

**SCHOOL OF ELECTRICAL ND ELECTRONIC ENGINEERING**

MINI PROJECT REPORT

ON

**“AI TRAINED SECURITY SYSTEM FOR BETTER SECURITY ON PRIVATE PROPERTY”**

Submitted in partial fulfillment of the requirements for the award of the Degree of

**Bachelor of Technology**

**In**

**Electrical and Computer Engineering**

Submitted by

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Under the guidance of

Prof.Seema Magadum

DESIGNATION

REVA UNIVERSITY

**2022-2023**

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**DECLARATION**

We, **Mr. Ashish K Jacob(R20EL007), Miss.Heba Yusuf(R20EL022) Miss.Rakshitha Megha S(R20EL037)** students of B. Tech, belongs to the School of Electrical and Electronics Engineering, REVA University, declare that this Project Report entitled **“AI TRAINED SECURITY SYSTEM FOR BETTER SECURITY ON PRIVATE PROPERTY ”** is the result the of project work done by me under the supervision of **Prof.Seema Magadum** in School of Electrical and Electronics Engineering.

We are submitting this Project Report in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Electrical and Electronics Engineering by the REVA University, Bengaluru during the academic year 2022-23.

We further declare that this project report or any part of it has not been submitted for the award of any other Degree / Diploma of this University or any other University/ Institution.





*(Signature of the Students)*

*Certified that this project work submitted by* ***Ashish K Jacob, Heba Yusuf, Rakshitha Megha S*** ha*s been carried out under my / our guidance and the declaration made by the candidate is true to the best of my knowledge.*

*Signature of Guide Signature of Director Date ………. Date ……….*

*Official Seal of the School*



**SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**CERTIFICATE**

Certified that the project work entitled **“AI TRAINED SECURITY SYSTEM FOR BETTER SECURITY ON PRIVATE PROPERTY”** carried out under my / our guidance by **Ashish K Jacob(R20EL007), Heba Yusuf(R20EL022), Rakshitha Megha S(R20EL037)** are bonafide students of REVA University during the academic year 2022-23, are submitting the project report in partial fulfillment for the award of  **Bachelor of Technology i**n **Electrical and Electronics Engineering** during the academic year **2022–23**. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said Degree.

**Dr. Raghu C N, Deputy Director, School of EEE, REVA University**

**Prof.Seema Magadum**

**Asst. Professor, School of EEE**

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**­­­­­­­­­­­­­­­­­­­**

**Dr. M Dhanamjaya,**

**Vice Chancellor,**

**REVA University**

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**Name of the Examiner with affiliation Signature with Date**

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**ACKNOWLEDGMENTS**

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**Ashish K Jacob(R20EL007)**

**Heba Yusuf(R20EL022)**

**Rakshitha Megha S(R20EL037)**

**ABSTRACT**

Our project uses OpenCV

OpenCV is a library of programming functions mainly aimed at real-time computer vision. Originally developed by Intel, it was later supported by Willow Garage then Itseez. The library is cross-platform and free for use under the open-source Apache 2 License.

The code is written in python.

The GUI (graphical user interface) used in this project is PyGUI to let the user decide between what to use and what not to use

The main Idea of the algorithm are as follows:

most of the statistics recorded is idle facts in which no pastime takes place. It uses action reputation to clear out the idle movement records and trims the component where pastime has been recorded the usage of movement detection and diverse movements.

Run the given data through the image processor and use that to work on the project.

Once the data is available it is then sent to the base system for it to be recorded and stored in a server (mostly plan on using mysql or MongoDB.)

Then once all the needed information is processed and stored in the database a web app can access the database server to present the user with the needed information in their couch

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**CHAPTER 1**

**INTRODUCTION**

**1.1 History**

The use of artificial intelligence (AI) in security has a relatively short history, but it has already had a significant impact on the field. In the early days of AI, researchers focused on developing systems that could perform specific tasks, such as playing chess or solving math problems. However, as AI technology has advanced, it has been applied to a wide range of security applications.

One of the earliest examples of AI being used in security was in the development of expert systems, which were designed to replicate the decision-making abilities of human experts in a particular domain. These systems were used in a variety of security contexts, including intrusion detection, risk assessment, and fraud detection.

In recent years, AI has been used to improve the effectiveness of security systems in a number of ways. For example, AI-powered security cameras can analyze video feeds in real-time to identify suspicious activity, while AI-based intrusion detection systems can analyze network traffic to identify and alert on potential cyber threats.

AI has also been used to improve the accuracy and efficiency of security operations centers (SOCs). By analyzing large amounts of data and using machine learning algorithms, AI-powered SOCs can identify patterns and trends that may indicate a security incident is imminent.

