Body Temperature Detection And Data Collection During COVID-19

Payal Yedlawar[1], Soni Waghare[2], Namrata Salwatkar[3], Umesh Ramteke[4],M.P Dongare[5]
[1, 2, 3, 4, 5]Dept of Electronics & Telecommunication Engineering
[1, 2, 3, 4, 5] Chandrapur Gondwana University.

Abstract- *COVID-19 is currently raging in numerous nations, posing a serious threat to people's lives, health, and social and economic growth. Body temperature screening is very effective in detecting possibly sick people early on and preventing the epidemic from spreading. The study primarily introduces the body temperature detection and data collection system, as well as designing a system that can detect and record body temperature.*

I. INTRODUCTION

In December 2019, a new kind of corona virus pneumonia (COVID-19) was discovered in Wuhan, China. Since then, further confirmed and suspected cases have been reported around the country, prompting the establishment of a primary response to severe public health emergencies. Fever, tiredness, and a dry cough are the most common symptoms among COVID-19 patients. COVID-19 is an important vaccine that can be used to screen suspicious patients early.

II. TEMPERATURE DETECTION AND DATA COLLECTION SYSTEM

Many different types of temperature measurement and body temperature collection methods are used during epidemic prevention and control, with the most common systems being: infrared temperature detection door, face recognition thermometer, portable automatic infrared temperature screening instrument, and so on.

2.1 Infrared temperature detection door

The infrared temperature detection door has a large temperature measurement area, has a response time of less than 1 second in a working environment of 0°C-45°C, and can sound an alarm if the body temperature is abnormal. In addition, an infrared temperature sensing door can be connected to a computer, channel gate equipment, and produce a signal for the channel gate switch. It can be employed in the subway system. Inspection, railway station security inspection, mall security inspection and other occasions.

Table.1. Epidemic prevention and control demand analysis

	Epidemic prevention and control	*Demand analysis*	*Temperature measuring instrument*
1	Flow density at the entrance	Rapid Temperature Screening requirements	Infrared thermometer
2	Highly contagious virus	Non-contact temperature measurement requirements	Infrared thermometer
3	Non-human target interference	Face Detection and Temperature Measurement Requirements	Face Recognition TemperatureMeasuring Machine
4	Repetition of temperature collection	Automatic Data Acquisition Requirements	Temperature detection and acquisition system

2.2 Face recognition temperature measuring machine

Face recognition temperature measuring machine built-in powerful AI chip, algorithm and computing power can complete face recognition within milliseconds, and support occlusion recognition, abnormal body temperature automatic alarm, Once the body temperature exceeds the normal value, it will automatically alarm and prohibit traffic.

2.3 Automatic Infrared Temperature Screening System

Portable infrared temperature screening equipment with tripod, appropriate for high-speed departure cars and other flexible temperature inspections, millisecond reaction, measurement precision up to 0.5°C, crowd of ultra-high temperature staff automated alarm In addition, an infrared temperature detecting door that can be connected to a computer, channel gate equipment, and provide a channel gate switch signal can be installed. It can be used for subway security inspections, railway station security inspections, mall security inspections, and other occasions to catch anomalous personnel thermal image photographs, allowing for nonsensical temperature measurement.

III. DESIGN OF BODY TEMPERATURE DETECTION AND DATA ACQUISITION SYSTEM

The human body temperature detection and collecting system designed in this study basically includes three molecular function modules: the identification sub-module, the temperature detection sub-module, and the data processing sub-module. Figure 1 depicts the overall flow of the system.

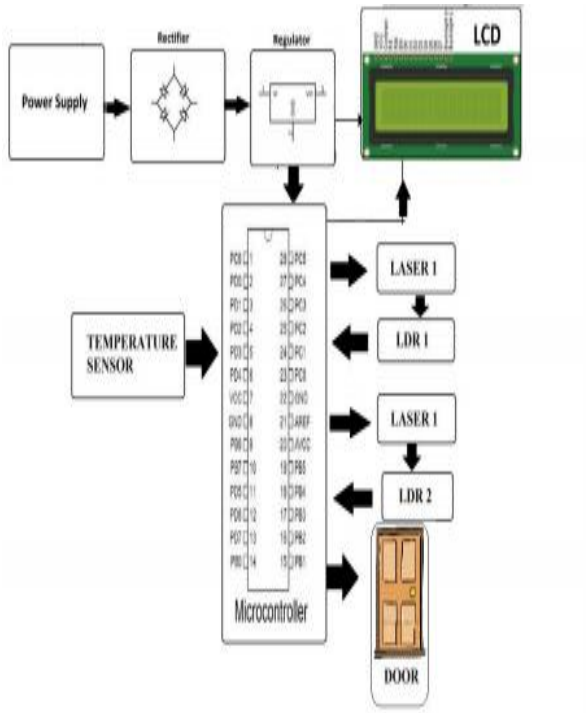


Figure.1 Auto temperature detector.

