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A Review on Intruder Alarm System

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Abstract: ***This paper presents a comprehensive description, from a security and accessibility perspective, of various security systems and technologies. For everyone who owns or rents a home, home security should be a top concern. Every individual needs a safe and secure residential space. Most of the market's security systems; however, are either costly or unsafe. Many times there are a number of loopholes present in the security systems and security devices which can be breached easily. The various security automation technologies considered in this review paper include Fiber sensor, Accelerometer, Global Mobile Communication System, Mobile Home Automation Systems, Internet Home Automation Systems. There is a decrease in the price of sensors as we see progress in the technology market, which makes vibration signature identification systems a cheap and effective alternative to the expensive security systems on the market.***

Keywords: Abduction, Advancement in Technology, Internet of Things (IoT), Security and Theft, motion sensor ,magnetic sensor, glass break detector, vibration sensor, lpg, etc

I. INTRODUCTION

The most basic definition of any security system is generated from its name; it is literally a means or method by which something is secured through a system of interworking components and devices. In this instance, we are talking implements a form of a signal, shout, and sound. It was then replaced with the help of the clapping of hands and with the instilling of signals to notify society or to blowout a certain message during the early periods of some African society.

The most significant among these security system technologies is the use of remote signaling thief security alarm. This type of security alarm system was design in the early 1970s. This administers a fast inventive reaction to alarm calls. However, organizations and industries are based on the supply of security service apparatus that usually come in dissimilar designs to keep burgles and thugs away from the environment that are not built for them. Today, we have an innovative group of electronic security alarm system with complexity at various levels.

All these methods of warning are fundamental, unreliable and unsystematic. With the help of advancement in technology today, these undeveloped methods of producing security alarm systems were changed by programmed security alarm systems in the late eighteenth period. These types of electronic security alarm systems usually work without the aid of any human being energy. When the modern security alarm system senses a positive signal which may be a sign of intrusion or breakage, it normally gives a warning of a very high sound or sends an alert to the owner subject to the type of security design.

The intruder alarm security is initiate by a cycle, from a comprehensive automated circuit loop that is close with an alarm at its output, or an indication to inform the owner of danger. They are a central control box that normally observer different gesture indicators and the perimeter protections that give an alarm or notify the owner when any of this sensor is a trigger.

Some of the intruder's security alarms system normally functions delicately on the conception of a magnetic contact and others. For those types of security systems working with the sensors, these devices are usually positioned at any entering of the industries, organizations, and building. In this case, the sensor will activate an alarm if the device gets a signal above its set inception. In the case of motion detection, the ultrasonic sensor is normally used; the point indicator can be used in the concession of a criminal alarm, theft or illegal individuals at certain points such as doors or windows.

II. INTRUDER ALARM SYSTEM

People's demand for a safe, comfortable and intelligent living environment is becoming more urgent as the economy, living conditions, and the environment deteriorate. A smart home is becoming increasingly popular. Future life can be more intelligent, consume less resources and make better use of renewable energy. The safety factor of smart homes has improved as technology has progressed. Automatic control technology, awareness technology, mobile communication technology, audio and video processing technology and other technologies are all integrated into smart homes. Smart home technology has steadily made its way into the average home. Despite the fact that some technologies are fairly mature, there is still a lot of room for innovation in this sector. Smart home systems focused on the Internet of Things (IoT) have inevitably become a research hotspot in recent years.

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As a consequence, this article delves into the viability of smart home device design from both a hardware and software perspective. Using the stereo matching algorithm, the device information is analysed and monitored accurately by constructing the application of an IoT module. The system's overall structure has been strengthened, ensuring the security and intelligence of users' homes while also encouraging the production of smart homes. The output of the intruder alarm system can differ from grief sign or loud bell cautionary to automatic telephone buttons and flashing outdoors rays. It accomplishes the warning purpose possible of informing neighbors of an illegal individual and at the same time, it will function as a signal to the police.

