

Security System For Bank Locker Using Biometric and IOT

Ms. Shraddha Shirhattimath¹, Ms. Nisha Shekhawat², Ms. Sonali Jagdhane³, Ms. Sapna Madna⁴

¹Student, Department of E&TC Engineering, Bhivrabai Sawant Polytechnic Pune, Maharashtra

²Student, Department of E&TC Engineering, Bhivrabai Sawant Polytechnic Pune, Maharashtra

³Student, Department of E&TC Engineering, Bhivrabai Sawant Polytechnic Pune, Maharashtra

⁴Student, Department of E&TC Engineering, Bhivrabai Sawant Polytechnic Pune, Maharashtra

Under guidance of prof.V.V.Tambat of JSPM's Bhivarabai Sawant Polytechnic .

Abstract – The main goal of this project is to design Advance Security System for bank locker using biometric and IOT technology, which provide a secure, authentic and user-friendly mechanism for operating safety lockers. This can be organized in bank, offices and home. Bank locker is safest place for the valuables. But present day bank security system use mechanical key method wherein a user processes one of the two key where as an authorized bank official processes the other. This method has following drawbacks:-

- Both the bank employees and user must have to present with the key to open the locker.
- There is possibility of losing the key which makes the system insecure.
- The key can be duplicated.
- The system is unable to match with today fast pacing digital world.

Improved to this we proposed advance security system for bank locker using biometric and IOT.

■ INTRODUCTION

IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Today, Internet application development demand is very high. So IOT is a major technology by which we can produce various useful internet applications.

Here we propose use IOT to improve the security system of bank locker. In day to day life every person are involved in banking transaction, because of high level security, we uses bank lockers to secure our important documents, jewellery or cash, etc in it. Today security is a main issue for protecting the resources. Security is important because risk of instruction and theft has become increasing. So we propose a smart locker with high security, and overcome existing problem related locker.

Hence it become a very important part for every common human being. System will verify an OTP which is generated by an Android App and identify the user accessing the locker using his/her OTP No. Also verify a user accessing the locker by using fringerprints.

■ LITERATURE SURVEY

AN EFFICIENT MULTISTAGE SECURITY SYSTEM FOR USER AUTHENTICATION :

Year of publish :- 2016

Methodology used :- 1) RFID system

2) Password

3) Biometric consecutively

Limitation :- The password can be hacked by the unauthorized user.

AN ADVANCED INTRNET OF THINGS BASED SECURITY ALERT SYSTEM FOR SMART HOME :

Year of publish :- 2017

Methodology used :- 1) PIR sensor

2) Email alert

Limitation :- The security alert warning is only given by the email.

DEVELOPMENT OF AN INTELLIGENT SYSTEM FOR BANK SECURITY :

Year of publish :- 2014.

Methodology used :- 1) Motion detection

2) Messagingthrough GSM module

Limitation :- Use of microcontroller not gives that much of reliable system.

■ PROBLEM DEFINITION & PROBLEM STATEMENT

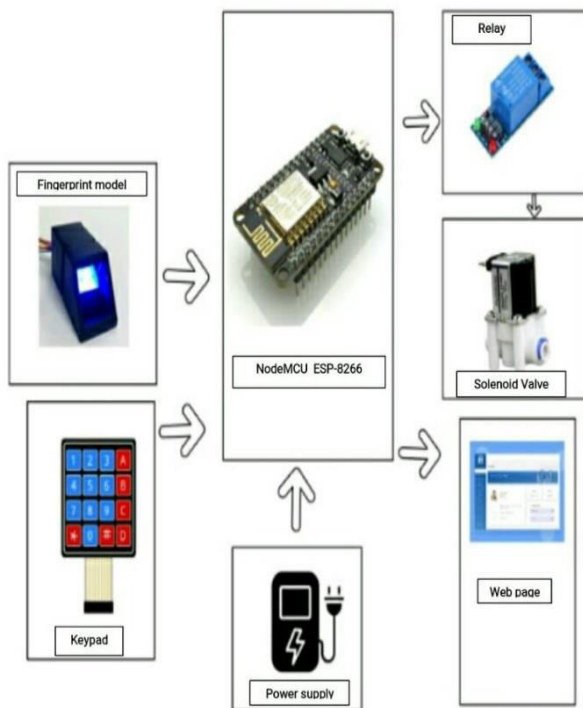
Today people are looking at ways and means to better their life-style using the latest technologies that are available. Any new facility for bank locker system that promises to enhance their life-style is grabbed by the consumers. The more such facilities and appliances are added, it become online process and highly safe security system. Hence it become a very important part for every common human being. System will verify an OTP which is generated by an Android App and identify the user accessing the locker using his/her OTP No. Also verify a user accessing the locker by using fringerprints.

