INTELLIGENT VIDEO SURVEILLANCE USING DEEP LEARNING

[1]V Mallesi,[2]K Arjun,[3]GS Udaya Kiran Babu
[1,2,3]Associate Professor
Department Of CSE
Bheema Institute of Technology and Science, Adoni

ABSTRACT:
Detecting abnormal activity is crucial for surveillance applications. It is possible to use automated video capture to record anomalous human behaviour without the need for system intervention. Human fall detection, or abruptly falling, is a significant application in the security and safety domain. The proposed system classifies activities or behaviour between training dataset and testing movies by using the Probabilistic Neural Network (PNN) approach. This allows the system to identify human activities or behaviour along the roadside. Using multi-PNNs, the partitions between classes of typical activities have also been learnt. A trend in smart surveillance is the recognition of human activity. This presents a number of issues, including the efficient detection of large video streams with little computer complexity. This research provides a framework for activity detection since existing methods for activity identification use convolutional neural network (CNN) model with computationally complicated classifiers, which makes it difficult to generate fast answers for anomalous activity. First, we use an efficient CNN model to identify anomalous human behaviour in the surveillance stream. Using an incredibly quick object tracker known as "minimum output sum of squared error" (MOSSE), the identified person is followed throughout the video stream. For each monitored person, pyramidal convolutional features are then recovered from two consecutive frames using the effective LiteFlowNet CNN. Lastly, a brand-new deep skip connection gated recurrent unit is trained to recognise and identify various temporal changes in the frame sequence. We conclude by showing that the suggested strategy is effective.

Key words: surveillance systems, video cameras, and recognition.

I. INTRODUCTION

During these recent years, applications of video surveillance have attracted more and more researchers. Consequently, various types of modeling, as well as several techniques of analysis and detection of human activities, are suggested. Particularly, many pieces of research are involved in the recognition and detection of human activities in general and especially abnormal activities. One important application is the supervision of elderly and disabled people at home in care centers, or hospitals. Recognition of human activities is a recent field that is interested to provide techniques and methods allowing the detection and classification of human activities, and extended now to recognize normal or abnormal activities. The motivation behind the latter is to provide an immediate intervention to preserve the lives of individuals or to ensure them some services they are unable to do by themselves. Being recent and interesting, this field has attracted the attention of several researchers who try to find solutions to the problems faced in studying such types of activities. However, the proposals made for this until now are those used for the recognition of normal human activities with minor modifications. These proposals are still very restricted because of the very limited number of works and surveys in this field. Moreover, they are not efficient and suffer from several

limitations and technical difficulties. To this end, we propose in this paper an overview and an analysis of the existing works, to offer the researchers a general view of what exists in this field and to provide them with a tool being a help to them propose new approaches. For this, the manuscript is organized as follows. In the second section, we present a definition of the abnormal activities, their various types, as well as some examples of abnormal activities of a group or a single person. We then discuss in the third section the motivations that led to the advent of this research axis and the development of techniques allowing the analysis and recognition of human activities in general and abnormal activities in particular. The fourth section is devoted to the proposed approaches in the literature for the detection of abnormal activities. In this section, we present for each proposal, the purpose for which it is set up, its different stages, and the means used for its validation. Subsequently, we discuss some aspects affecting or influencing the effectiveness and credibility of the classification of human activities. The sixth section presents the three modes of automatic learning (supervised, unsupervised, and semi-supervised). Thereafter, we enumerate the encountered limitations to be taken into consideration to improve the systems of recognition and identification of abnormal activities. Finally, we finish with a conclusion where we summarize our study.

II. RELATED WORK

This paper is much work on abnormal behavior detection took a supervised learning approach. Diverse contributions have been made in the development of behavior recognizers for smart building surveillance applications. In automatic roaders, human surveillance, the vehicle or human activities and behaviors are detected and recognized for monitoring and warning purposes, for detecting human behavior.

