

## AUTOMATIC DOOR MONITORING SYSTEM

T.M GEETHANJALI<sup>1</sup>, AMULYA C SHETTY<sup>2</sup>, MANSI S V<sup>2</sup>, PRATHEEKSHA H P<sup>2</sup>, SINCHANA U<sup>2</sup>

<sup>1</sup>Asst.Professor, Dept. of information science & Engineering, PES College of Engineering Mandya, Karnataka, India

<sup>2</sup> Students, Dept. of information science & Engineering, PES College of Engineering Mandya, Karnataka, India

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**ABSTRACT** - Security currently has become a very important issue nowadays. Home automation these days make use of the latest technological components that are available. In our door monitoring system, we have used ESP-8266 WIFI module, magnetic proximity sensor and jumper wires. When the door is opened, a notification is sent via Gmail. Magnetic reed switch is used to detect the door status whether the door is opened or closed. In our proposed system, NodeMCU board based on ESP-8266 Wi-Fi module is used as an IoT platform that monitors the system and controlling of the door. We fix a magnetic reed switch for interaction with whoever may enter near the door, mounted at appropriate places at the door. IFTTT (If This Then That) is free web-based service that connects with any application or software and triggers a task if any changes occur within the web services. Status of the switch is monitored by NodeMCU. As anyone tries to open the door, the door status will be altered and the task will be performed by IFTTT which returns the status of the door back to NodeMCU. The main advantage of our proposed system is that it can be easily used in home for security without any requirement of new software installation.

### 1. INTRODUCTION

Internet of things has been overpowering these days by extending with the internet connectivity increasing electronics product segment. IoT is an extension of an embedded system along with shared networks. Security and safety has always been one of the major problems faced by the urban people`

#### 1.1 PROPOSED SYSTEM

The Automatic Door Monitoring System proposed here involves in building smart home automation. This door monitoring system is built with the magnetic proximity sensors. When a person opens the door, the magnetic sensors move far away and the status of the door will be changed. This change will trigger the IFTTT to perform a task. By default the status of the door is closed, since the status of the door is changed the concerned person will get an email or SMS. Likewise when the door is closed by the person, an email will be received indicating the door status along with date and time.

#### 1.2 OBJECTIVES

- To design and implement automatic door monitoring system
- The project is to develop a prototype of a product capable to send an email using SMTP and IFTTT.
- Its aim is to reach high security by sending email or SMS (ie Whether the door is opened or closed the owner gets the message in their mobile or gmail)
- The different components we use in this project is NodeMCU, jumper wires, Magnetic Proximity sensor
- Magnetic Proximity sensor is used to see whether the door is opened or closed

#### 1.3 EXISTING SYSTEM

Various researches have been made by different researchers in developing this project. However, they serve a different application and have different technologies implemented.

- [1] A GSM, Internet and SpeechControlledWireless Interactive Home Automation SystemIn this project, they have presented the design and implementation of a home automation system where communication technologies GSM, Internet, and speech recognition have been used.
- [2] Web-Based Online Embedded Door Access Control and Home Security System Based on Face Recognition This paper describes about the implementation of wireless control system to a home for authenticated people only and they have used ZigBee module for the door accessibility.
- [3] Study of Automated Face Recognition System for Office Door Access Control Application”, This paper focuses on the study and development on an automated face recognition system with potential application for office door access control.

## 2. HARDWARE REQUIREMENT



Fig -1: ESP 8266 Wi-Fi module



Fig -2: Jumper Wire



Fig -3: Magnetic Proximity Sensor

## 3. WORKING

The project works with the help of the sensor. The sensor will work as follows. The magnetic proximity sensor sends a notification to the IFTTT platform to perform a task.

The sensor will work until the door is opened at a degree of 180 and beyond that the sensors will lose their magnetic power. When the magnetic sensors are moved apart IFTTT will get a notification about the door status. In IFTTT the change in door status triggers a task, the task is to send a notification via email to the concerned person. The email contains the door status along with date and time. Once the email is received by the concerned person, he/she can take any action.

### 3.1 ALGORITHM(FLOW CHART)

Step 1: Set the circuit connection and then upload code to the board.

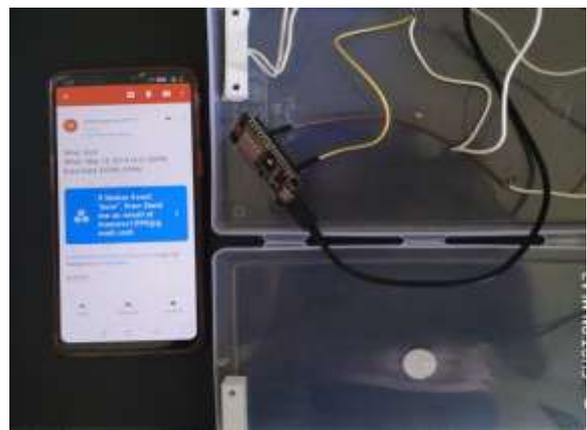
Step 2: Check whether the magnetic sensor is closer or not.

Step 3: If the magnetic sensor is closer then go to step 4. If the magnetic sensor is far then go to step 5.

Step 4: Door will be opened and get either SMS or email.

Step 5: Door will be closed and get either SMS or email

### 3.2 SNAP SHOT



### 3.3 ADVANTAGES

- Cost - There are so many home automation systems these days and many are very affordable for anyone, though not all of them. Plus, they can even help you save money.
- Easy installation - The installation of this automatic door monitoring system is very simple.

- Easy maintenance - The maintenance required for the security system will be easy for anyone. If there is a need for replacement of parts, then these can be found with the company you got it from.
- Flexible and versatile – These sensors are easy to use. This might help to increase the awareness of whoever opens/closes the door.
- Foundation to a smart home – By making use of latest technologies we can build a higher security to our home and make it smarter and efficient.

### 3.4 FUTURE SCOPE

This project has scope for improvement and many enhancements can be done to make it more reliable and interesting. For example, implementing face recognition technique.

We can implement this work in such a way that, the door can be opened only by family members. We can implement this system for places like home, offices, and any other private places, etc. in order to provide high security.

### 4. CONCLUSIONS

We have designed Automatic Door Monitoring System. We have proposed a possible solution to utilize sensors in IoT. Proposed system represents the design and implementation of an Automatic door monitoring system using magnetic proximity sensor and Wi-Fi module. The magnetic proximity sensor is used to send notification when the door is opened/closed. Once the sensor encounters that someone is trying to open the door it sends notification to IFTTT automatically with the use of ESP-8266 Wi-Fi module and again when the door is closed the sensors will send notification. After IFTTT receives a notification it sends an email to the concerned person that includes door status along with date and time. This is done using ESP-8266 Wi-Fi module. NodeMCU has very good features and low-cost embedded hardware platform. The system consumes less power, is of low cost, easily operable, easy to handle and easy to install.

The automatic door monitoring system is suitable to be used in home activity contributing to the decrease of the energy consumption due to the security issues. With this system, implemented is possible to monitor the door, sending an email that the door is opened when a person opens the door and sending an email that the door is closed when the person closes the door. This process is done without any need of human interference in opening and closing of door. We have successfully implemented ESP-8266 Wi-Fi module to send the email of the door status along with date and time to the concerned person.

### REFERENCES

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