

Automatic Temperature Detection using Touchless Door Bell

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Abstract – This Automated temperature and buzzing system contains sensors which will measure the temperature of the person in front of an entry point. If the temperature of the person is below 37.6 degree, below the acceptance limit, green light will blink and automatically the door bell will buzz and the person enters without touching any surface, common walls or doors. After this process one can enter the gates of offices, mall, house, college entrance and hospitals. This device will be operated by motion of hand.

Key Words: Sensors, Temperature, Automation, Covid-19, Controllers, Smart Products

1. INTRODUCTION

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.

2. PROBLEM DEFINITION

To avoid infection from covid 19 virus, in these difficult times, which is spreading exponentially, we should avoid touching surfaces. The suspect victim can get the disease within a week or after 10-12 days later, so for the safety of the family members, colleagues, doctors, delivery person touching at the entry point is a problem. Also at the entry point of every society, offices, malls, hospital gates, temperature check is compulsory. So we have created a smart entry system where both the temperature of a human body and the door opening system can be done automatically.

3. WORKING

A 5V Supply is given to Ultrasonic sensor and Arduino board from the Ultrasonic Sensor the signal is generated and that is converted in the distance by the coding and controller system, is attached to digital pin number 7.

LM 35 temperature sensor is connected to Ground and 3.3V input supply for sensing the temperature from the body, it is connected with the RGB led, on the controller board and internally in the code the parameters are given regarding the temperature values high and low. Buzzer is connected to Ground and digital pin number 7 where it will follow the signal reading from the ultrasonic sensor and it will start buzzing. RGB Led is connected to digital pin number 2, 3, 5. It will blink green if temperature of person is below 37.6 degree Celsius and will blink red if temperature is higher than 37.6 degree Celsius. If the temperature is high and the gate is not opening at that moment the guard or the house member will get to know that the person standing outside has a high temperature and has a fever or some problem within the body. Display Screen is connected to Arduino by Ground and 5V input supply. Ultrasonic sensor operates when in range of 1 foot

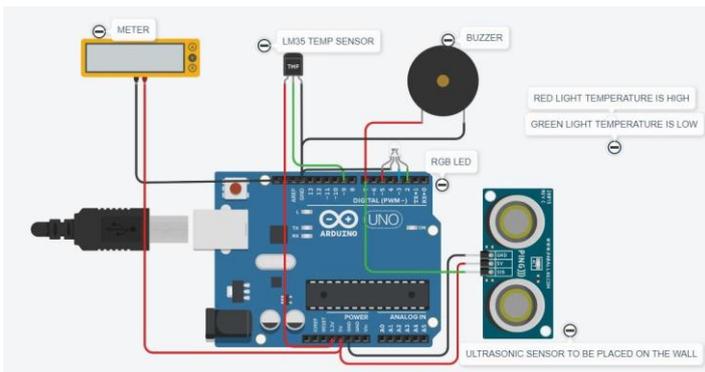


Figure 1 Circuit diagram



Figure 2 – Testing of circuit

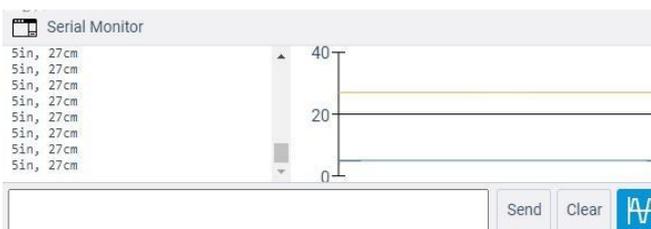


Figure 3 – Result on Serial monitor

4. APPLICATION

This system can be used at every possible entry point to check the body parameters, it is majorly used in offices and crowded places where maximum number of people are visiting in a single day.

Even at the hospitals there are different covid wards where sudden temperature check is needed, where some time it is the most important product which is very useful. It can also be installed at the society entrance gate and thus rules of social distancing will be followed. Thus this device is easy and safe to use.

5. COMPONENTS IN USE

System Consists of following hardware: -

- a) Arduino Uno
- b) Buzzer
- c) LM 35 Temperature Sensor
- d) RGB Led
- e) Red/ Green Light
- f) Meter
- g) Ultrasonic Sensor

6. FINAL DESIGN OF PRODUCT

In order to give this product aesthetic appeal, prototype design has been proposed below. This is how the new model would be available in the market.

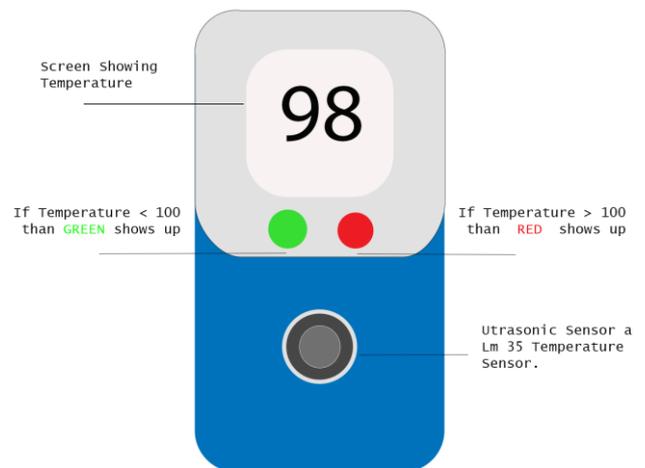


Figure 4 – Product Design of Automatic Temperature detection using touchless Door Bell

7. CONCLUSIONS

This research can be further extended by linking it to devices through Iot. This will help in reducing the manpower to check the temperature. In the future aspect it can connect to the emergency medical services. In general, this product will provide an extra layer of safety from covid-19 infection by making automatic decisions through the developed system as vaccines are still away, the process of primary detection of symptoms that is fever is very important.

8. ACKNOWLEDGMENT

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REFERENCES

1. N. Radhakrishnan, "Iot Based Wireless Automated Bell Ringing System in an institution."The Journal of creative behavior volume 8(3):2320-2882, Mar. 2020,
2. T Kusmanto, B. Yudha and A, Susano, "Utilisation of Arduino Uno R3 AND RTC DS3231 As Bell Automatic School Bell", 2nd International Conference On Community Service Programme Lembaga Penelitian dan Pengabdian Kepada Masyarakat Universitas PGRI Semarang
3. Burgoji Santhosh Kumar, "Implementation Of Automatic College Bell Ringing System Using Arduino", ISSN: 2393-8374, VOLUME-5, ISSUE-4, 2018.

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