Types of an anomaly to detect object or behavior some are as follows:

1. Video-based abnormal human behavior recognition

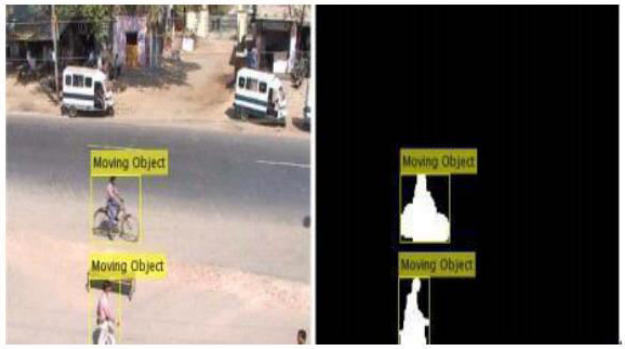

Fig. 1 Example of difference from walking or jogging

This technique only focuses on updating anomalous human activity detection. The hidden Markov Model (HMM) and Dynamic Bayesian Network Model (DBNM) [1] are using to detect suspicious behavior as shown in Fig. 1

2. Motion detection, tracking, and classification for automated video surveillance.

Fig. 2. Tracking of moving object

III.SYSTEM ANALYSIS

EXISTING SYSTEM

- 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 labor-intensive need to be controlled.
- It is also a very tedious and time-consuming job and human observers can easily lose attention.

PROPOSED SYSTEM

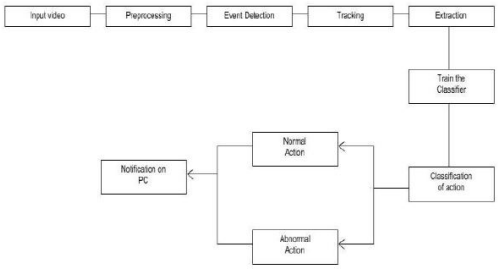

Fig 3. The proposed activity recognition framework for surveillance applications.

IV.SCREEN SHOTS

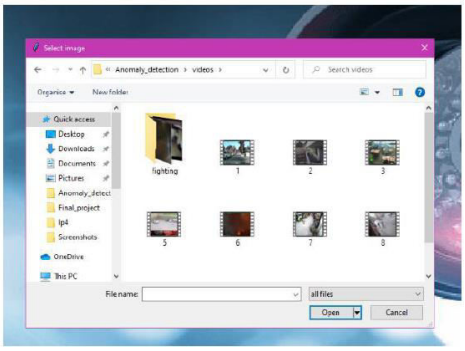

Fig: Input for Abnormal Activity Detection

- From here we'll take the file as an input for detection.

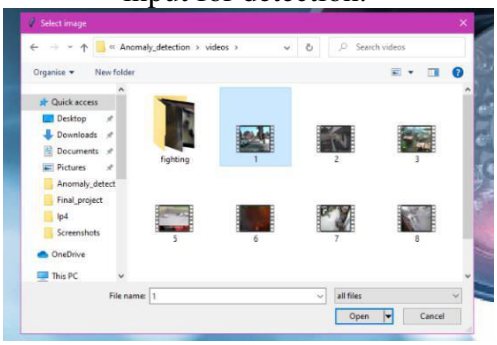

Fig: Input file for detecting abnormal activity.

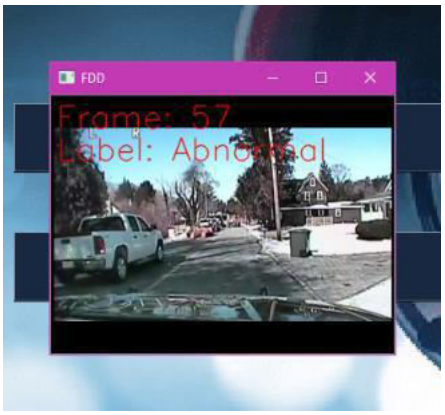

Fig: Output of Abnormal Detection.

Fig: Output shows as a normal activity.

- After opening video, system will start processing on that video to detect abnormal activity, it will show result as an abnormal activity through that video.
- Whenever abnormal activity happen, system will detect that activity and label it as 'abnormal'.
- If there is no abnormal activity detected then it will label as 'Normal'.

