IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 1, January 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | A Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 1, January 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1201053 |

Weapon Detection through CCTV

Aastha Patil , Bhakti Patil , Pragati Patil, Tejaswini Patil, Ms.Monika Kute

Department of Computer, Pimpri Chinchwad Polytechnic College, Pune, India

ABSTRACT: - Suspicious activities are of a problem when it comes to the potential risk it brings to humans.With the increase in criminal activities in urban and suburban areas, it is necessary to detect them to be able to minimize such events. Early days surveillance was done manually by humans and where a tiring task as suspicious activities were uncommon compared to the usual activities. With the arrival of intelligent surveillance systems, various approaches were introduced in surveillance. A significant field of research and development focuses on sophisticated machine learning methods for the detection of suspicious human behaviour to lower monitoring costs while increasing safety. We require a real-time intelligent human activity detection system that can recognize suspicious actions in hospitals because it is challenging for personnel to continuously watch in hospitals. The complicated low-accuracy algorithms and approaches used by current systems make them less dependable. By integrating a Convolutional Neural Network and using the 2D posture estimation approach to the system, this study suggests a real-time suspicious human activity recognition method with high accuracy. This system is suitable for usage in hospitals, homes, and other surveillance areas. Here, we use 2D pose estimation to extract skeleton pictures of people from the input video frames in order to determine their pose.

I. INTRODUCTION

The hospital of image processing and computer vision known as Suspicious Human Activity Recognition from Video Surveillance recognizes human activity and classifies it into normal and abnormal activities. Abnormal behaviors are the uncommon or suspicious actions that people rarely take when in a hospital, including slipping and falling. Normal activities are the regular tasks carried out by people, such as slipping, when they are in a hospital. Video surveillance is increasingly used today to keep an eye on people's movements and stop suspicious behavior among patients in hospitals. It is also necessary to have intelligent video surveillance to automatically detect falls among elderly hospital patients. For fall detection, the market mostly offers worn-sensor based systems (Willems et al. 2009; Nguyen et al. 2009). These devices are primarily electronic devices that force elderly people to eitherput them in their pockets or wear them on their wrists. These wearable fall detectors often contain an accelerometer or manual help button to detect a fall. These wearable fall detectors do have certain limitations, though. One of the drawbacks of fall detectors is that older individuals sometimes forget to wear them, and the help buttons are ineffective for those who pass out after falling. Modern developments in computer vision have produced fresh approaches to get beyond these limitations. One of the key benefits of a visual-based fall detection system is that it doesn't require the user to wear anything, making it less obtrusive than a wearable sensor. In addition, computer vision systems offer greater insight into a person's behavior than typical wearable sensors do. This enables a visual-based home monitoring system to collect data on falls as well as other aspects of daily life that are important for health care monitoring, like mealtimes and sleep length. An image of a Human Fall detection thatwas taken by a sophisticated vision surveillance system. There are two different kinds of surveillance systems: the first is semi-autonomous, which records video and sends it for human expert analysis. In order to stop suspicious human activity in hospitals, non-intelligent video surveillance requires constant human monitoring, which is very expensive, problematic, and also very tough and challenging to do. In order to conduct low level tasks like motion detection, tracking, categorization, and abnormal event identification, a second fully autonomous surveillance system is needed

II. MODULE IDENTIFICATION

In this work, we have attempted to develop an integrated framework for reconnaissance security that distinguishes the weapons progressively, if identification is positively true it will caution/brief the security personals to handle the circumstance by arriving at the place of the incident through IP cameras.We propose a model that provides a visionary sense to a machine to identify the unsafe weapon and can also alert the human administrator when a gun or firearm is obvious in the edge. Moreover, we have programmed entryways locking framework when the shooter seems to carry appalling weapon. On the off chance conceivable, through IP webcams we can likewise share the live photo to approach security

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | A Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 1, January 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1201053 |

personals to make the move in meantime. Also, we have constructed the information system for recording all the exercises to convey impact activities in the metropolitan territories for a future crisis. This further ends up in designing the database for recording all the activities in order to take prompt actions for future emergency.