Automated dialers linked to the burglar alarms are set to call the police officials and to play a pre-recorded report notifying the police personal that the organization, industries or house has been break. In this research, advances in security alarm system technologies using different types of sensors that are used in the security system and advancing the security system-using the internet of things (IoT) against abduction or intrusion are review considering an intruder alarm. A security alarm system has been a great concern in the world nowadays, considering the surge in burglaries in different parts of the world today and the rise in abduction, everyone needs to take protective actions to avoid an illegal entering into their industries, organizations or homes.

The point that security alarm system exists in our environment or homes is often a hindrance to frighten a burglar before trying to force an entry, making the possessions of it in our home or environments, will make you feel safe and increase peace of mind to the users.

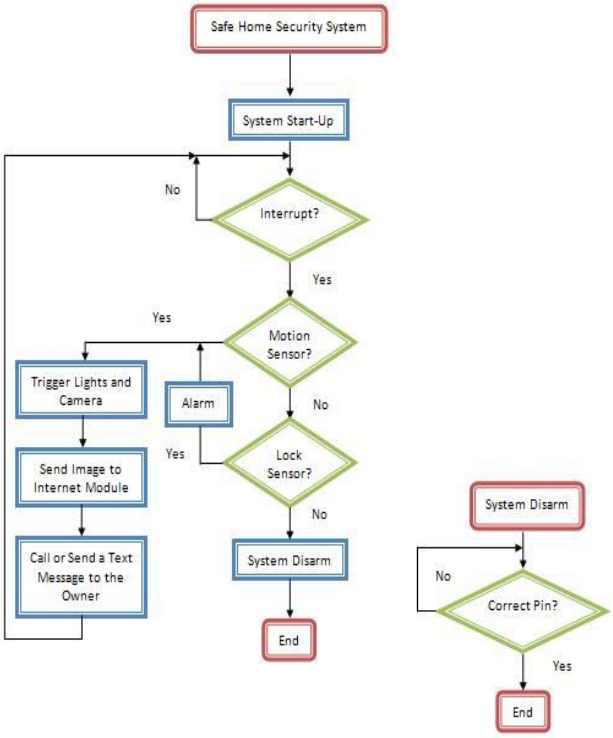


Figure1: general operating flowchart of intruder alarm system

III. LITERATURE REVIEW

Sydney Mambwe Kosongo,Yanxia Sun [1] The Internet of things (IoT) enables a large number of physical things or objects to connect, communicate, and exchange data with each other. IoT techniques span from health care to tactical military, in which human care is a type of classical application. The objects of human care services could include various kinds of medical equipment, even body parts. Wireless sensor networks (WSNs) are crucial for connecting, communicating, and exchanging data among such a large number of things. Although WSNs have the advantages of low installation cost, unattended network operation, and flexible deployment, their deficiency in physical defense devices renders both network and information vulnerable for malicious attacks. In general, the intrusion detection has two main techniques: misuse detection and anomaly detection. Misuse detection essentially identifies the previously known attacks from the normal network behaviors, while anomaly detection establishes the normal profiles to detect the new attacks. The combination of these two intrusion detection techniques is the hybrid intrusion detection. All the three techniques have been widely used in IoT.

Rajyavardhan Singhb and Pratyush Jain [2] Internet of Things (IoT) is a new and surging technological advancement where in which the Internet is connected to various day-to-day physical objects belonging to various domains and making them “smart” like that of various machine dependent processes, manufacturing processes and healthcare. It is a system of interrelated computing devices, machines and people. Internet-connected IoT devices brings several benefits in our daily life but are susceptible to security issues. These vulnerabilities to IoT systems create security threats for any smart environment formed around the aforementioned concept. Thus, there is a need for intrusion detection systems (IDSs) which are designed specifically for IoT systems in order to combat these security related threats and create a secure network for the smart environment. IoT devices tend to have limited computing and storage capabilities. Hence, conventional IDSs might not be suitable for such networks. Due to the specifications and protocols of IoT devices, intrusion detection in IoT systems proves to be a challenging task. Thus, the field of intrusion detection systems in IoT systems is one that requires research and considerable effort to address the key security issues and security threats. A literature review is presented on the IDS in IoT topic, with emphasis on the present-day research, challenges and future directions.

