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PROPOUNDING FIRST ARTIFICIAL INTELLIGENCE APPROACH FOR PREDICTING ROBBERY BEHAVIOR POTENCIAL IN AN INDOOR SECURITY CAMERA

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ABSTRACT

This project pioneers the development of an innovative Artificial Intelligence (AI) approach for predicting potential robbery behavior in indoor security camera footage. With an increasing demand for proactive security measures, the proposed system harnesses the capabilities of AI to analyze video data and predict potential robbery behavior before it occurs. The approach combines advanced computer vision techniques and machine learning algorithms to recognize patterns indicative of suspicious activities. By training the system on a diverse dataset of indoor security camera footage, the model learns to distinguish normal activities from potential robbery behaviors. The project aims to contribute to the enhancement of indoor security systems, providing a proactive and intelligent tool for early detection and prevention of criminal activities, ultimately improving safety and security in indoor environments.

I. INTRODUCTION

Motivation

The increasing need for advanced security systems and the rising concerns surrounding indoor safety have motivated the development of an Artificial Intelligence-based approach for predicting potential robbery behavior in indoor security camera footage. Conventional surveillance systems often rely on reactive measures, and there is a growing demand for proactive and intelligent security solutions that can anticipate and prevent criminal activities before they escalate. By leveraging the capabilities of AI, this project aims to address the gaps in existing security systems and contribute to a more

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efficient and effective approach to indoor security.

Problem definition

The problem at hand is the limitation of traditional security systems in providing proactive measures for preventing indoor criminal activities, particularly robbery. Existing surveillance methods may struggle to identify potential threats in real-time or provide early warnings to security personnel. This gap in early detection poses a significant challenge in ensuring the safety and security of indoor spaces. The project seeks to address this problem by introducing an Artificial Intelligence-based system that can analyze security camera footage, predict potential robbery behavior, and trigger timely alerts or preventive actions.

Objective of project

The primary objective of this project is to develop an advanced Artificial Intelligence approach for predicting robbery behavior potential in indoor security camera footage. The project aims to:

1.Utilize computer vision techniques and machine learning algorithms to analyze video data for recognizing patterns associated with potential robbery behavior.

2.Train the AI model on a diverse dataset of indoor security camera footage to enable it to distinguish normal activities from suspicious behaviors.

3.Implement a proactive security system that can predict and alert security personnel to potential robbery incidents in real-time.

4.Improve overall indoor security by providing an intelligent tool that contributes to early detection and prevention of criminal activities.

Scope of project

The scope of this project encompasses the development and implementation of an AI-based predictive system tailored for indoor security applications. The system will focus on analyzing video data from indoor security cameras to identify patterns indicative of potential robbery behavior. The scope also includes the training of the AI model using a diverse dataset to ensure robust performance in different indoor environments. The project aims to offer a scalable and adaptable solution that can be integrated into existing security infrastructure, providing enhanced

capabilities for early detection and prevention of indoor criminal activities.

II. EXISTING SYSTEM AND DIADVANTAGES

The current state of indoor security camera systems designed for predicting robbery behavior potential is marked by several limitations that necessitate the development of a more sophisticated solution, as proposed by the "Propounding First Artificial Intelligence Approach for Predicting Robbery Behavior Potential in an Indoor Security Camera" project. Existing systems often operate reactively, relying on rudimentary motion detection or predefined rule triggers, resulting in delayed responses to potential threats. High rates of false positives contribute to alert fatigue among security personnel, undermining the efficacy of threat prevention. Moreover, these systems typically exhibit limited behavioral analysis capabilities, focusing on basic motion detection rather than nuanced assessments of human behaviors indicative of potential robbery. The inability to adapt and learn over time, the reliance on single modality analysis, and the absence of advanced predictive analytics further hinder the effectiveness of existing systems. Scalability challenges, limited integration with artificial intelligence, dependency on static rules, and potential privacy concerns also characterize these systems. The "Propounding First Artificial Intelligence Approach" project aims to address these disadvantages by leveraging advanced AI techniques, multi-modal analysis, and predictive analytics to enhance the accuracy and proactivity of threat prediction in indoor security camera systems.

