RESEARCH ARTICLE

Journal of Global Humanities and Social Sciences
2024,Vol. 5(8)300-303
DOI: 10.61360/BoniGHSS242016870801

A New Security Alarm Based on Interaction

Hamidreza Hajiaghaee[1], Roghayeh Rezaei[2], Mehdi Gheisari[3,4,5,*], Yang Liu[4,6,*], Naser Khodabakhshi-Javinani[7] and Saman Khammar[8]

[1]Department of Electrical Power Engineering, Islamic Azad University, Iran

[2]Department of Computer Engineering, Technical and Vocational University of Kosar, Iran

[3]Department of Cognitive Computing, Institute of Computer Science and Engineering, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, India

[4]Department of Computer Science and Technology, Harbin Institute of Technology (Shenzhen), China

[5]Young Researcher and Elite Club, Parand Branch, Islamic Azad University, Iran

[6]Research Center for Cyberspace Security, Peng Cheng Laboratory, China

[7]Electrical and Computer Engineering Department, Yadegar-e-Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Iran

[8]Faculty of Electrical and Computer Engineering, University of Sistan and Baluchestan, Iran

Abstract: An alarm or an alarm system is a device that warns or detects any violation of privacy in different places by making noise, sound, or warning the person in a variety of ways, including via email, SMS, phone call, or sounding. Alarms that are currently available in the market have different shapes and types. Generally, they have a common structure and their main purpose is similar to each other. There is another type of burglar alarm in the market, which is used today in certain places to protect property and assets, and in certain organizations such as banks and car alarms. This article reviews and presents a different alarm, whose main purpose is to provide possible security in public and private places, especially military places.

Keywords: telephone, automatic bell ringer, call control, messaging systems

1. Introduction

From keyless entry to the ability to activate your alarm remotely through your mobile phone, the latest state-of-the-art home security systems simplify our lives in a number of ways. It was Augustus Russell Pope who invented the first alarm system in Boston, Massachusetts, on 21 June 1853 (Alarm-kravspesifikasjon for Amoco Norway Oil Company; Requirement Specification for the HAMBO Alarm System). Pope connected doors and windows independently by parallel tropics against rivals, even though it was a simple invention at the time. Electrical tropics close when a door or window is opened, and an electromagnetic alarm is triggered as a result. Robbery, property damage, and personal safety can be prevented by using these systems in residential, commercial, industrial, and military settings. Any event that occurs can be automatically recorded by a television surveillance system. The alarm also has an automated telephone system, an SMS system, a telephone control system, and most importantly, afighter alarm that prseveralical entries. An interaction-based alarm is proposed in this article (Alarm Systems). The most effective and reliable protection tools are sensors that can detect and recognize robbers in alarm systems. These systems are useless without sensors. In this article, it is considered one of the most important parts of them (Almasi, 2020; NORSOK Standard I-002).

An intruder alarm is one of their most important parts there is an intruder, a loud bell warning when an intruder is detected, or even flashing outdoor lights during an intruder alarm (Khan et al., 2012). Besides letting neighbors know there is an illegal individual around, it also serves as a warning signal for the police. Using an automated dialer associated with a burglar alarm, police officials are notified that a break-in has occurred and are made aware with a pre-recorded report (Kaur et al., 2016). Security alarm technology has come a long way due to technological and

***Corresponding authors:** Mehdi Gheisari, Department of Cognitive Computing, Institute of Computer Science and Engineering, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences, India, Email: Mehdi. gheisari61@gmail.com and Yang Liu, Department of Computer Science and Technology, Harbin Institute of Technology, China, Email: Liu.yang@hit.edu.cn

