SMART DOOR LOCK

Rohit P. Borse[1], Mayuri M. Bamane[2], Utkarsha V. Shinde[3]
[1]UG Student, [2]UG Student, [3]UG Student
BE Computer Department
JSPM's BSIOTR, Wagholi, Pune, India

ABSTRACT: In the affection of advanced way of life in a Smart City, home security has turned into a reasonable yet in fact testing territory for players of this eld. The proposed framework controls the entryway bolt through an Android Application utilizing Wi-Fi as the correspondence convention, that communicate with NodeMCU Wi-Fi module inserted in the entryway bolt and the Firebase cloud informing administration. The project verify the accreditation of the client and after that sends an OTP to the portable Application interface utilizing cloud-based secure informing administration.

KEYWORDS: Digital Lock, Security, Android App, Access Control, Authentication, Android Smart Phone, NodeMCU, Door Automation, Servomotor.

INTRODUCTION

Digital home security systems are becoming inevitable in modern lifestyle. There may be situations when nobody is inside the house, but the owner of the house wants to allow the access to the house to some bona fide visitor. Since such systems allow access only to the bona fide visitors, it acts as an efficacious deterrent in the case of break-ins and robberies. On the flip side, anybody having the access code of such digital home security system may be seen as the bona fide visitor. Therefore, these systems are prone to potential misuse, in which, a person with mala fide intention can hack the access code of this digital dome security system and thereby, get the access to the house without anybody noticing or suspecting it. Nonetheless, the good thing is that statistics show that burglars are less likely to attempt to break into a home in which there is a home security system installed. Furthermore, in the case of those burglars who are smart enough to attempt a break-in into a house with a digital home security system, the likelihood of them being apprehended is substantially higher than them getting away. Home automation system is a computerized, intelligent network of electronic devices, designed to monitor and control the home appliances and lighting systems in a building. It allows users to remotely monitor and control consumer electronics through the external network such as Internet. Home automation is the emerging field that has attracted the attention in both the commercial and research field. Although wired home networks were famous at the early developments of home automation systems, nowadays wireless communication is replacing the wired system which are very messy and also difficult to setup. The comparison between the typical wired home server and our proposed smart digital door lock system. Wired system requires proper planning and construction works for efficient and clean design. It is the reason wireless communications are replacing the wired ones. Furthermore, wireless system provides more flexibility and extensibility.

LITERATURE SURVEY

[1] Pradip Tilala, Anil K. Roy and Manik Lal Das, "Home Access Control through a Smart Digital Locking-Unlocking System", Proc. of the 2017 IEEE Region 10 Conference (TENCON), Malaysia, November 5-8, 2017. In the pretext of digital lifestyle in a Smart City, home security has become a prudent yet technically challenging area for players of this field. Home access system is a part of home security. In this paper, we present a smart locking and unlocking system for home door security. The proposed system controls the door lock through an Android App using Wi-Fi as the communication protocol, that communicates with WeMos D1 Wi-Fi module embedded in the door lock and the Firebase cloud messaging service. With the help of cloud-based secure messaging service, it is easy to a send a message to a remote Android mobile which belongs to the owner/user of the house. This aspect removes the need to embed GSM

module with a smart lock system. To keep vigil of the open/closed status of the door and the unusual events like door smashing, keeping door open for a long time, we use the accelerometer and magnetometer, respectively. The mobile phone App is personalized with a unique user password for the secure access to the door lock system. The system verifies the credentials of the user and then sends an OTP to the mobile App interface using cloud-based secure messaging service. The implementation of the proposed system demonstrates its practicality with minimal accessories. In case of breaching of the secured access, such as, theft or unauthorized opening of the door, the proposed system sends a warning message to the user/owner of the house.