Mehmet Çavaş [3] However, this constant advancement of the internet of things (IoT) usefulness is extremely cherishing; the seeing of its security disputes is likewise significant mainly in the state of pervasive accessibility of the internet The rate of theft and abduction in some parts of the world is increasing by the day; this imbibes fears that become a threat to the peace and economic development of any society nowadays. It is paramount to find viable technologies that will secure the lives of humans as countermeasures to tackle this kind of problem. With the help of the latest development of technology, it is possible to secure people’s lives, industries, schools, organizations, and homes using an alarm security system that will monitor, guide and protect against burglar and abductors and make life easier using internet of things (IoT). This paper will review related works on the security alarm system from its origin, its advancement in technology using internet of things (IoT); challenges faced using the internet in the security alarm system and its impact of installing the security alarm systems.

Muhammad Baballe Ahmad1, Abdullahi Abba Abdullahi2, Abubakar Sadiq Muhammad[4] The most basic definition of any security system is generated from its name; it is literally a means or method by which something is secured through a system of interworking components and devices. With the help of the latest development of technology, it is possible to secure people’s lives, industries, schools, organizations, and homes using an alarm security system that will monitor, guide and protect against burglar and abductors, because of the rate of theft and abduction in some parts of the world is increasing by the day; this imbibes fears that become a threat to the peace and economic development of any society or country nowadays. It is paramount to find viable technologies that will secure the lives of humans as countermeasures to tackle this kind of problem. This paper will review literature related to security alarm systems, different types of sensors used in the security system, advances in its technology, and disadvantages of installing the security alarm system and the importance of installation for security purposes in which most of the papers I read did not.

Bello Abubakar Imam[5] The main purpose of the household automation and security system is to help in controlling our household gadgets by the used of various methods such as the user of web pages, android application, and Global System for Mobile communication (GSM) when one is not at his home, office or organization. The system will inform you if theirs is an intrusion or abduction in the secured environment by sending a short message service (SMS) on the person's phone. The system can also assist old age individuals by helping them control their home devices with the aid of their smartphones because they old age will not allow them to go to these places and On or OFF this appliance or to regulate them. The rate of theft and abduction in some parts of Nigeria is increasing by the day; this imbibes fears that become a threat to the peace and economic development of the country. It is paramount to find viable technologies that will secure the lives of humans as countermeasures to tackle this kind of problem. With the help of the latest development of technology, it is possible to secure people’s lives, industries, schools, organizations, and homes using an alarm security system that will monitor, guide and protect against burglar and abductors. This paper will review literature related to security alarm systems, different types of sensors used in the security system, advances in its technology.

Parul Gupta Ms.[6] In a digital era, library professionals are not only responsible for efficient transaction services but also act as custodian of materialsin all forms. With the constraints of funding, more and more librarians are relying on different technological advances such as Electronic Security Systems (ESSs) to provide security to library materials, buildings, and premises. The present paper uses survey methodology to assess the perception of library professionals especially librarians of select libraries of Northern India on the different ESSs such as Radio Frequency Identification (RFID), Closed-circuit television (CCTV), Biometric and Burglar system, and the related applications, benefits, and problems. The work highlighted that most of the libraries are relying on technology such as RFID or Electro-Magnetic (EM) Tags and Surveillance System than Biometric and Burglar for the security of library materials. The study raises awareness of the importance of ESSs for the betterment of the libraries and emphasizes the need to implement such security systems.

Neil Dalal, Nadeem Akhtar[7] Wi-Fi (802.11) networks have become an essential part of our daily lives; hence, their security is of utmost importance. However, Wi-Fi Protected Access 3 (WPA3), the latest security certification for 802.11 standards, has recently been shown to be vulnerable to several attacks. In this paper, we first describe the attacks on WPA3 networks that have been reported in prior work; additionally, we show that a deauthentication attack and a beacon flood attack, known to be possible on a WPA2 network, are still possible with WPA3. We launch and test all the above (a total of nine) attacks using a testbed that contains an enterprise Access Point (AP) and Intrusion Detection System (IDS). Our experimental results show that the AP is vulnerable to eight out of the nine attacks and the IDS is unable to detect any of them. We propose a design for a signature-based IDS, which incorporates techniques to detect all the above attacks. Also, we implement these techniques on our testbed and verify that our IDS is able to successfully detect all the above attacks. We provide schemes for mitigating the impact of the above attacks once they are detected. We make the code to perform the above attacks as well as that of our IDS publicly available, so that it can be used for future work by the research community at large.

