**CHAPTER 1**

**INTRODUCTION**

The necessity for some means by which someone on the outside of a door could notify someone on the inside of his presence has been recognized for centuries. The earliest solution to this problem consisted of the simple expedient of knocking on the door with one's fist. As the human race grew in wisdom and technical sophistication, new and subtler methods were invented. The first of these was the mechanical door knocker, which saved man untold pain from bruised knuckles.

Then came the mechanical switch method requires that a mat containing many such switches be placed in front of the door in such a way that anyone approaching the door must step on it. Not only are such mats highly unesthetic, but it must be connected to the sound producing unit inside the house, requiring that a hole be drilled through a wall. This sort of installation is beyond what most homeowners have the time or skill to attempt, and is therefore usually done by professionals, greatly increasing total cost.

The photoelectric method requires that a light source and photodetector be mounted on either side of the path leading to the door. Here again, installation is usually done by professionals, and unless it is possible to hide the units in shrubbery, the light source and detector can be even more unesthetic than a mat.

Installation of a doorbell based on a capacitance proximity sensor is somewhat simpler than that of a mechanical switch or photoelectric unit in that the entire device can be mounted on the inside of the door. However, in order to obtain even the minimal detection range of two feet, metal sensor plates of several square feet must be used, and while these cannot be seen from the outside, they are painfully obvious from the inside.

In order to overcome the disadvantages of the methods discussed, it is clear that the ideal automatic doorbell would consist of a single small battery-operated unit, requiring no electrical connections at all. Installation would consist of driving a nail into the door and hanging the unit from it. The automatic doorbell herein described seeks to meet these criteria.

In the year 2020, Covid-19 virus has infected mankind on this earth and in this situation to stay safe we have to follow various precautions. Washing our hands regularly, wearing masks in public, and avoiding touching surfaces.

We can’t have the same old habits of eating, travelling, buying or even doing our routine works. Today homes have become offices and the internet is only saviour.

During lockdown the trend of ordering online and home delivery of various things groceries, electronics, books has increased. Though e-commerce companies claim that their employees take all safety measures from sanitizing to social distancing but when they come to house, they have to touch the doorbell and their temperature needs to be scanned. Also, our Corona warriors that is doctors, government officials have to go door to door for testing the local communities. So, touching surfaces is one we should avoid. As per studies, corona viruses stay on surfaces for nearly 24-48 hours.

Even when our family member or maybe a guest comes from outside, we need to check their temperature to see if it is less than 99.6’ F. If the temperature is more, we should tell them to seek a doctor or maybe live in isolated space and shall be allowed to visit the house only after proper sanitization is done.

**CHAPTER 2**

**LITERATURE SURVEY**

**2.1** **SMART BELL USING IOT**

Ambika, Baswaraj Gadgey, Veeresh Pujari, Pallavi B V, International Journal for Research in Applied Science & Engineering Technology (IJRASET) (2017).

This paper gives basic idea of how to remotely monitor and control door. It will work as and when bell rings at the door or any motion is sensed at the door, it will act as a trigger to the camera and the camera will capture the image of the person standing in front of the door, that will be shown to the registered user who is away from home and then he will identify the person and through the web server he can control the door lock.

Smart home security control system has become indispensable in daily life.

The design and development of a home security system, based on human face recognition technology and remotely monitoring technology, to confirm visitor identity and to control door accessibility has been reported in this paper.

**2.2 IOT SMART BELL NOTIFICATION SYSTEM:DESIGN AND IMPLEMENTATION**

Woo-hyuk Park and Yun-gyung cheong, 19th International Conference on Advanced Communication Technology (ICACT) (2017).

In this paper, they provide a security system that combines the functions of smart phone and home network system. It enables the users to monitor visitors in real-time, remotely via the IoT-based doorbell installed near the entrance door to a house.

If an outsider breaks into the house, the system can help identify the trespasser by acquiring CCTV evidence. Furthermore, this system can be used to report to the police or home security service provider immediately when a trespass occurs.

The design and development of a home security system combined with the functions of smart phone and home network system to confirm visitor identity has been reported in this paper.

**2.3 RASPBERRY PI BASED SMART DOORBELL**

Jie-Ci Yang, Chin-Lun Lai, Hsin-Teng Sheu and Jiann-Jone Chen, MDPI journal (2016).

The proposed system will allow to communicate between visitors and owners of the house. Video camera system (the photo of visitors will be sent to the owner of the house), instant message notification, SMS / MMS notification and dual audio / single sided process will be provided with videophone.

In addition, cloud storage of image data with a high resolution will be provided using the system with increasing safety and security is-sues, the use of smart door system increased consistently with the advent of security related electronics, such as digital door locks, advanced video conversation devices, and wire-less home security networks.

The design and development of a home security system combined with the functions of video camera system along with cloud storage to ensure security has been reported in this paper.