IV. EQUIPMENT

4.1. Arduino UNO R3

Classified as an atmega series microcontroller, Arduino Uno has 14 input/output pins, specifically analog and digital inputs. It is programmed using an IDE environment with C or CPP.

Figure.2 Arduino board.

4.2. Long range Infrared proximity sensor

Figure 3. distance infrared sensor

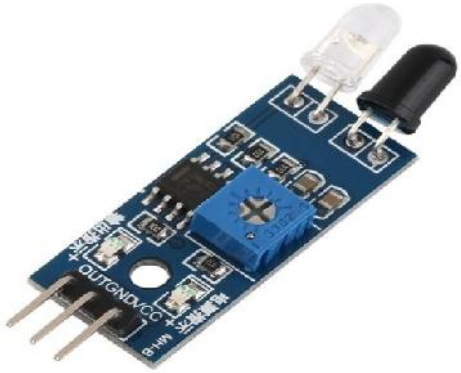
An infrared distance sensor GP2YOA21YK, with a sensing distance of up to 150 cm, is used to detect the presence of an incoming person at the social distancing gate's point of entry. The width of the gate is designed to only allow one person at a time at the entrance.

4.3. Ultrasonic sensor

Figure 4. Ultrasonic Sensor

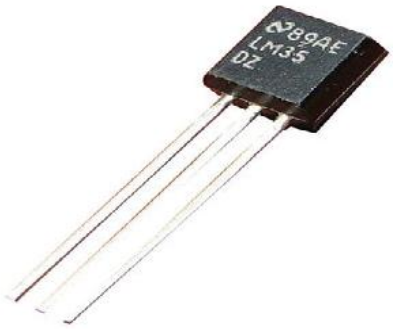
Coupled with the long-range, infrared sensor, the ultrasonic sensor is primarily utilized for monitoring the social distancing of 1 meter between the people inside the gate. It emits a sound wave at a very high frequency undetectable by human ears. Functioning as a radar, it determines the object distance through frequency hits, returning as an echo

4.4. Infrared proximity sensor



The IR proximity sensor is placed below the thermometer sensor to detect the presence of an individual to start the temperature reading.

4.5 Temperature sensor



A temperature sensor is an electronic device that measures the temperature of its environment and converts the input data into electronic data to record, monitor, or signal temperature

V. CONCLUSION

Inside the gate, social distance is maintained, and the body temperature of each individual entering is automatically measured. The fully automated elements of social distancing and non-contact, body temperature detection help to prevent the spread of the COVID19 virus by reducing person-to-person contact.

REFERENCES

[1] "COVID-19 tracker," Republic of the Philippines Department of Health, 23 July 2020, https://www.doh.gov.ph/covid19tracker.

[2] Healthy Pilipinas, Philippine Department of Health, 24 July2020,https://covid19.healthypilipinas.ph/?la ng=en.

[3] "Coronavirus disease (COVID-19), Situation Report-185," World Health Organization, 23 July 2020, https://www.who.int/docs/defaultsource/coronaviruse/situationreports/20200723-covid-19-sitrep185.pdf?sfvrsn=9395b7bf_2.

[4] T. Saminathan, A. Musipatla, P.M. Varma, P. S. Khan, P. and G.M. Kumar, "IoT Based Automated Waste Segregator for Efficient Recycling," International Journal of Innovative Technology and Exploring Engineering, vol. 8, no. 6S, Apr. 2019, pp. 164-166.

[5] S.M. Samreen, B. Gadgay, V. Pujari and B. Pallavi,"Automatic Metal, Glass and Plastic Waste Sorter," International Journal for Research in Applied Science and Engineering Technology, vol. 5, no. 6, Jun. 2017.