

# SMART DOOR AUTHENTICATION

Ms.N.Pranavi ,

**Mr.Syed sadiqvali**

Assistant Professor-ECE

Sanskriti school of engineering

Puttaparthi-515134

C. Sivalakshmi, P. Veda Sri Sai ,

SMD.Kousare Moin, K. Ranipriyanka

**STUDENTS OF ECE**

Sanskriti school of engineering

Puttaparthi-515134

## ABSTRACT:

*In day-to-day life, technologically transition towards a wireless world, Security is important role to provide the safety. Previously, in locker rooms for banks and high security areas, passwords traditional lock systems, etc., were employed. However, these systems were found to be not perfectly secure. Over the years various methods have been proposed by researchers across the globe which have proven to be successful but have lacked in areas such as security and authentication time. This paper presents an electronic door lock mechanism that able to generate dynamic temporary access key for the guest. It is an innovative design for a Smart door with the aid of a biometric NFC band and OTP authentication methods which would provide secure and easy access to our homes.*

*Keywords: Arduino, RFID, GSM Module, Biometric, OTP, NFC.*

## INTRODUCTION

Traveling has become a lifestyle in the last decade. During the covid-19 pandemic, travel became limited until the pandemic ended. Travel habits do not disappear, just be stopped temporarily. When the pandemic ends, the human lifestyle will back again with the trend of going around the world. One of the things that is a concern for travellers is about efforts to reduce travel cost which can be saved from the cost of residence. The host will meet with the guest to provide the access key (physical key) during the guest arrival day. When the time to check out comes, the guest

also needs to return the physical key to the host. There're some issues that can happens here, such as the possibility of physical key duplicated by the guest (thus, compromising security for the next guest), losing the key, or the difficulties to match the meeting time between the host and guest. Meanwhile, IoT-based technology is on the rise, and it is predicted to be the core of future industrial field. The vision of IoT built from smart objects which provide the application logic to sense the local situation and interact with human users There exist point-to-point communication technologies such as Bluetooth, NFC, and wireless connection.

## METHODOLOGY

The fingerprint and RFID technology is used widely for security purpose. Here also we used these two algorithms. The system of automatic fingerprint identification having collection of images, pretreatment, extraction of feature as well as matching feature and on many parts. To verify a person, the fingerprints are one of the best identities.

The primary advantage of the RFID, GSM and RFID is efficient security. The RFID can detect any type of object by using radio transmission frequency. RFID can be an electronic system which can transmit and receive data over radio waves. It can be useful for tracking, detecting and sorting the different objects. The implemented system having the RFID reader, Modem i.e. GSM, RFID tags keyboard as well as LCD. In this the reader of the RFID reads the Id number of the person. If is valid then only the access can be given. If it is not valid then the entire process can be stopped. When the Finger print is valid the password can be sent to the valid user mobile number through microcontroller. Our implemented system needs passwords to open the home locking. When the user entered the passwords then the home locking will be opened if those are matched. Otherwise, the locker cannot open and a text message will be sent to the authorized user as an alert. RFID means Radio Frequency Identification. It

can detect the person useful in banks, offices as well as in homes.

Existing system has same method of giving alarm signal, and those systems are based on microcontroller and GSM module only. Attackers and unauthorized user who does not know the password can make OTP attempt. Therefore, if an attacker mistypes the OTP more than given number of time then they will not access for them. The OTP and RFID tags-based security system is implemented in order to overcome the drawbacks of previously existing systems like digital and mechanical door lock system. The security systems are classified based on the technology used to implement them in real time

i.e, tags, password-based system, GSM based system, Motion Detector Based System, VB Based System, Combined System, Social Networking Sites Based. The existing security systems are unique code is set by the programmer the system will work only if the proper code is entered by the user. Further the system security can be increased by adding one more feature that user can change the password any time as it is stored in PROM. The other system is developed by ANNIE P. Omen that allows changing the password. That includes palmtop recognition featuring fingerprint recognition. It operates on the process called image processing, initially it takes the picture of the palmtop then it portioned the image using the process called image process. So, that this method will reduce errors in other systems like tags.