scientific advances (Hasanet al., 2015). This study reviews advances in security alarm system technology using different types of sensors used in security systems and advances in security systems using Internet of Things against kidnapping and intrusion considering burglar alarms to do. Security alarm systems have become a huge problem in today's world due to the increase in robberies and increase in kidnappings in different parts of the world. Everyone should take protective measures to prevent trespassing into their industry, organization, or home (Nwalozie et al., 2015). A basic security system is derived from that name. It is a means or method of protecting something through a system of interacting components and some device. Our home surveillance and alarm security systems are widely used. One motivation is the increase in crime, theft, and robbery in today's world. In many of our homes, industries, schools, and organizations, they invade primarily by forcing criminal entry. Circumstances indicate that it is normally blocked with the help of smart alarm security. Criminals usually break into buildings that are more vulnerable to security than those guarded by alarms. The development of security alarm systems started with human creation. To convey information, humans make some kind of signal, shout, or sound. In the early days of some African societies, it was replaced by the use of clapping for social communication or specific messages. All these basic warning methods are unreliable and unsystematic, while technology has been effective on human life in the fields of safety and security, and artificial intelligence has made great progress in various fields in recent decades. Security technology with artificial intelligence is actually a computer with advanced software that, using a set of cameras around the house and with advanced facial recognition software, is able to recognize the faces of passersby and neighbors and store them in its database to recognize strangers. In the vicinity of the house, inform the home owner of the possibility of tampering and the image of the passerby through a smartphone application, or if the owner of the house is not available and the possibility of tampering is certain, call the police, and report the situation (Almasi & Alimardani, 2020; Rahmani et al., 2020). The underdeveloped methods of producing security alarm systems were replaced by programmed security alarm systems in the late 18th century. He warns that this type of electronic security works without human energy. Modern security alarms, upon detecting a positive signal that could be a sign of intrusion or breach, usually emit a very loud sound or send an alert to the owner, depending on the type of security enhancement (Almasi, 2020; Mohsen, 2015). The earliest security alarm system was developed by a person named William F. Channing. Moses G. Farmer, who later became an electronic engineer, invented this structure. This system used automatic display boxes to mark the location of burst fires and was first launched in Boston, United States (Cloud Based Intruder Security System Conference, 2022). Security systems have become essential for many applications that require a secret these days, and these systems are available with many state-of-the-art features. Thieves usually steal expensive and important things while the owner is absent or far away (Salram et al., 2002). Now, with the advent of big data, there is a need for even more computing power (Ziaei & Almasi, 2020). Many security systems available on the market are not effective in dealing with intruders. With many security systems, loss through robbery and when the perpetrator has escaped lead to uncertainty about the reputation of the security. In addition, it is extremely important to have a developed alarm system that not only secure but also increases the chance of catching a criminal (Rashidi et al., 2011; Nusser & Pelz, 2000).

1.1. High-Tech new alarm systems

During the 20th century, it saw significant developments in alarm technology. In the years following WorldWar II, emergency calls were designed to manipulate health services, police, and households. People's protection progressed throughout us as a result. Engineers blended the primary movement detectors on alarms in 1970. With the upward thrust of democracy, alarm structures had been referred to as standard protection characteristics in a building. As Wi-Fi alarm structures entered the marketplace withinside the 1980s and 1990s, alarm generation was modified absolutely on a sensible level, and the inevitable mess of cables has gone. Video surveillance and motion detectors are capable of protecting entire complexes nowadays. The innovation oftechnologyis still a wonderto peopletoday(www.ptil.no).

1.2. Passive infrared

Most security systems have some type of motion sensor installed. Passive infrared (PIR) sensors are the most commonly used motion sensors. PIR sensors are widely used to detect any kind of movement and the system will notify the owner of the event even if the owner is completely unaware of it. The word "passive" implies that the detector cannot generate or radiate energy. It works entirely by detecting thermal energy emitted by other objects. Strictly speaking, PIR sensors do not detect motion. Rather, it detects sudden temperature changes at specific locations. The sensor detects sudden changes in temperature between room and body temperature when an intruder walks in front of the sensor and then returns to room temperature. Infrared detectors work by following a current generated by crystals, optical filters, and The field-effect transistor (FET) is a type of transistor that uses an electric field to control the flow of current in a semiconductor. FETs (JFETs or MOSFETs) are devices with three terminals: source, gate, and drain. FETs control the current flow by applying a voltage to the gate, which in turn alters the conductivity between the drain and the source. The load exposing heat from some crystals and ceramics can be referred to as an "Electric Follower" since they produce heat. A current electric-powered infrared detector follows are constructed with the aid of usingconnecting small ceramic fans with respected polarity, along with PIS201S and E600STO. This system's output is buffered with the aid of using a The junction-gate field-effect transistor (JFET) is one of the simplest types of field-effect transistor JFETs are three-terminal semiconductor devices that can be used as electronically controlled switches or resistors, or to build amplifiers. This detector works with the aid of using radiating infrared electricity to the floor of the crystal while a frame moves close to it. Radiated infrared electricity modifications the output voltage with the aid of using inflicting a minor extrude in heat. Alarms are activated when the voltage is changed, inflicting the alarm to activate.