[2] Yong Tae Park, Pranesh Sthapit, Jae-Young Pyun, "Smart Digital Door Lock for the Home Automation", IEEE, TENCON 2009. In this paper, we propose a smart digital door lock system for home automation. A digital door lock system is equipment that uses the digital information such as a secret code, semi-conductors, smart card, and finger prints as the method for authentication instead of the legacy key system. In our proposed system, a ZigBee module is embedded in digital door lock and the door lock acts as a central main controller of the overall home automation system. Technically, our proposed system is the network of sensor nodes and actuators with digital door lock as base station. A door lock system proposed here consists of RFID reader for user authentication, touch LCD, motor module for opening and closing of the door, sensor modules for detecting the condition inside the house, communication module, and control module for controlling other modules. Sensor nodes for environment sensing are deployed at appropriate places at home. Status of individual ZigBee module can be monitored and controlled by the centralized controller, digital door lock. As the door lock is the first and last thing people come across in entering and leaving the home respectively, the home automation function in digital door lock system enables user to conveniently control and monitor home environment and condition all at once before entering or leaving the house. Furthermore, it also allows users to remotely monitor the condition inside the house through Internet or any other public network. The biggest advantage of our proposed system over existing ones is that it can be easily installed when and where necessary without requirement of any infrastructures and proper planning.

[3] Agbo David O., Madukwe Chinaza, Odinya Jotham O., "Design And Implementation Of A Door Locking System Using Android App", International Journal of Scientific & Technology Research Volume 6, Issue 08, August 2017. The Android Operating System finds wide use in smart phones and tablets and is thus suitable for home controllers. This project presents a smart home controller that uses the Bluetooth in an Android device to control the operation of an automated security door system. The software was designed using an Android app that generates a password that is recognized by the Bluetooth to control the opening and closing of the door located at some distance from the user. The Bluetooth module that is installed on the door receives the commands from the android phone, and passes these commands to the microcontroller that controls the opening and closing of the door. The design was simulated in Proteus integrated development environment after which the hardware was built on experimental boards. The performance of the system agrees excellently with its conception. The system can be used in various situations where access to an enclosure need to be secured.

[4] Lubhansh Kumar Bhute, Gagandeep Singh, Avinash Singh, Vikram Kansary, Preetam Rao Kale, Shailendra Singh, "Automatic Door Locking System Using Bluetooth Module", International Journal for Research in Applied Science & Engineering Technology (IJRASET), 2017. Smart home automation system playes a major role which helps in reducing a work by using some technologies. The proposed work is to send a signal to door from a tablet or mobile devices by using bluetooth system. This allows the user to lock and unlock a door from inside or outside a house with a Bluetooth device available. The ideal purpose of the work is, if the door is not locked in first floor or in any other floor, The user from ground floor can open the door or unlock the door from mobile phone or laptop, which makes a person to reduce its energy or save time. The major components of the system are latest arduino board, Servo motor and a bluetooth module standard protocol for wireless communication.

[5] Neelam Majgaonkar, Ruhina Hodekar, Priyanka Bandagale, "Automatic Door Locking System",

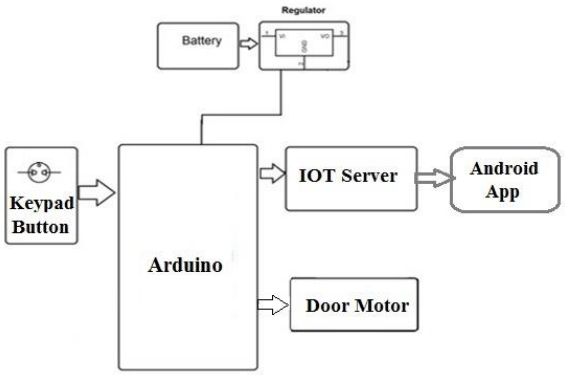
International Journal of Engineering Development and Research, 2016. Our main objective is to utilize the different electronic parts available in the market and build an integrated home security system by using Bluetooth device and Microcontroller technology. This system gives service at low cost compared to the cost of the available security system. We want to make a system that will give 24 into 7 service By using registered password in this system we can unlock the door by which it increases the security level to prevent an unauthorized unlocking. If the user forgets the combination of password this system gives the flexibility to the user to change or reset the password. Security measure is very high as provided in two ways. First we have to enter password for blue-tooth connection and second is for unlocking the door in application. Both passwords can be changed as and when required. This automatic password based lock system will give user more secure and low cost way of locking-unlocking system.