In almost every security systems GSM is mainly used in order to send and receive SMS at the time of authentication and for detecting the obstacles many sensors are used. The recently invented security system is remote control security system. In this system the GSM hand set acts as transmitter and another GSM mobile set with DTMF decoder with motor attached to the door lock by using DTMF decoder, microcontroller unit and a stepper motor. This is most useful security system because now a day's people want to secure their homes though they are far away from home so this is invented by Jayashri Bengali et al. The other system called entry way security framework is intended to allow only the authenticated person with valid smart card of RFID is required for passing the door. In this type of security systems user have to place a tag in contact with RFID detector then only the entry way gets

opened. This can be used in maintaining the attendance and person tracking, invented by K Srinivasa et. al. The existing system is Bluetooth based system these system uses Arduino platform and Bluetooth module.

The locker security system which contains RFID tags, GSM and RFID reader which authenticates the person and unlocks the door. The other system is social networking sites based it can provide security using phone device. This system has a pin which is used to close and open the door from specific region using SMS from social sites like WhatsApp and Facebook etc.

### SYSTEM ARCHITECTURE

The Below figure shows the system architecture of smart door lock system. The basic operation of the device is on power up the device displays a message on the LCD and a red status led lights up, indicating that the door is locked. The RFID reader scanner activates. If the reader recognizes a tag that has been enrolled then it will activate the relay and the green status led for a few seconds, enough to open the door enter and close it. The user then has the option of entering the authorized mobile number then OTP will send to that mobile number; if the entered OTP is incorrectly then the display will show that the OTP was invalid and then revert to the default screen. When the OTP is entered correctly, then they will access the door

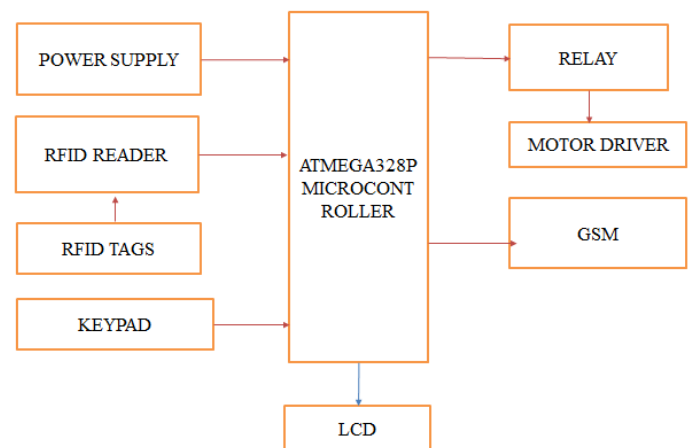


Fig: General Block Diagram of the smart door lock

## FLOW CHART

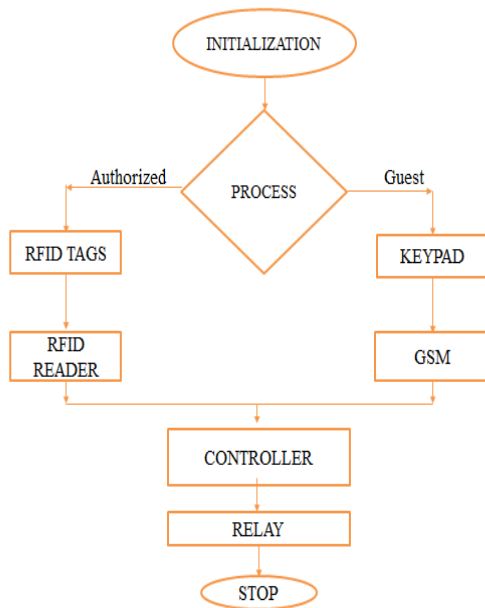


Fig: flow chart smart door authentication

### The steps of proposed work as given below

Step 1: Person who wants to enter the room should scan his tags with the help of RFID reader

Step 2: If the user tags is matches with authorized tags.

Step 3: If it is not matches then guest only enter his mobile number through keypad.

Step 4: OTP enters through the keypad on the door.

Step 5: OTP verification takes place.

Step 6: If it matches then door opens.

## RESULTS AND DISCUSSION

The smart door lock system is Arduino microcontroller-based security system. This allows the access to authorized person by verifying both tags and OTP. This system uses Arduino micro controller and GSM technology. GSM is used in order to transmit and receive

OTP (One Time Password) between user and the controller using mobile phones SMS service. So that it can authorized the person who wants to unlock the door.

