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Home Protection GSM Smart Alert System

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ABSTRACT:

For the sake of your family's safety and security, install a home security system. These days, most individuals are concerned about keeping their jewels, documents, and cash safe from criminals. Most people who want to store valuables away from prying eyes invest in manually operated safety lockers. These locks are simple to breach and provide no warning to the owner after they have been compromised. As a result, we are developing a cutting-edge alert home security system for residences, complete with fingerprint and password verification in order to get entry. Using GSM technology, an SMS is delivered to the user whenever an unauthorized person tries to open the door lock.

***Keywords*:** This kit includes an Arduino, a display, a keypad, a fingerprint reader, a camera, and a GSM module.

INTRODUCTION

There is a rising need for safety and protection from a wide range of dangers, making it imperative that people install home security systems. Our lives and possessions are safeguarded by the safety that security affords us. A stronger security system is crucial for protecting family members and expensive possessions at home. Most people, both in the country and the city, now consider safety to be an issue of paramount importance. Thieves will attempt to break into homes and businesses, posing a threat to valuables including decorations, paperwork, and cash. Most individuals will probably put in a lot of locks to counteract this security risk. However, typical security systems have limitations, such as mechanical locks that may be broken over with specialized equipment and the potential for key loss. Therefore, we will create a state-of-the-art home security system that utilizes fingerprint and soft password authentication and also incorporates the GSM technology for sending an alarm message to the user if any unauthorized person attempts to unlock the door lock. To make the home more secure, we've decided to install a CCTV camera outside for round-the-clock surveillance. Since the CCTV camera being utilized is linked to Wi-Fi, the user may check the status of security at any time using an android application on their smartphone. Since it uses a night vision camera, it can maintain watch even after the sun has gone down.

SYSTEM ARCHITECTURE AND BLOCK DIAGRAM

Figure 1 depicts the proposed system's fundamental block diagram. This setup is comprised of four separate parts.The fingerprint reader and keypad form the first module, and they'll be used to unlock the door. The fingerprint scanner employs lossless compression to store the fingerprints of over 300 individuals. If the fingerprint reader detects that the individual trying to enter is not authorized to do so, it will not allow admission. The fingerprint module enters user mode once it is connected to the Arduino. In this mode, saved scan pictures will be compared against stored photographs for verification. The fingerprint scans of approved users will be saved in a separate module, together with their respective ID numbers. Scan their fingerprints as proof that they have permission to unlock the lock. There is an Arduino-to-scanner interface. This controller will be controlling the fingerprint scanning and matching procedure. The keypad is connected to the Arduino so that fingerprint recognition may be used if desired. The individual 4-digit PIN may be used to open the door system as well. The keypad may be used to input the password to unlock the door in the event of fingerprint problems. Each individual who needs access to the building might have their own unique PIN. Each person in the household just needs one PIN under this arrangement.

The second component is an LCD display that shows whether the user's fingerprint or password was accepted or rejected. A "WELCOME" message with the user's name will appear on the LCD screen if the fingerprint or password submitted is valid; otherwise, a "WRONG PASSWORD" message will be shown.

The GSM module, the third, will send a message to the homeowner if the front door is opened without permission. If the supplied fingerprint/password is erroneous three times then the GSM module will advise about the status of unauthorised entry into the home to the house owner by sending the SMS. If the incorrect fingerprint or password is input three times in a row, the module will sound an alarm.The employment of closed-circuit television cameras for the purpose of constant surveillance is the fourth component.

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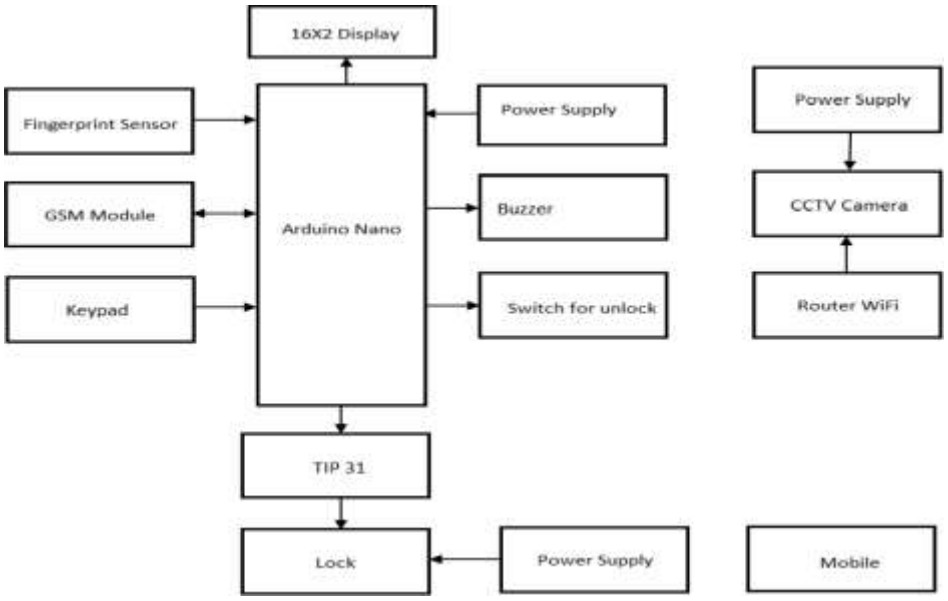