**1.2 Project overview**

Over the previous couple of years because of globalization a major exchange has been came about in exceptional sectors global including enterprise, protection, fitness, etc. one of their key sectors that are now challenge global is security and privateness. Because of the emergence of shielding premises, offering security is one of the most important obligations……

~~My project~~ aims to make a contribution to this era of security

It aims to make securing a house automatic task. The more the security system is used the more it autonomous it becomes making it the perfect candidate to be used in big houses with old people in it.

**CHAPTER 2**

**LITERATURE SURVEY**

**[1] The Impact of Artiﬁcial Intelligence on Data System Security:A Literature Review**

**Ricardo Raimundo 1and Albérico Rosário**

**Abstract:**

Diverse forms of artiﬁcial intelligence (AI) are at the forefront of triggering digital security innovations based on the threats that are arising in this post-COVID world. On the one hand, companies are experiencing difﬁculty in dealing with security challenges with regard to a variety of issues ranging from system openness, decision making, quality control, and web domain, to mention a few. On the other hand, in the last decade, research has focused on security capabilities based on tools such as platform complacency, intelligent trees, modeling methods, and outage management systems in an effort to understand the interplay between AI and those issues. The dependence on the emergence of AI in running industries and shaping the education, transports, and health sectors is now well known in the literature. AI is increasingly employed in managing data security across economic sectors. Thus, a literature review of AI and system security within the current digital society is opportune. This paper aims at identifying research trends in the ﬁeld through systematic bibliometric literature review (LRSB) of research on AI and system security. The review entails 77 articles published in the Scopus database, presenting up-to-date knowledge on the topic. The LRSB results were synthesized across current research subthemes. Findings are presented. The originality of the paper relies on its LRSB method, together with an extant review of articles that have not been categorized so far. Implications for future research are suggested

**Introduction:**

The assumption that the human brain may be deemed quite comparable to computersin some ways offers the spontaneous basis for artiﬁcial intelligence (AI), which is supportedby psychology through the idea of humans and animals operating like machines thatprocess information by devices of associative memory [1]. Nowadays, researchers areworking on the possibilities of AI to cope with varying issues of systems security acrossdiverse sectors. Hence, AI is commonly considered an interdisciplinary research area thatattracts considerable attention both in economics and social domains as it offers a myriadof technological breakthroughs with regard to systems security [2]. There is a universaltrend of investing in AI technology to face security challenges of our daily lives, such asstatistical data, medicine, and transportation [3].Some claim that speciﬁc data from key sectors have supported the development of AI,namely the availability of data from e-commerce [4], businesses [5], and government [6],which provided substantial input to ameliorate diverse machine-learning solutions andalgorithms, in particular with respect to systems security [7]. Additionally, China andRussia have acknowledged the importance of AI for systems security and competitivenessin general [8,9]. Similarly, China has recognized the importance of AI in terms of housingsecurity, aiming at becoming an authority in the ﬁeld [10]. Those efforts are already beingcarried out in some leading countries in order to proﬁt the most from its substantial

**Conclusion:**

This piece of literature allowed illustrating the AI impacts on systems security, whichinﬂuence our daily digital life, business decision making, e-commerce, diverse social andlegal issues, and neural networks.First, AI will potentially impact our digital and Internet lives in the future, as the majortrend is the emergence of increasingly new malicious threats from the Internet environment;likewise, greater attention should be paid to cyber security. Accordingly, the progressivelymore complexity of business environment will demand, as well, more and more AI-basedsupport systems to decision making that enables management to adapt in a faster andaccurate way while requiring unique digital e-manpower.Second, with regard to the e-commerce and manufacturing issues, principally amidstthe world pandemic of COVID-19, it tends to augment exponentially, as already observed,which demands subsequent progress with respect to cyber security measures and strategies.The same, regarding the social applications of AI that, following the increase in distance

**[2] Camera based Smart Surveillance System-Literature Survey Ishan Kokadwar, Anurag Kulkarni, Sayali Khare, Vaibhav Limbhore, Swati Chandurkar**

**Abstract:**

Over the last few years due to globalization a major change has been occurred in different sectors worldwide such as business, security, health, etc. One of their key sectors which are now concern worldwide is security and privacy. Due to the emergence of protecting premises, providing security is one of the most important tasks. Thus, to provide security, the video surveillance system was introduced. A video surveillance system is used for the monitoring of the behavior, activity or other information generally of people in a specific area. The application of video surveillance is now not only limited to provide security for area but expanded to the various sectors. This paper aims to elaborate the various techniques in video surveillance, automated video analysis and insight generation. These techniques were used to build the Software System for Automated Surveillance for Academic Institution’s Campus premises.