[6] K. Hwang and J. W. Baek, "Wireless Access Monitoring and Control System based on Digital Door Lock", IEEE Transactions on Consumer Electronics, Vol. 53, No. 4, NOVEMBER 2007. In this study, we propose a novel wireless access monitoring and control system based on the digital door lock, which is explosively used as a digital consumer device. Digital door lock is an electronic locking system operated by the combination of digital key, security password or number codes. To implement the system with ZigBee network protocol, four types of modules are developed, ZigBee module, digital door lock module, human detection module, and ZigBee relay module. ZigBee module is designed to support wireless sensor network and also used for the ZigBee tag to identify the access objects. Digital door lock module is implemented as a digital consumer device to control the access system as well as locking system.

SYSTEM DESIGN

For home to be secure we have to use number of locks to doors which will have more number of keys to a single door and which will be open by a single person having keys. If key is lost or other person from family want to open door in absence of other, it becomes more difficult without keys. So we are proposing secured door lock system which will not require any sort of key to open. This will be open only on entering real time requested OTP.

The purpose of this project is to study and evaluate a suitable set to develop a smart door lock which is intended to offer high security, easy access, and control. A key challenge that is faced in this project is the security and privacy of the IoT systems. Therefore, the proposed system will present an extensive investigation for the security and privacy of IoT systems seeking to enhance the lock mechanism by connecting it to the internet, making it more robust, reductive and innovative.



ADVANTAGES

Using a smart door lock system has many of its own advantages:

- It's secure
- Simple and easy to access
- It's pick-proof
- Entire lock and electronics housing is well constructed
- We can use multiple smart locks

APPLICATION

- Control of doors and windows shutters
- Faster operation and efficient
- Security system
- This project can be used in Industries, Home, Office, Shops
- Can be used for garage doors and gates
- By using smart app, disabled or elderly people can control lock as well as appliances anywhere inside house

CONCLUSION

In this project, smart door lock system which integrates the home security with home automation. Home security system for automatic doors provides advance security of today's standard for home owners. Proposed system will be used for real time home security which will avoid theft at houses. Due to the use of IOT each member will get notification about door open which will home security full proof.

FUTURE WORK

The IoT system that was developed in this project focus on the security approach more than the functionality of the system. Some of the functionality that this system need to be further developed is to make it deployable for a group of users.

REFERENCES

[1] Pradip Tilala, Anil K. Roy and Manik Lal Das, "Home Access Control through a Smart Digital Locking-Unlocking System", Proc. of the 2017 IEEE Region 10 Conference (TENCON), Malaysia, November 5-8, 2017.

[2] Yong Tae Park, Pranesh Sthapit, Jae-Young Pyun, "Smart Digital Door Lock for the Home Automation", IEEE, TENCON 2009.

[3] Agbo David O., Madukwe Chinaza, Odinya Jotham O., "Design And Implementation Of A Door Locking System Using Android App", International Journal of Scientific & Technology Research Volume 6, Issue 08, August 2017.

[4] Lubhansh Kumar Bhute, Gagandeep Singh, Avinash Singh, Vikram Kansary, Preetam Rao Kale, Shailendra Singh, "Automatic Door Locking System Using Bluetooth Module", International Journal for Research in Applied Science & Engineering Technology (IJRASET), 2017.

[5] Neelam Majgaonkar, Ruhina Hodekar, Priyanka Bandagale, "Automatic Door Locking System", International Journal of Engineering Development and Research, 2016.

[6] I. K. Hwang and J. W. Baek, "Wireless Access Monitoring and Control System based on Digital Door Lock", IEEE Transactions on Consumer Electronics, Vol. 53, No. 4, NOVEMBER 2007.