Gede Arna Jude Saskara[8] Attacks on wireless networks can disconnect and slow down the network by flooding the network with junk packets or Dos and scanning. To solve these problems, a system that is able to monitor and detect security problems is needed. The system that can detect and monitor security problems is known as the Intrusion Detection System. One of the Intrusion Detection System software that is widely used is Kismet. In this research, the Kismet Intrusion Detection System software used to secure wireless networks was installed on a Raspberry Pi to measure the performance of the Kismet Intrusion Detection System. The method used in this study was a literature review that proceeded with a system design that included designing the topology and tests. The next step was implementing the system, followed by testing the performance of the Intrusion Detection System so that conclusions can be drawn and made into a report. Based on research on Intrusion Detection System Performance using Kismet software installed on the Raspberry Pi, it was concluded that Kismet installed on the Raspberry Pi could detect 10 Denial of Service attacks from 10 attacks with an average detection rate of attacks sent until detected by Kismet was 3.42 seconds. Therefore, it can be said that the performance of the Kismet intrusion detection system installed on the Raspberry Pi was accurate and could detect attacks quickly.

G.H.A. Chaminda[9] e, in this project, it is proposed to develop an indexing system to find relevant events in a CCTV recording. The whole project consists of four sub models such as Image acquisition model, Image processing model, Information extraction model and E-mail generation stage. The proposed project on CCTV Intruder Detection system can successfully identify the intruders, minimize the false alarms and minimize the human supervision of such systems. It automatically detects the unauthorized activities on the premises: for example, it detects unauthorized access to the premises and sends the warning message to the system owner. Then the system owner can respond according to the incident by remotely logging on to the system and viewing CCTV live stream, playing an alarm, calling the police, etc. This system is highly recommended for the home surveillance which has become an integral part of home security system. The technologies used in this project are OpenCV 3.4.1 and Python 3.0. The project has a distinctive edge in terms of time and efficiency when compared with similar systems discussed here. That is, in an ordinary surveillance system, in case of an incident, all the recorded videos should be manually viewed in order to find the intrusion. This consumes lot of time. In contrast, in the present system, an immediate detection can be obtained because of the email that is generated for the user giving such information as time and image of intrusion. Further, the system has another advantage as it is developed to minimize false alarms.

K. Vijayaprabakaran[10] The intruder detection system is targeted for the private areas, restricted areas and for the domestic home applications to notify the entrance of the intruder or any person to the specified areas. The intruder detection system eliminates the theft and entrance of the persons to the restricted areas by notifying the owner or the gardener through the registered application when the system detects an intruder in the locality. In this work an IoT based intruder detection system named Smart-IDS is proposed to avoid the entrance of the person without any special workforce for the target location. The proposed Smart-IDS detects the intruder using the Node MCU and Ultrasonic sensor and the cloud based Blynk application is employed to send the alert notification to the user. The experiments with the proposed Smart-IDS has performed more efficiently. Keywords: Intruder Detection, Node MCU, IoT, Blynk.