III.PROPOSED SYSTEM AND ADVANTAGES

The proposed system for predicting robbery behavior potential in indoor security cameras is a transformative solution that harnesses advanced artificial intelligence (AI) techniques, multi-modal analysis, and predictive analytics to overcome the limitations of existing systems. By implementing sophisticated AI-driven behavioral analysis, the system moves beyond conventional motion detection, enabling a nuanced understanding of human activities indicative of potential threats. The inclusion of multi-modal analysis, incorporating video, audio, and environmental sensors, provides a comprehensive approach, capturing diverse aspects of potential robbery

behavior for more accurate threat assessments. One of the distinctive features is the integration of predictive analytics, empowering the system to foresee potential threats based on historical patterns and evolving trends, thereby facilitating proactive measures to mitigate risks before they escalate. The adaptive learning mechanism ensures continuous refinement of threat prediction models, allowing the system to adapt to changing environments and tactics employed by potential perpetrators. Addressing scalability challenges, the system is built on a scalable architecture, efficiently handling data from multiple cameras and surveillance points. Privacy concerns are mitigated through sophisticated AI algorithms that differentiate between normal activities and potential threats, ensuring a focused approach without unnecessary intrusion. With reduced false positives, real-time alerts, centralized monitoring integration, and a user-friendly interface, the proposed system offers an enhanced and streamlined experience for security personnel. Continuous optimization and updates based on feedback and emerging technologies ensure the system's long-term effectiveness and relevance, marking a significant advancement in indoor security camera systems for predicting and preventing robbery behavior potential.

IV.MODULES

Service Provider

In this module, the Service Provider has to login by using valid user name and password. After login successful he can do some operations such as

Login, Browse Datasets and Train & Test Data Sets, View Trained and Tested Accuracy in Bar Chart, View Trained and Tested Accuracy Results, View Prediction Status, View Status Ratio, Download Predicted Data Sets, View Ratio Results, View All Remote Users.

View and Authorize Users

In this module, the admin can view the list of users who all registered. In this, the admin can view the user's details such as, user name, email, address and admin authorizes the users.

Remote User

In this module, there are n numbers of users are present. User should register before doing any operations. Once user registers, their details will be stored to the database. After registration successful, he has to login by using authorized user name and password. Once Login is successful user will do

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some operations like register and login,and predict ,view your profile.

V.CONCLUSION

This research work proposes an approach for RBP prediction in video surveillance images. There are several challenges of CCTV videos like the various ways for robbery incidence, variety in camera angle mounted in different places and low resolution of video images acquired by CCTVs. Tackling these obstacles ensues timely actions and prevents robbery fully or partially observable from surveillance videos. This work is conducted because based on our extensive literature review, despite significance of preventing robbery occurrence, no RBP prediction has been done before. We extract some common scenarios of robbery occurrence with the help of an expert comments and by watching several robbery videos from CCTVs. We investigate these scenarios to deduce more common features between them and implement a practical approach for RBP prediction. Our study proposes a deep-learning based approach with the help of fuzzy inference machine to calculate potential of robbery. This approach provides a retrained YOLOV5 algorithm by gathering proper dataset of human with or without head cover. This deep-learning based algorithm is used to efficiently implement crowd and head cover detection modules. This paper also executes loitering module by our defined methodology which calculates the Euclidean traveled distance of individuals using Deep SORT method. A fuzzy inference machine is delineated to infer robbery potential of videos for every 10 frames and average them for every snippet based on three module results. The proposed method is applied to the Robbery folder of UCF-Crime dataset and F1-score of proposed system is 0.537. This result shows that our proposed methodology can correctly predict robbery potential for more than half of the videos.