V.CONCLUSION:

The suggested method seeks to deliver results based on the detection of anomalous activity and establish a new avenue in the area of video monitoring. The user will be able to keep an eye out for any strange activity or questionable occurrences. Monitoring anomalous activity in a variety of domains, such as security, crime prevention, and traffic monitoring, has proven to be exceedingly challenging. By alerting the user when an abnormal state is detected, it will assist the user. The amount

of characteristics that are now provided is an effort to cover every fundamental feature of video surveillance as well as some unnoticed but important factors. This study examines the identification of anomalous human behaviour by offering a succinct review of the latest research assignments in the domain of video surveillance. The CNN has been put into use to identify unusual activity. Ultimately, by examining current research projects in the area of video surveillance and using the findings as a foundation for identifying anomalous activity.

REFERENCES

[1] VRIGKAS, Michalis, NIKOU, Christopher's, ET KAKADIARIS, Iohannis A. A review of human activity recognition methods. Frontiers in Robotics and AI, 2015, vol. 2, p. 28.

[2] POPULAR, Oluwatoyin P. ET WANG, Kejun. Video-based abnormal human behavior recognition—A review. IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), 2012, vol. 42, no 6, p. 865-878

[3] BENABBAS, Yassin, IHADDADENE, Nacim, ET DJERABA, Chaabane. Motion pattern extraction and event detection for automatic visual surveillance. EURASIP Journal on Image and Video Processing, 2010, vol. 2011, no 1, p. 163682.

[4] HUNG, Ya-Xuan, CHIANG, Chih-Yen, HSU, and Steen J., et al. Abnormality detection for improving elder's daily life independence. In: International Conference on Smart Homes and Health Telematics. Springer Berlin Heidelberg, 2010. p. 186-194.

[5]ADAM, Amit, RIVLIN, Ehud, SHIMSHONI, Ilan, et al. Robust real-time unusual event detection using multiple fixed-location monitors.

[6] SHIN, Jae Hyuk, LEE, Boreom, ET PARK, Kwang Suk. Detection of abnormal living patterns for the elderly living alone using support vector data description. IEEE Transactions on Information Technology in Biomedicine, 2011, vol. 15, no 3, p. 438-448.

[7] PALANIAPPAN, Adithyan, BHARGAVI, R., ET VAIDEHI, V. Abnormal human activity recognition using SVM based approach. In: Recent Trends in Information Technology (ICRTIT), 2012 International Conference on. IEEE, 2012. p. 97-102.

[8] A. Datta, M. Shah and N. Lobo, "Person-on-person violence detection in video data", Proceedings of the 16th International Conference on Pattern Recognition, vol. 1, pp. 433-438, 2002.

[9] Paolo Rota, Nicola Conci, Nicu Sebe, and James M Rehg, "Real-life violent social interaction detection", International Conference on Image Processing, pp. 3456–3460, 2002.

[10] M. Drulea, and S. Nedevschi, "Total Variation Regularization of Local-Global Optical Flow", IEEE Int. Con. Intelligent Transportation Systems, pp. 318-323, 2011.

[11] E. ESEN, M. ARABACI, and M. SOYAL,"Fight Detection in Surveillance Videos", Int. Workshop on Content-Based Multimedia Indexing, pp. 131-135, Jun 2013.

[12] CAVIAR Test Case Scenarios, http://groups.inf.ed.ac.uk/vision/CAVIAR/CAVIARDATA1 Daniel Gutchess, M Trajkovics, Eric Cohen-Solal, Damian Lyons, and Anil K Jain, "A background model initialization algorithm for video surveillance," in ComputerVision, 2001. ICCV 2001. Proceedings. EighthIEEE International Conference on. IEEE, 2001, vol. 1, pp. 733–740.

[13] Varun Chandola, Arindam Banerjee, and Vipin Kumar, "Anomaly detection: A survey," ACM computing surveys (CSUR), vol. 41, no. 3, pp. 15, 2009