Fig 1. Block Diagram

I. CIRCUIT DIAGRAM

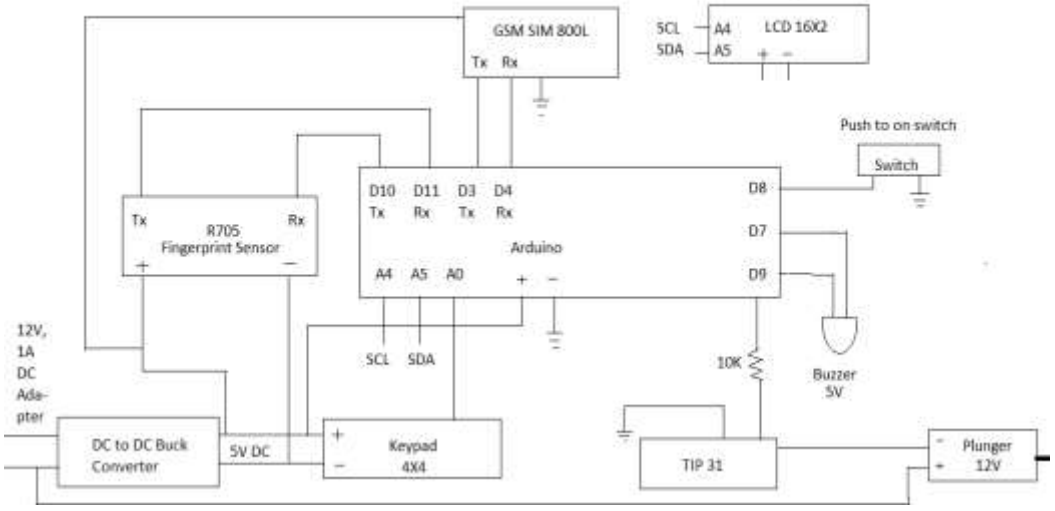

Fig 2. Circuit Diagram

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RELATED WORK

The Raspberry Pi–powered door lock system includes a camera, keypad, and pi–lids to create an alerting system that can both alert the property owner and identify visitors with unique user IDs.[4] An alternative approach that uses voiceprint and Internet-based mobile authentication may speed up, simplify, and strengthen smart home authentication.Those in need of a low-cost yet dependable security system would like the options presented in [7]'s Design and Implementation of an SMS Based Home Security System. The goal of this work is to provide people an easy, quick, and trustworthy means to contact emergency services when they need it.[8] The creation of an ANDROID app in a GSM home security system that deciphers the message a mobile device receives on a possible intrusion and then sends a reply (Short Message Service) SMS to set off an alarm/buzzer in the far-off home, alerting the residents to the possibility of an invasion.Using GSM technology and a mobile based home security system, [10] a cost efficient and yet flexible and powerful home security system must be designed and implemented for the convenience and safety of the occupants.[11] This system is a microcontroller-based home security system with a fingerprint reader, PIR motion detector sensors, a GSM module, and a surveillance webcam designed for use in developing countries.After reviewing the aforementioned articles, we've learned that there are many various kinds of security systems, each using its own unique combination of technologies. After researching the aforementioned options, we settled on creating an advanced alert home security system that combines features like fingerprint scanning, password authentication, sending alert messages via GSM technology, ringing a buzzer to alert nearby neighbors when an intruder tries to unlock, and continuous surveillance with CCTV camera.

II. FLOW CHART

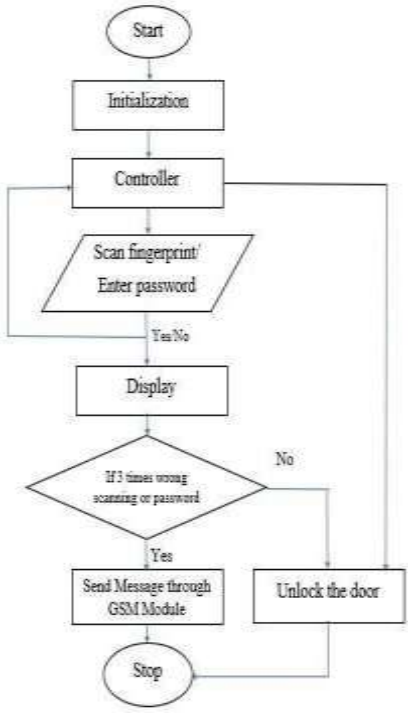

Fig 3. Flowchart of the system

1) Algorithm:

Step1. - Initialize Controller, Fingerprint Module and GSM Module.
Step2. - Scan the fingerprint or enter the password to unlock the door.
Step3. - Check and compare the currently scanned fingerprint and already stored fingerprint of the authenticate user or check whether the entered password is correct or not.
Step4. - If the scanned fingerprint or entered password is correct then controller will provide high pulse to TIP31 transistor which will unlock the door and will also display the message as “WELCOME”.
Step5. - If the scanned fingerprint or entered password is wrong then the “WRONG” message will be displayed on the LCD screen.
Step6. - If the person scans wrong fingerprint or enter the wrong password more than three times then initiate the GSM module to send alert message to the user or owner and make the i/o line high to the buzzer and sent the message “Somebody trying to open the door and try once again with authenticate password”.

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III. RESULT

Fig 4. Overview of the system

Figure 4 shows the overview of proposed system. It shows 16X2 LCD display, 4X4 matrix keypad and fingerprint scanner.

Fig 5. Locked system

Figure 5 shows the front view of the proposed system. It continuously displays “AVCOE SANGAMNER” and “DOOR LOCKED” message on LCD display.

Fig 6. Authorised person scanning finger

When we scan the finger and it gets matched with the stored one then it shows the “WELCOME” message on display with the respective person name which is shown in figure 6.

Fig 7. System displaying message after scanning fingerprint

When door gets unlocked, it remains unlock for 6 seconds as shown in figure 7 and then the system gets locked again displaying the same message as shown in figure 5.

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CONCLUSION

The problems with traditional security measures include the potential for loss of keys and mechanical locks. The suggested technique would eliminate all the concerns surrounding home security generated owing to current locking mechanism. As an Advanced Alert Home Security system, the suggested setup includes a fingerprint module, keypad, and GSM. The system's advanced characteristics include portability, cheap cost, and the ability to function independently. The suggested method also has the benefit of offering round-the-clock surveillance via CCTV cameras. In the long run, including Internet of Things capabilities into this system will increase its adaptability and use. This concept provides a glimpse into the future, which will hopefully spur quick innovation in this age of increased security.

REFERENCES

[1] Dwi Ana Ratna Wati,Dika Abadianto, "Design of Face Detection and Recognition System for Smart Home Security Application",2nd International Conferences on Information Technology, Information Systems, and Electrical Engineering (ICITISEE),August 2017.
Department of Information Technology, School of Computing, Sathyabama University, Chennai, India, May 2017; M. Akhil Raja, G. Rakesh Reddy, Mrs. Ajitha, "Design and Implementation of Security System for Smart Home."
An Advanced Internet of Things based Security Alert System for Smart Homes, S. Tanwar, P. Patel, K. Patel, S. Tyagi, N. Kumar, M. S. Obaidat, Fellow of IEEE and Fellow of SCSk, Department of CE, Institute of Technology, Nirma University, Ahmedabad, India, 2017.

The 2017 International Conference on Computer and Applications (ICCA) included a paper titled "Smart Door System for Home Security Using Raspberry pi3" by Naser Abbas Hussein and Inas Al mansoori.

Reference: [5] Mr. Amit Hatekar, Harsh Babani, Tejal Kakde, Namit Wadhwa, "Fingerprint Based Security System using GSM Module", Int. Journal of Engineering Research and Application, ISSN: 2248-9622, Volume 7, Issue 5, (Part -2) May 2017.

For example, see [6] "Low Cost Multi-level Home Security System For Developing Countries" by Hasan. U. Zaman, Tarafder Elmi Tabassum, Tanha Islam, and Nadia Mohammad from the 2017 International Conference on Intelligent Computing and Control Systems.

Using a combination of voiceprints and online authentication, Honglei Ren, You Song, Siyu Yang, and Fangling Situ presented "Secure Smart Home: A Voiceprint and Internet-Based Authentication System for Remote Accessing" at the 11th International Conference on Computer Science & Education (ICCSE 2016) at Nagoya University in Japan on August 23-25, 2016.

(9) "Design and Implementation of an SMS Based Home Security System", Dept. ojECE, Biplav Choudhury, Tameem S. Choudhury, Aniket Pramanik, Wasim Arif, J. Mehedis, 2015.

According to "Smart Home Definition and Security Threats" by Michael Schiefer of AV-TEST GmbH, presented at the 2015 Ninth International Conference on IT Security Incident Management and IT Forensics.

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