Accordingly, we change the problem of predicting to robbery detection one. Thus, we can compare it with prior literature which have worked on the anomaly-detection specially the robbery detection and their dataset is UCF-Crime. F1-score of detection method is 0.607 and it is utmost among other methods. The result proves that our proposed scenario-based system works correctly with high ability in detecting and also predicting robbery behavior. Our proposed approach can be used by any

places which have surveillance cameras and want to prevent robbery crime. They do not need to employ a person to watch the real time videos of theses cameras precisely and infer the robbery potential. However, this person should watch the videos uninterruptedly to not make a mistake. Additionally, any one can make our methodology privately by changing the thresholds value due to particular culture.

We can increase F1-score by improving loitering detection accuracy. As future work, we intend to achieve an improved tracking algorithm for low-resolution video images by improving Deep SORT method. Human of low-resolution videos cannot be detected precisely to track. This is because the detector of Deep SORT algorithm is FRR CNN. Therefore, we will change detection framework of Deep SORT algorithm to retrained YOLOV5 by low-resolution human images. The proposed YOLOV5 will have only one object class, low resolution images.

VI.REFERENCES

1 .W. Sultani, C. Chen and M. Shah, "Real-world anomaly detection in surveillance videos", Proc. IEEE/CVF Conf. Comput. Vis. Pattern Recognit., pp. 6479-6488, Jun. 2018.

2. J. James P. Suarez and P. C. Naval, "A survey on deep learning techniques for video anomaly detection", arXiv:2009.14146, 2020.

3. T. Mei and C. Zhang, "Deep learning for intelligent video analysis", Proc. 25th ACM Int. Conf. Multimedia, pp. 1955-1956, Oct. 2017.

4. H. Yan, X. Liu and R. Hong, "Image classification via fusing the latent deep CNN feature", Proc. Int. Conf. Internet Multimedia Comput. Service, pp. 110-113, Aug. 2016.

5. M. Ghazal, C. Vazquez and A. Amer, "Real-time automatic detection of vandalism behavior in video sequences", Proc. IEEE Int. Conf. Syst. Man Cybern., pp. 1056-1060, Oct. 2007.

6. I. P. Febin, K. Jayasree and P. T. Joy, "Violence detection in videos for an intelligent surveillance system using MoBSIFT and movement filtering algorithm", Pattern Anal. Appl., vol. 23, no. 2, pp. 611-623, May 2020.

7. W. Lao, J. Han and P. De With, "Automatic video-based human motion analyzer for consumer surveillance system", IEEE Trans. Consum. Electron., vol. 55, no. 2, pp. 591-598, May 2009.

8. A. G. Ferguson, "Predictive policing and reasonable suspicion", Emory Law J., vol. 62, no. 2, pp. 259, 2012.

9. C. Beck and C. McCue, "Predictive policing: What can we learn from Wal-Mart and Amazon about fighting crime in a recession?", Police Chief, vol. 76, no. 11, pp. 18, 2009.

10. K. J. Bowers and S. D. Johnson, "Who commits near repeats? A test of the boost explanation", Western Criminol. Rev., vol. 5, no. 3, pp. 12-24, 2004.

11. SPD 2021 year-end crime report, 2021, [online] Available: https://www.seattle.gov/documents/Departments/Police/Reports/2021_SPD_CRIME_REPORT_FINAL.pdf.

12. FBI, 2019, [online] Available: https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019/topic-pages/robbery.

13. B. Fawei, J. Z. Pan, M. Kollingbaum and A. Z. Wyner, "A semi-automated ontology construction for legal question answering", New Gener. Comput., vol. 37, no. 4, pp. 453-478, Dec. 2019.

14. R. Thompson, Understanding theft from the person and robbery of personal property victimisation trends in England and Wales, 2014.

15. P. J. Cook, "Robbery violence", J. Criminal Law Criminol., vol. 78, no. 2, pp. 357-376, 1987.