2. Literature Review

The alarm system is implemented with sensors, which send information about intruders via SMS or phone. Besides being scalable, the proposed alarm system can include some additional features without any modifications. Study has been conducted on some of the existing alarm systems for detecting thefts from vehicles, properties, and homes. Liu & Jiang (2017) proposed a vehicle robbery alarm system that sends information about vehicle theft and evidence that the system is very effective for driver safety as well as vehicle security. In their study, Zainal Arifin et al. (2019) proposed a laser alarm system for home automation that interfaced

with websites and mobile apps, helping to alert the owner even when hewas far away. Pollux is a vehicle security alarm system proposedby Zhixiong Liu et al. based on a computer vision technology that has been tested in simulated environments and proven to be reliable and powerful.

3. Design, Construction and Evaluation of Proposed Alarm Systems

In terms of on-site security and theft prevention, fire alarm systems are useful in several respects. Of course, the uniqueness of the system led to it being registered as an invention, as well as being presented as a research paper, due to its certain differences from advanced alarms on the market. Besides this alarm system, there is also a system capable of operating weapons of war such as colt. The device can send events occurring via different SMS messages to different people. It is also capable of connecting to various sensors such as smoke, engine, or gas leak sensors, which can be wired or wireless, call the competent authority, and verbally state your address. In addition, it will capture the environment and send them relevant data online, allowing us to hear audio voices from the environment and communicate with potential thieves. Other facilities of fighter alarm are as follows.

3.1. Phone controlling system

Using this system, the user can edit the created scenario anywhere and on any device. By entering security codes, the user can control the system and activate or deactivate certain sensors, SMS systems, and fighters. To ensure that the settings of the system are correct, the system sends an SMS when the user sets it. This system does not require an application.

3.2. SMS system

When a sensor reacts to a physical element as a result of an alarm, SMS alarm systems send constant SMS messages to a reserved number. However, the SMS system for this alarm differs in several ways. For example, the order of sensors differs from sensor to sensor, and every sensor that is used has its own SMS. It is not unusual place exercise for the primary door to react to bodily motion with the aid of using activating the alarm system, which then sends an SMS to precise human beings referring to precise events. For instance, the robber has entered from the second door or the window. Mobile phone devices are vulnerable to malicious attacks, and although they have many protection options, they are very vulnerable (Liu & He, 2005). Mobile phone devices are updated day by day and their capabilities are increased. These valuable features allow people to keep an eye on their homes and property anytime and anywhere (Nehmadi & Meyer, 2011). The use of mobile phones has become increasingly common and complicated in recent years, so that life without the use of mobile phones will be disrupted. In addition to phone calls, mobile phones can also be used as a means of communication. In today's mobile world, SMS and MMS are available on cell phones, cameras, music boxes, gaming platforms, and even wireless remote controls. For example, new applications can achieve security and control (Sohr et al., 2011). Security systems have been a very crucial problem for warning systems which may be carried out on a big scale (Almasi, 2019; Moshayedi, 2022). The new technology revolution has triggered the development of numerous forms of safety systems regular with the needs of businesses and people and the latest revolution in technology (Abdullah, 2011; Yun & YinGen, 2009). Given the need for safety, a reliable, effective, and cheaper safety system is vital. There are various wireless safety systems that may be used to guard the premises against intruders. Some of them use radio frequency, on the equal time as others use lasers (Wu et al., 2006). There are visible and invisible laser safety systems (Liao, 2007; Yaraziz, 2022). There is not always any limitation to how large or small belongings can be with a laser safety system. In general, it can be understood that laser safety systems are divided into two parts: transmitter and receiver. In some models, laser safety systems require a unique code to arm and disarm. In others, they will be controlled wirelessly (Gheisari, 2022). Modern laser safety systems depend upon infrared motion detectors as their essential sensing component. Infrared motion detectors discover adjustments withinside the environment using infrared slight beamlight; benefits of laser safety systems are many. In covered areas indoors or outdoors, they will be without issue installations and used effectively. The sensors can be plugged into everyday electric-powered shops or telecall clever telecall smartphone jacks withinside the home. Outdoors will be hidden underneath wood or flowers and would not damage the lawn. However, an immoderate rate can be associated with laser safety systems (Almasiet al., 2019).