■ METHODOLOGY

This project provide a highly secure, valid and easy for all customer's who has a locker in a bank and the head of the branch who responsible for all the operations connected to safety lockers. Our project works on following method: -

First person enroll user name and password and mobile number. If user name and password matches then finger of person will detect and store with ID . If the ID gets matches. Then four digit code will be sent on authorized person mobile to unlock. So biometric and Bluetooth security is more advantage than other system. This sytem can also a log containing check in and check out of each user along with basic information .

BLOCK DIAGRAM



7

Fig.1. Block Diagram of Security system for bank locker using biometric and IOT.

NodeMCU ESP-8266 (Wi-Fi Enable Microcontroller).

The NodeMCU project incorporates firmware with a prototyping board (Which in turn has an MCU module board mounted on it). The name “NodeMCU” combines “node” and “MCU” (micro-controller). The name “NodeMCU” strictly speaking refers to the firmware and prototyping (development) board rather than the associated software development kits.

ESP8266 Wi-Fi library:

ESP8266 is all about Wi-Fi. If you are eager to connect your new ESP8266 module to a Wi-Fi network to start sending and receiving data, this is a good place to start. If you are looking for more in depth details of how to program specific Wi-Fi networking functionally, you are also in the right place.

RELAY DRIVER

Here we will try to interface a relay module to NodeMCU. Then you can control your appliances with NodeMCU wirelessly.

First of all power NodeMCU.

Then connect the relay module GND to GND.

Connect the relay module power to NodeMCU 3.3V.

Lastly, relay module signal to NodeMCU D1.

POWER SUPPLY

If the ESP8266 module you have doesn't have a 3.3V voltage regulator on board, you have to add one externally. You could use an LM1117-3.3 for example.

Connect the first pin of the regulator to ground.

Place a 10μF capacitor between pin 2 (Vout) and ground. Watch the polarity.

Place a 10μF capacitor between pin 3 (Vin) and ground.

Connect pin 2 to 3.3V or VCC of the ESP8266.

Connect pin 3 to 5V power source, a USB port.

4X4 KEYPAD

4X4 KEYPAD Modules are available in different sizes and shapes. But they all have same pin configuration. It is easy to make 4X4 KEYPAD by arranging 16 buttons in matrix formation by yourself. 4X4 KEYPAD will have eight terminals. In them four are rows of matrix and four are columns of matrix. These 8 pins are driven out from 16 buttons arranged in matrix formation.

SOLENOID LOCK

In conventional door lock, there is key to pull or push the latch, and we have to operate manually, but in solenoid lock, has a low voltage solenoid that pulls the latch back into the door when an interrupt (Pushbutton, Relay, etc.) is activated. The latch will retain its position until the interrupt is enable. The operating voltage for solenoid lock is 12V. You can also use 9V, but it results in slower operation. Solenoid door lock are mainly used in remote areas to automate operations without involving any human effort.

BIOMETRIC DEVICE

A biometric device is a security identification and authentication device. Such device use automated methods of verifying or recognizing the identify of a living person based on a physiological or behavioral characteristic. These characteristics include fingerprints, facial images and voice recognition.

Advantages

High accuracy in terms of security.

No one can hack or crack system because of using the Android app and Biometric device.

It is easy to use and require no special training and equipment.

It provides unique Android app, which accessed by only the authorized person.

Disadvantages

It takes more time to process.

The unauthorized person cannot recognized clearly.