**Introduction:**

Nowadays, security is measure concern in every organization. To this satisfy issue the organizations use surveillance cameras. The limitation in using them is that there must be an operator to watch the stream from the cameras and take respective decisions. The use of camerabased surveillance has extended from security to tracking, environment and threat analysis and many more. By using the power of modern computing and hardware it is possible to automate the process. The emergence of machine learning, Deep learning, and computer vision tools have made this process efficient and feasible for general purpose use. So instead of using human support for monitoring and insight generation, we can let the processor and machine learning system do the task in a more efficient and errorless way. Here we have mentioned few approaches which had helped us in solving this problem.

**Conclusion:**

In this paper we have discussed data collecting, storing and analysis technique for CCTV Camera Surveillance. We found that for feature extraction and tuning system to work hand in hand with deep learning model haar cascade was useful. By using Image Mosaicing technique images could be stitched and camera position limitation were removed. Thus, among many methods of collecting camera input we found IP based camera technique on distributed network us useful and CNN model was useful for detail analysis.

**[3] : AI enabled smart surveillance system (J. Phys.:Conf. Ser. 1916 012034)**

**Abstract :**

The conventional household door locking system has lot of drawbacks and it is still yet not resolved. Most of the security systems so far in our markets includes video surveillance or vigilance system. In order to improve security level facial recognition and object detection technique using CNN algorithms can be used which is also provides remote proctoring facilities to owners. The proposed system detects the object and identifies the anomalous activity near the door by applying Convolutional Neural Network. Electric door lock solenoid is used to unlock the door. An ultrasonic sensor is utilized to measure the distance between a person and door through the facial recognition when it reaches a certain threshold value that has been kept to detect the person reaching the doors and it tries to capture the human image only if it is mismatched from database. When a stranger try to access the door an alert message might be triggered to registered mobile number and he proprietor would be able to control the door locking system and inspect the image of person which has been mailed.

**Introduction :**

Nowadays, the safety and security are most challenges issues in modern time society to stop people life and their valuables assets from illegal handling. As a result, the safety and security extending to personal social security to protect every individual’s personal information, valuable things and their day to day activities. Hence, the private security services moving towards to integration of video surveillance, door lock access conflicts in personalized monitored areas [1, 2]. The personal authorization or network based remote authorization or smart devices based on local authorization, or the illegal access risk within the building facility. In recent era, the network based centralized electronic access system developed for security gate and control and door access control in smart buildings with different user authorization interfaces like wireless communication technology like Near-Field communication (NFC), Contactless Communication Technology like Radio-Frequency Identification (RFID), fingerprint recognizer, and face recognizer, etc. [3-7] to limit the physical access of the people within the buildings or assets. The building facility localized electronic access system receives the user specific authentication and authorization information from a centralized access system server and performs the automated gate or door lock open or close control for the precise individuals to access control system user authentication interfaces are subject to the security compromising by exposing the password or digital keys to strangers. Also, the RF-based available user interfaces are susceptible to security threats. However, theinstallation cost of remote proctored system would be high and also has the weakness of access distance, security and network access efficiency issue. Recent advancement in IoT plays vital role in remote monitoring and security systems. These security systems can be improved by providing intelligence to the hardware components. AI based Jetson Nano device supports to integrate intelligence to detect anomalous activities by enabling deep learning concept. It will increase the efficiency of the security system

**Conclusion :**

Our proposed system is to provide safety and security. This proposed system helps people to secure house from an unauthorized person. To lock and unlock the smart door we don’t need any keys it will open only for an authorized person and it doesn’t open for an unauthorized person. In bounding boxes an algorithm was implemented and its process is to distinguish the authorized and unauthorized person. The bounding boxes marking green and red for detected person. In future we can enhance the execution time delay which is useful for identifying the burglars quickly and taking action according to the situation

**CHAPTER 3**

**PROPOSED WORK**

**3.1 Security module**

**3.1.1 Introduction**

**3.1.2 OpenCV2 and its implementation**

**3.1.3 PYQT6 and its implementation**

**3.1.4 Facial Recognition working**

**3.2 Communication between the different Libraires**

**3.2.1 OpenCV2 to PYQT6**

**3.2.2 OpenCV2 to Facial Recognition Module**

**3.3 Additional features available**

**3.4 Final Project Outlook**

**CHAPTER 4**

**RESULT ANALYSIS**

**4.1 Automatic Security System**

**4.2 Usage of the software**

**CHAPTER 5**

**CONCLUSION AND FUTURE SCOPE**

5.1 conclusion

5.2 future scope