3.3. Fighter alarm system

In the fighter machine, there may be a colt. When a thief has bodily movement in front of the camera, he reacts. By influencing the bodily elements at the camera, the cause gun instructions to be intelligently and robotically directed on the thief with the aid of using the camera. Quickly and after a completely brief duration of time, the recorded voice activates the thief to depart the site. For example, if the thief surrenders and leaves the location, the machine is deactivated. Within three seconds, the gun will hearthplace quickly. Usually, it is far used a good deal extra in army bases and its use is normally in army bases, however, if it is far allowed and they permit it, it could additionally be utilized in public locations like banks. It is feasible to split this fighter-interceptor and use it one by one for army purposes. A unique cable from the fighter machine is hooked up to a laptop with a reveal that shows the pix obtained from the camera. A four-manner navigation key connected to the device gun controls the weapon, which includes swinging and firing.

4. Conclusions

This alarm destroys the weaknesses of alarms and improves them, thereby increasing their use. It has advantages and disadvantages. A phone system can be used to control the alarm from anywhere. An SMS alarm system is a system that sends a text message or constant text message to a saved number whenever it is activated. However, this alarm has a very different SMS system. A variety of alarms are available on the market and each has its own advantages and disadvantages. Using this alarm, you can use it anywhere and control it through a telephone system, destroying the weaknesses of alarms and improving them. An SMS alarm system sends a text message to a stored number whenever it is activated. But this alarm has a very different SMS system. After the user sets the settings, a confirmation SMS is sent to him, so he can be assured that everything is fine. In the alarm, the most important and practical system is the fighter system. By using this system, robberies can be prevented from entering an area, fought, and thrown out, and if necessary, the robber can be killed. To ensure the safety of a position, this system is very important.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

References

Abdullah, J. (2011). The design of mobile control car security system. IACSIT International Journal of Engineering and Technology, 3, Journal of Engineering and Development, 16 (2012). ISSN: 1813-7822 329.

Alarm Systems: A Guide to Design, Management and Procurement, (2013). The Engineering Equipment and Materials Users Association (EEMUA) publication No. 191.

Alarm-kravspesifikasjon for Amoco Norway Oil Company, Valhall CCR Upgrade Project, IFE/HR/F-99/1118.

Almasi, M. (2019). An investigation on face detection applications. International Journal of Computer Applications, 177, 17–23.

Almasi, M. (2020). Designing a non-contact sensor for capturing pacemaker. International Journal of Computer Trends and Technology, 68, 43–48,

Almasi, M. (2020). Human movement analysis from the egocentric camera view. In International Conference on Electronics and Sustainable Communication Systems (ICESC). http://doi.org/10.1109/icesc48915.2020.9155757.

Almasi, M., & Alimardani, M. (2020). Application of self-organizing map for time-varying biological to predicting of complexity Systems. International Journal of Computer Trends and Technology, 68, 59–64,

Almasi, M., Fathi, H., Adel, S., & Samiee, S. (2019). Human action recognition through the first-person point of view, case study two basic task. International Journal of Computer Applications, 177, 19–23.

Cloud Based Intruder Security System Conference (2022). 16th International Conference on Intelligent Systems and Controls (ISCO'22) At: Karpagam College of Engineering, Coimbatore, Coimbatore, Tamil Nadu, India. http://doi.org/10.5281/zenodo.5839759

Gheisari, M., et al. (2022). A novel enhanced algorithm for efficient human tracking. International Journal of Informatics and Communication Technology, 11, 1–7.

Hasan, R., Khan, M. M., Ashek, A., & Rumpa, I. J. (2015). Microcontroller based home security system with GSM technology. Open Journal of Safety Science and Technology, 5, 55–62. Published Online in SciRes. http://www.scirp.org/journal/ojsst

Kaur, S., Singh, R., Khairwal, N., & Jain, P. (2016). Home automation and security system. Advanced Computational Intelligence: An International Journal (ASCII), 3, 17–23.

Khan, S. R., Al Mansur, A., Kabir, A., Jaman, S., & Chowdhury,N. (2012). Design and implementation of low-cost home security system using GSM network. International Journal of Scientific & Engineering Research, 3.