III. OBJECTIVE

For society security reason, if different types of weapons, such as sticks, knives, and guns, can be detected in surveillance images, this can effectively prevent the chance of gangsters carrying weapons and acting fiercely or seeking revenge. To identify weapons, we need to distinguish them from other surveillance objects and images in a real-time manner. But most cameras have limited computing power, and images captured in the real world have their own problems, such as noise, blur, and rotation jitter, which need to be solved if we want to correctly detect weapons. Therefore, in this study, we develop a weapon detection system for surveillance images by employing a deep learning model.

IV. LITERATURE SURVEY

When it comes to the potential risk it poses to people, suspicious activity is a problem. It is essential to detect criminal activity given the rise in it in urban and suburban areas in order to reduce such occurrences. In the early days, surveillance was carried out manually by humans, which was a taxing task because suspicious activity was rare compared to everyday activity. Different methods of surveillance were introduced with the introduction of intelligent surveillance systems. We concentrate on examining two situations where, if ignored, there is a high risk to human lives: identifying potential crimes involving firearms and identifying abandoned luggage on surveillance footage.[1]

Automated teller machines (ATMs) are frequently used to conduct financial transactions and are quicklyevolving into a necessity of daily life. Money can be withdrawn, deposited, and transferred between accounts whenever needed with the use of ATMs. However, this convenience is tainted by criminal activity, which is rapidly compromising bank clients' security, such as money theft and assaults on consumers. In this research, we provide a video-based framework that can quickly spot suspicious activity at ATM installations and sound an alarm in the event of any suspicious occurrence. The suggested method uses Hu moments and motion history images (MHI) to extract pertinent features from video .[2]

This publication takes into account original works that expand the field of knowledge. Even if no novel information or ideas are given, original reviews and surveys are accepted. The article's results shouldn't have been submitted to or published elsewhere. It is possible to submit expanded versions of conference publications. The language used to write articles must be standard English and be understandable.[3]

The computer analysis of visual data is the main topic of this publication. The journal Computer Vision and Image Understanding publishes papers on all facets of image analysis, from early vision's low-level, iconic processes to recognition and interpretation's high-level, symbolic rocesses. The domain of image understanding is addressed over a wide range of topics, with papers providing perspectives that diverge from prevailing viewpoints.[4]

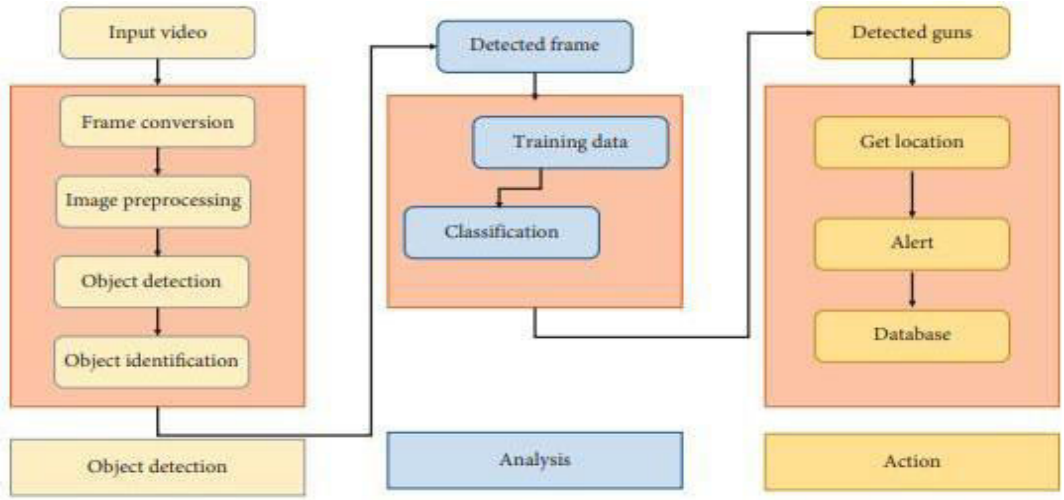
International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | A Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 1, January 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1201053 |

V. SYSTEM ARCHITECTURE



VI. SYSTEM IMPLEMENTATION

Gun Detection:

VI. CONCLUSION

In this study, the state-of-the-art YOLO V3 object detection model was implemented and trained over our collected dataset for weapon detection. We propose a model that provides a visionary sense to a machine or robot to identify the weapon and can also alert the human administrator when a gun or a firearm is obvious in the edge. There is an immediate need to update the current surveillance capabilities with improved resources to support monitoring the effectiveness of human operators. Smart surveillance systems would fully replace current infrastructure with the

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | A Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 1, January 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1201053 |

growing availability of low-cost storage, video infrastructure, and better video processing technologies.

