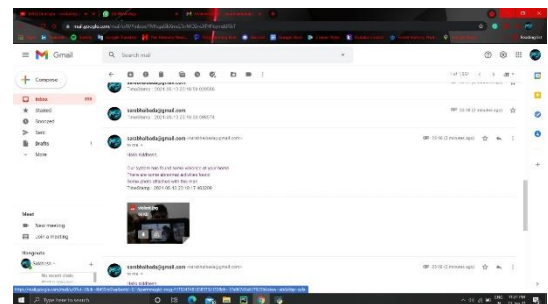

Figure 8. SMTP Module

At the time of misbehaving, abnormal movement, and violence our model detecting an activity an act like a security system. After that it will be passing a message to the owner or security base by taking pictures and videos clips of abnormal movement.

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III. CONCLUSION

This project is very beneficial in annual function or in event or in gathering for maintaining silence and troubleshoot or avoid the disturbance made by crowd. This system will help to handling around 85%-90% of abnormal activity also will provide security in public sectors.

IV. FUTURE SCOPE

In future, we can modify our module by giving different and more complex dataset due to which it performs like a sharp security surveillance system. So due to addition of such a dataset our model easily catches the enemy and encountered such a big critical condition. So, it helps for maintaining silence as well as discipline.

E.g.: This project can also be applying at college surrounding due to which we can decrease or stopped fighting and abusing of student.

REFERENCES

[1] Dhiman and D. K. Vishwakarma, "A review of state-of-the-art techniques for abnormal human activity recognition," Engineering Applications of Artificial Intelligence, 2019.

[2] W. Sultani, C. Chen, and M. Shah, "Real-world Anomaly Detection in Surveillance Videos," Centre for Research in Computer Vision (CRCV), University of Central Florida (UCF), 2018.

[3] S. Chaudhary, M. A. Khan, and C. Bhatnagar, "Multiple Anomalous Activity Detection in Videos," Procedia Computer Science, 2018.

[4] L. Tian, H. Wang, Y. Zhou, and C. Peng, "Video big data in smart city: Background construction and optimization for surveillance video processing," Future Generation Computer Systems, 2018.

[5] S. Chaudhary, M. A. Khan, and C. Bhatnagar, "Multiple Anomalous Activity Detection in Videos," Procedia Computer Science, vol. 125, pp. 336–345, 2018.

[6] A. Ben Mabrouk and E. Zagrouba, "Abnormal behavior recognition for intelligent video surveillance systems: A review," *Expert Systems with Applications*, vol. 91, pp. 480–491, 2018.

[7] Z. Mushtaq, G. Rasool, and B. Shehzad, "Multilingual Source Code Analysis: A Systematic Literature Review," IEEE Access, vol. 5, pp. 11307–11336, 2017.

[8] R. Olmos, S. Tabik, and F. Herrera, "Automatic handgun detection alarm in videos using deep learning," rocomputing, vol. 275, pp. 66–72, 2018.

[9] P. Zhou, Q. Ding, H. Luo, and X. Hou, "Violent Interaction Detection in Video Based on Deep Learning" in Journal of Physics: Conference Series, 2017.

[10] P. C. Ribeiro, R. Audigier, and Q. C. Pham, "RIMOC, a feature to discriminate unstructured motions: application to violence detection for video-surveillance," Computer vision and image understanding, vol. 144, pp. 121–143, 2016.