Liao,I. (2007). Infrared Remote Control Based on LCD Displayer and Speech Synthesizer, M.S. Theses of Electronic Engineering Dept., National Taiwan Technology and Science University.

Liu, X., & Jiang, S. (2017). The vehicle hijacking alarm system. In 2017 13th International Conference on Natural Computation, Fuzzy Systems and Knowledge Discovery (ICNC-FSKD) (pp. 633–637). http://doi.org/10.1109/FSKD.2017.8393344.

Liu,Z., & He,G. (2005). A vehicle anti-theft and alarm system based on computer vision. In IEEE International Conference on Vehicular Electronics and Safety (pp. 326–330). http://doi.org/10.1109/ICVES.2005.1563666.

Mohsen,A., et al. (2015). An improved node scheduling scheme for resilient packet ring network. Majlesi Journal of Electrical Engineering, 9, 43.

Moshayedi,A. J., etal. (2022). Simulation andvalidation ofoptimized PID controller in AGV (Automated Guided Vehicles) model using PSO and BAS algorithms. Computational Intelligence and Neuroscience, 2022, Article ID 7799654, 22 pages. https://doi.org/10.1155/2022/7799654.

Nehmadi, L., & Meyer, J. (2011). A system for studying usability of mobile security. In Third International Workshop on Security and Privacy in Spontaneous Interaction and Mobile Phone Use (IWSSI/SPMU), San Francisco, CA, USA, June 12.

NORSOK Standard I-002.

Nusser, R., & Pelz, R. (2000). Bluetooth-based wireless connectivity in an automotive environment. In Proceedings of IEEE Vehicular Technology Conference (VTC), vol. 4 (pp. 1935–1942).

Nwalozie, G. C., Aniedu,A. N., Nwokoye, C. S., & Abazuonu,I. E. (2015). Enhancing home security using SMS-based intruder detection system. International Journal of Computer Science and Mobile Computing, 4, 1177–1184. Available Online at www.ijcsmc.com

Rahmani, A. I., Almasi, M., Saleh,N., & Katouli, M. (2020). Image fusion of noisy images based on simultaneous empirical wavelet transform. Traitement du Signal, 37, 703–710 .

Rashidi, F., Ariff, M., & Ibrahim, M. (2011). Car monitoring using bluetooth security system. In International Conference on Electrical, Control and Computer Engineering Pahang, Malaysia, June 21–22.

Requirement Specification for the HAMBO Alarm System, (2000). IFE/HR/F-2000/1141.

Salram, K., Gunasekaran,N., & Rama Reddy, S. (2002). Bluetooth in Wireless Communication. IEEE Communications Magazine, 90–96.

Sohr, K., Mustafa, T., & Nowak, A. (2011). Software security aspects of java-based mobile phones. In SAC 2011, Taichung, Taiwan, March 21–25.

Wu, B., Peng, H., & Chen, C. (2006). A practical home security system via mobile phones. In Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics, Istanbul, Turkey (pp. 299–304), May 27–29.

www.ptil.no

Yaraziz, M. Y., et al. (2022). Recent trends towards privacy-preservation in Internet of Things, its challenges and future directions. IET Circuits, Devices & Systems.

Yun,L.,&YinGen,Y.(2009). Design andimplementation ofa mobile phone integrated alarming-system. In International Conference on Multimedia Information Networking and Security, IEEE.

Zainal Arifin, M. A., Kassim, M., Mahmud, A. R., & Izwan Suliman, S. (2019). Automation security system with laser lights alarm on web pages and mobile apps. In 2019 IEEE 9th Symposium on Computer Applications & Industrial Electronics (ISCAIE) (pp. 287–292). http://doi.org/10.1109/ISCAIE.2019.8743998.

Ziaei,S., & Almasi,M. (2020). Approaching mobilecloud computing, security issues, and challenges. In The 2nd. International Congress on Science & Engineering, Paris, France.

How to Cite: Hajiaghaee, H., Rezaei, R., Gheisari, M., Liu, Y., Khodabakhshi-Javinani, N., & Khammar, S. (2024). A New Security Alarm Based on Interaction. Journal of Global Humanities and Social Sciences, 5(8), 300–303. https:// doi.org/10.61360/BoniGHSS242016870801