**2.4** **ARDUINO BASED WIRELESS DOOR BELL**

Anusha (Electronics Hub)

The aim of this project is to design a simple and cost-efficient wireless doorbell. This project is designed an Arduino based Wireless Doorbell using simple hardware.

The project is implemented using RF Module for wireless communication and also an Arduino UNO board to analyze the data

In order to ring the bell (or buzzer in this case), we need to push the button on the transmitter side of the circuit. When the button is pushed on the transmitter side, a logic ‘0’ will be detected by the Encoder IC. The Encoder IC will transmit this data serially through the RF Transmitter Module.

The transmitted data will be received by the RF Receiver Module and is given to the Decoder IC. The Decoder IC, then decodes the serial data to parallel data and transmits the Logic ‘0’ to Arduino. In the Arduino UNO’s, it is programmed such that, whenever a Logic ‘0’ is detected by the Arduino, the buzzer is turned on. Hence, whenever the button is pressed, the buzzer is turned on wirelessly.

The design and development of a home security system combined with the functions of RFID based system to ensure security has been reported in this paper.

**CHAPTER 3**

**SCOPE AND OBJECTIVES OF THE PROJECT**

**3.1 OBJECTIVES OF THE PROJECT**

Protecting our loved ones and ourselves from the deadly coronavirus by restricting entry to our house to only people with a normal body temperature. So, our objective is to build a smart anti-corona doorbell using an Arduino Nano.

As COVID-19 is becoming worse day by day it is important for to be safe ourselves and ensure safety to our family. As we cannot measure a person’s temperature at home. So, for the safety concerns, we install this advanced doorbell at the entrance of our house to measure the visitor’s temperature and then by using it we can decide whether to let them in or not which ensures safety.

Thus, the main idea of the project is to ensure safety through technology.

**CHAPTER 4**

**HARDWARE DETAILS OF THE PROJECT**

The Hardware components used in this project are

* OLED Display
* Bread Board
* ARDUINO NANO
* IR sensor
* Temperature Sensor (MLX90614)
* Door Bell/ Buzzer
* Relay Module

**4.1 RELAY MODULE**

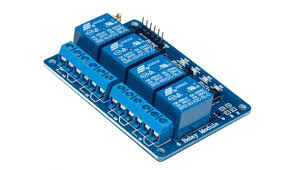
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Fig.4.1 Relay Module

• It is also able to control various appliances and other types of equipment with large current. Relay output maximum contact is AC250V 10A and DC5V 10A. One can connect a microcontroller with standard interface directly to it.

• Red working status indicator lights are conducive to the safe use. It has a wide range of applications such as all MCU control, industrial sector, PLC control, smart home control.

• This neat relay module features 4 x 5V relays rated at 10A/250V each. It is designed to switch up to 4 high current (10A) or high voltage (250V) loads with the help of microcontroller.

• Each relay can individually switch on/off by an opto-isolated digital input, which that can connect directly to a microcontroller output pin. It only requires a voltage of approx 1.0V to switch the inputs on but can handle input voltages up to 5V. This makes it ideal for 1.0V to 5V devices.

**4.1.1 SPECIFICATIONS AND FEATURES**

• One normally closed contact and one normally open contact

• Channel: 4 channels

• Relay Operating Voltage: 3.3V to 5V

• Triode drive, increasing relay coil

• High impedance controller pin

• Pull-down circuit for avoidance of malfunction

• Power supply indicator and Control indicator lamp

• Power supply and relay instructions, lit, disconnect is off;

• Input signal, signal, common Terminal and start conducting;

• Useful for appliance control;

• DC or AC signal, control, you can control the 220V AC load;

• There is a normally open and one normally close contact;

• The module is compliant with international safety standards, control and load areas isolation trenches.

**4.2 TEMPERATURE SENSOR (MLX90614)**

**4.3 IR SENSOR**

**4.4 OLED DISPLAY**

**4.5 ARDUINO NANO**

**CHAPTER 5**

**SOFTWARE DETAILS OF THE PROJECT**

**CHAPTER 6**

**RESULTS AND DISCUSSION**

**CHAPTER 7**

**CONCLUSION**

**REFERENCES**

1. Ambika, Baswaraj Gadgey, Veeresh Pujari, Pallavi B V “Smart Bell Using IOT” International Journal for Research in Applied Science & Engineering Technology (IJRASET) (2017).
2. Woo-hyuk Park and Yun-Gyung cheong “IoT smart bell notification system: Design and implementation” 19th International Conference on Advanced Communication Technology (ICACT) (2017).
3. Jie-Ci Yang, Chin-Lun Lai, Hsin-Teng Sheu and Jiann-Jone Chen “An Intelligent Automated Door Control System Based on a Smart Camera” http://www.mdpi.com/journal/sensors (2016).
4. Arduino based Wireless Doorbell: www.electronicshub.org/wireless-door-bell

**PUBLICATIONS / CONFERENCE CERTIFICATES**