IV. CONCLUSION

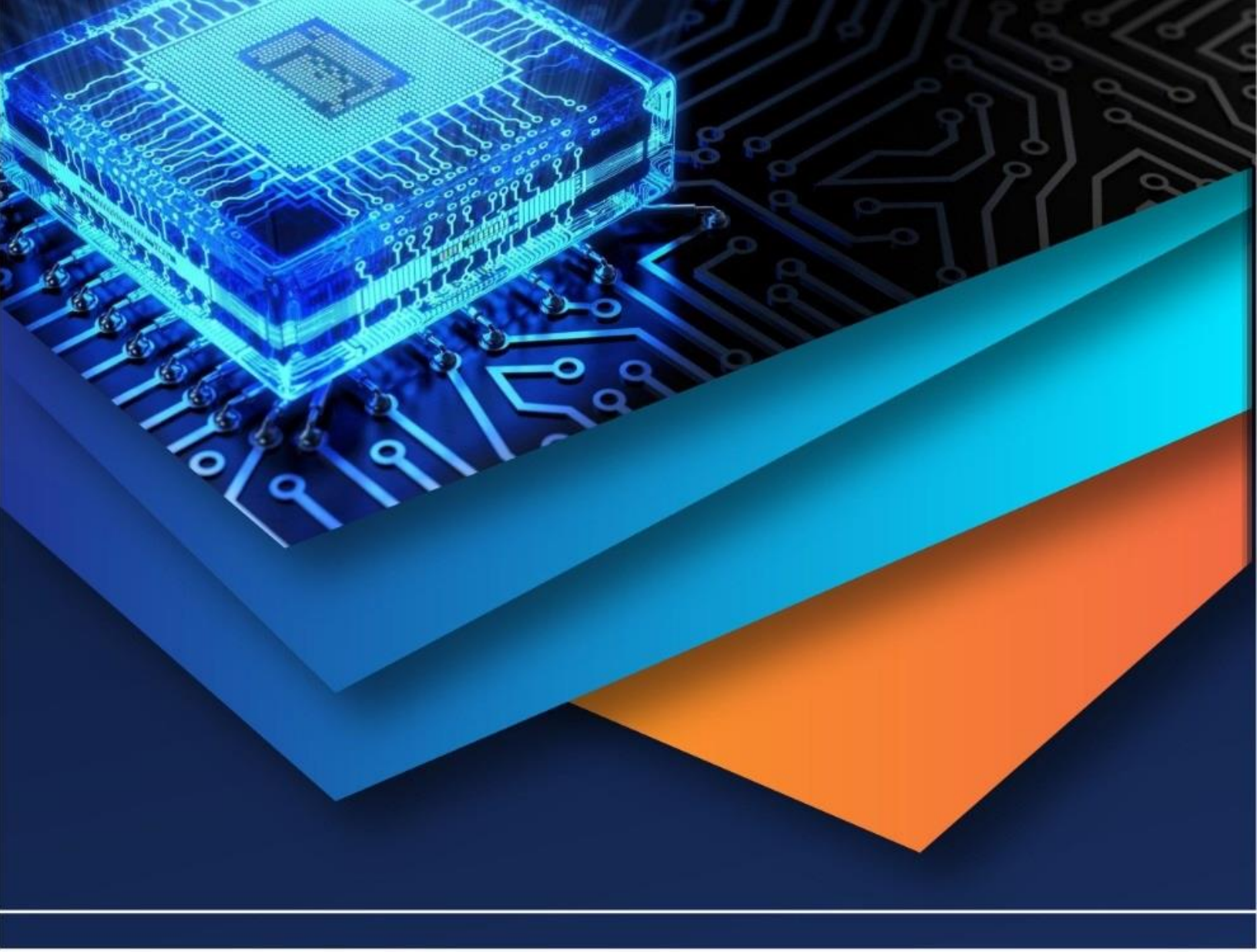
Burglary is the most common cause of property losses. Different types of detectors are used, which are far more effective than human senses, to detect the unwanted changes in the property areas. Too many types of systems are in use for unwanted change detection.

The main objective of this review was to bring about awareness concerning the security actions people can make in their day-to-day life activities due to the rise in abductions and burglary in our neighbouring homes due to joblessness and poverty. This research also reviewed some papers related to security alarm systems, painted out the challenges of the security system to users or homeowners in neighbours their faced, and the importance of installing it in our homes, industries, organizations, and government agencies for security, safety and easy access of our house appliances using modern technology. An intruder alarm security system is designed to detect unauthorised entry into your home or business. The most basic burglar alarms monitor a property for security breaches, such as the opening of a door or the breaking of a window. When movement is detected, a loud siren or silent alarm is triggered.

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