Flowchart

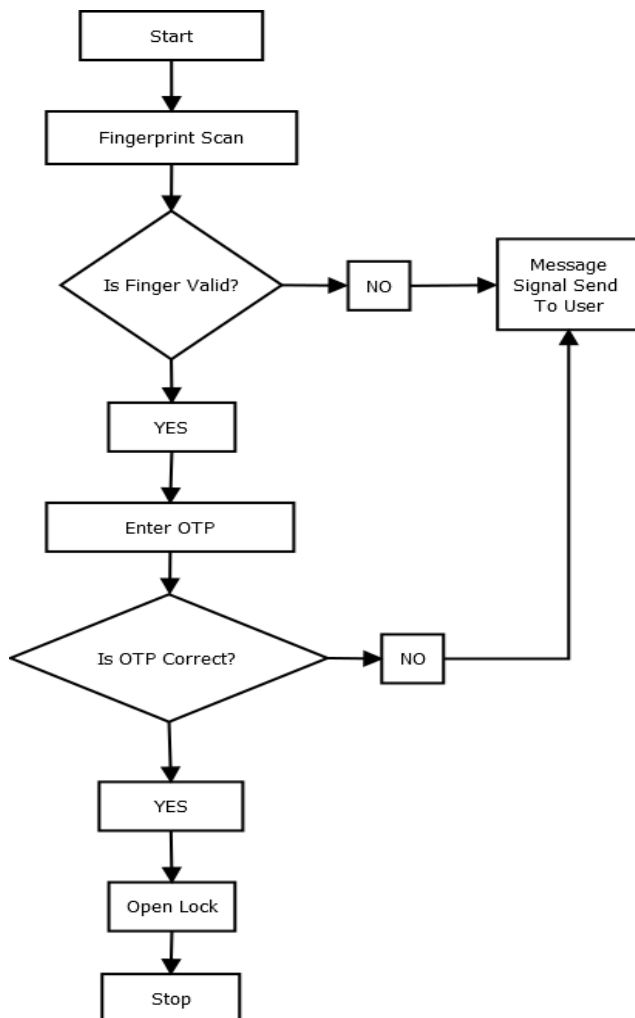


Fig :- Flowchart of working bank locker security system using biometric and IOT.

Future Scope

In future system will be implemented with image processing to achieve more security.

Applications

Bank lockers use : Provide a secure, authentic and user-friendly mechanism for operating safety lockers and ensure the safety of the valuables.

ATM Machine use : Most of the leading banks have been experimenting with biometric for ATM machine use and as a general mean of combating card fraud.

Travel and tourism : There are multi-application cards for travellers which, incorporating biometric, would enable them to participate in a system as well as paying for their air ticket, hotel room, hire care etc.

Home security system.

Industrial security system.

It is use for protection and safety purpose.

Conclusion

Our propose system will effectively detect and control unauthorized access by recognizing safety of the bank locker room. This system is used where top level security is needed. System uses the Android app which generates an OTP to registered mobile number which highlights the smart security.

References

- [1] Arun Cyril Jose, Reza Malekian, Member, IEEE, Ning Ye "Improving Home Automation Security; Integrating Device Fingerprinting into Smart Home "DOI 10.1109/ACCESS.2016.2606478,IEEE Access
- [2] 'Neeraj Khera, Amit Verma "Development of an Intelligent System for Bank Security"2014 5th International Conference-Confluence the Next Generation Information Technology Summit (Confluence)
- [3] Ashutosh Gupta, Prerana Medhi, Sujata Pandey, Pradeep Kumar, Sanket Kumar, H.P.Singh "An Efficient Multistage Security System for User Authentication" International Conference on Electrical, Electronics and Optimization Techniques (ICEEOT)-2016
- [4] S.Tanwar, P.Patel, K.Patel, S.Tyagi, N.Kumar, M.S .Obaidat "An Advanced Internet of Thing Based Security Alert System for Smart Home "fellow of IEEE and Fellow of SCS
- [5] Mrutyunjaya Sahani, Chiranjiv Nanda, Abhijeet Kumar Sahu and Biswajeet Pattnaik "Web-Based Online H Embedded Door Access Control and Home Security System Based on Face Recognition" 2015 International Conference on Circuit, Power and Computing Technologies [ICCPCT]
- [6] Srivatsan Sridharan "Authenticated Secure Bio-metric Based Access to the Bank Safety Lockers"ICICES2014-S.A.Engineering college, Chennai, Tamil Nadu, India, ISBN No.978-1-4799-3834-6/14
- [7] K.Balasubramanian, A.Celaloglu "Analysis of Remote Control Techniques Employed in Home Automation and Security System"
- [8] Salil Prabhakar, Sharath Pankanti, AnilK. Jain "Biometric Recognition: Security and Privacy Concerns
- [9] S.V.Tejesvi, P.Sravani, M.L.Mythili, K.Jayanthi, P.Nagesh Kumar, K.Balavani "Intellectual Bank Locker Security System "Int. Journal of Engineering Research and Application ISSN:2248-9622, vol.6, Issue 2(Part-2) February 2016,pp.31-34
- [10] Safa.H, Sakthi Priyanka.N, Vikkashini Gokul Priya.S, Vishnupriya.S, Boobalan.T "IOT based Theft Preemption and Security System"DOI;10.15680/IJRSET.2016.0503229.