REFERENCES

1. S. A. Velastin, B. A. Boghossian, and M. A. Vicencio-Silva, "A motion-based image processing system for detecting potentially dangerous situations in underground railway stations," *Transportation Research Part C: Emerging Technologies*, vol. 14, no. 2, pp. 96–113, 2006.
View at: Publisher Site | Google Scholar
2. United Nations, *Office on Drugs and Crime, Report on "Global Study of Homicide"*, https://www.unodc.org/documents/data-and-analysis/gsh/Booklet1.pdf.
3. P. M. Kumar, U. Gandhi, R. Varatharajan, G. Manogaran, R. Jidhesh, and T. Vadivel, "Intelligent face recognition and navigation system using neural learning for smart security in internet of things," *Cluster Computing*, vol. 22, no. S4, pp. 7733–7744, 2019.
View at: Publisher Site | Google Scholar
4. V. Babanne, N. S. Mahajan, R. L. Sharma, and P. P. Gargate, "Machine learning based smart surveillance system," in *Proceedings of the 2019 Third International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud)(I-SMAC)*, pp. 84–86, IEEE, Palladam, India, December 2019. View at: Google Scholar
5. A. Joshi, N. Jagdale, R. Gandhi, and S. Chaudhari, "Smart surveillance system for detection of suspicious behaviour using machine learning," in *Intelligent Computing, Information and Control Systems. ICICCS 2019. Advances in Intelligent Systems and Computing*, A. Pandian, K. Ntalianis, and R. Palanisamy, Eds., vol. 1039, Springer, Cham, Berlin, Germany, 2020.
View at: Publisher Site | Google Scholar
6. K.-E. Ko and K.-B. Sim, "Deep convolutional framework for abnormal behavior detection in a smart surveillance system," *Engineering Applications of Artificial Intelligence*, vol. 67, pp. 226–234, 2018.
View at: Publisher Site | Google Scholar
7. S. Y. Nikouei, Y. Chen, S. Song, R. Xu, B.-Y. Choi, and T. Faughnan, "Smart surveillance as an edge network service: from harr-cascade, SVM to a lightweight CNN," in *Proceedings of the 2018 IEEE4th International Conference on Collaboration and Internet Computing (CIC)*, pp. 256–265, Philadelphia, PA, USA, April 2018.
View at: Publisher Site | Google Scholar
8. R. Xu, S. Y. Nikouei, Y. Chen et al., "Real-time human objects tracking for smart surveillance at the edge," in *Proceedings of the 2018 IEEE International Conference on Communications (ICC)*, pp. 1– 6, Kansas City, MO, USA, May 2018.
View at: Publisher Site | Google Scholar
9. S. Ahmed, A. Ahmed, I. Mansoor, F. Junejo, and A. Saeed, "Output feedback adaptive fractional-order super-twisting sliding mode control of robotic manipulator," *Iranian Journal of Science and Technology, Transactions of Electrical Engineering*, vol. 45, no. 1, pp. 335–347, 2021.
View at: Publisher Site | Google Scholar
10. S. Ahmed, H. Wang, and Y. Tian, "Adaptive fractional high-order terminal sliding mode control for nonlinear robotic manipulator under alternating loads," *Asian Journal of Control*, 2020.
View at: Publisher Site | Google Scholar
11. S. Ahmed, H. Wang, and Y. Tian, "Adaptive high-order terminal sliding mode control based on time delay estimation for the robotic manipulators with backlash hysteresis," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 51, no. 2, pp. 1128–1137, 2021.
View at: Publisher Site | Google Scholar
12. J. Redmon, S. Divvala, R. Girshick, and A. Farhadi, "You only look once: unified, real-time object detection," in *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, pp. 779–788, Las Vegas, NV, USA, June 2016.
View at: Google Scholar
13. A. Farhadi and R. Joseph, "Yolov3: an incremental improvement," *Computer Vision and Pattern Recognition*, 2018.
View at: Google Scholar

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.379

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details