The locker or door opens after the RFID tags verification is done. GSM module can be used as a receiver, which send messages to the authorized person and notifies him by mobile application. So that this provides dual security with low cost and implementation is also very simple.

## CONCLUSION:

The automated door lock system is implemented using Arduino, RFID reader and GSM module for OTP transmission and reception. This work is less expensive and easy to implement so that common man can also get high security, the microcontroller permits the system installation in more easy way compared to other existing systems mentioned above. The applications of this system are they can be used in office, banks, confidential areas etc

Table. 1. Comparison of Proposed Model with existing NFC based models

Characteristics	NFC based smart device (Previous model)	NFC based smart band (Proposed model)
User Authentication	It didn't have a method to authenticate user.	A biometric sensor Authentication is implemented in the smart band to identify the user.
Security	Owner is unable to give remote access to guest securely.	An OTP based system is present in proposed model Security where the guest enters his/her mobile number and the owner has the ability to grant access to the guest to enter the house.
Speed	For models having authentication, authentication time was high.	In this model we will be using an efficient RFID tag which takes around 3-5ms of time to authenticate user's tags.
Robustness	Robustness of these systems is relatively less.	Robustness of our model is more due to its 2-level security system.

## REFERENCES:

1. D. Vishal, H. S. Afaque, H. Bhardawaj and T. K. Ramesh, "IoT driven road safety system," 2017 International Conference on Electrical, Electronics, Communication, Computer, and Optimization Techniques (ICEECOT), Mysuru, 2017, pp. 1-5.
2. R. M. N. Deelaka Ranasinghe and G. Z. Yu, "RFID/NFC device with embedded fingerprint authentication system," 2017 8th IEEE International Conference on Software Engineering and Service Science (ICSESS), Beijing, 2017, pp. 266-269.
3. G. Govindan, S. K. Balakrishnan, R. L. Ratheendran and S. K. Sivadasan, "Real time security management using RFID, Biometric and Smart Messages," 2009 3rd International Conference on Anti- counterfeiting, Security, and Identification in Communication, Hong Kong, 2009, pp. 282-285.
4. Hussaini Habib, Adamu Murtala Zungeru, Ajagun Abimbola Susan, Ijemaru Gerald Kelechi, Oresanya Babajide Oluwatosin, "Design of a GSM-Based Biometric Access Control System", Control Theory and Informatics Vol.4, No.8, 2014.
5. E. Edwan, A. Shaheen and A. Alloh, "Assets and Keys Management System Using NFC Technology," 2018 International Conference on Promising Electronic Technologies (ICPET), Deir El-Balah, 2018, pp. 8-12.
6. A.O. Oke, O.M. Olaniyi, O.T. Arulogun, O.M. Olaniyan "DEVELOPMENT OF A MICROCONTROLLER - CONTROLLED SECURITY DOOR SYSTEM." The Pacific Journal of Science and Technology, Volume 10. Number 2. November 2009 (Fall).
7. K.Srinivasa Ravi, G.H.Varun, T.Vamsi, P.Pratyusha, "RFID BASED SECURITY SYSTEM". International Journal of Innovative Technology and Exploring Engineering (IJITEE), Volume-2, Issue-5, April 2013
8. Lia Kamelia, Alfin Noorhassan S.R, Mada Sanjaya and W.S., Edi Mulyana , "DOOR-AUTOMATION SYSTEM USING BLUETOOTH - BASED ANDROID FOR MOBILE PHONE", ARPN Journal of Engineering and Applied Sciences, VOL. 9, NO. 10, OCTOBER 2014 [7]
9. Nikhil Agarwal, G. Subramanya Nayak, "MICROCONTROLLER BASED HOME SECURITY SYSTEM WITH REMOTE MONITORING", International Conference on Electronic Design and Signal Processing (ICEDSP), 2012. [8]
10. Saurabh Vinayak Lawate, M.S. Ali, "ELECTRONIC EYE FOR SECURITY SYSTEM", International Journal of Electronic and Electrical Engineering, Volume 7, Number 9, 2014.