Detection of Covid 19 using Arduino UNO Atmega328 Microcontroller

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Abstract: **This research provides an automated social distancing gate and body temperature detection sensor that uses infrared sensors, a pulse oximeter, and infrared temperature sensors to maximize efficiency and minimize cost. The infrared sensors work together to keep track of and maintain the social distance between people approaching the gate. An automatic non-contact body temperature sensor is installed at the entry to check people's temperatures before they enter the area. When the observed body temperature is higher than normal, the gate will remain closed. The sensors are operated through an Arduino Uno.**

Key Words: COVID-19, social distancing gate, Arduino Uno, proximity sensor, infrared temperature sensor

I. INTRODUCTION

COVID 19 has a major effect on the world; new restrictions have been enforced, such as the number of users permitted in a particular room in offices, shops, and so on, in order to maintain social distancing. Temperature checks are needed at the entrances of malls, shops, and offices on a regular basis. The system provides a complete solution to the new criteria set by the government in order to fight against covid19 coronavirus. In this initiative, we create a space in which such precautions are undertaken, and we utilize infrared sensors to monitor a person's arrival. When the system detects an entry, it checks the person's body temperature; if it is lower than the set temperature, the person is let in; otherwise, entrance is prohibited. Only a certain number of persons are permitted in the room. The LCD will be used to set/view the allowable temperature, the number of individuals allowed in the room, and the number of people currently present inside the room. We also use here a pulse oximeter to detect blood oxygen of the person. If it's less than the mandatory limit then also the person is not allowed to enter. There will be also a sanitizer to disinfect the person before he/she enters the room.

II. METHODOLOGY

A long-range infrared sensor is mounted outside the gate to detect approaching persons at the social distancing gate's entrance. The IR temperature sensor has a range of 2cm-5cm and can measure temperatures ranging from -70°C to 382.2°C. The presented system employs sensors to continuously monitor people's entry, temperature, and oxygen rate and transmits it to the microprocessor, which further displays it on the LCD. The detection range of the infrared proximity sensor is 2cm to 30cm. The pulse oximeter sensor is used to detect the blood oxygen level of the people entering. The system is designed on the Arduino Uno, a microcontroller board based on the ATmega328. The

DC motor is employed to open and close the gate as well as to power the sanitizing pump. The LCD is used to display 1 the temperature, blood level and count of people in the room. In gate, an IR temperature sensor measures and displays on LCD the persons' temperature as soon as they come in front of the gate.
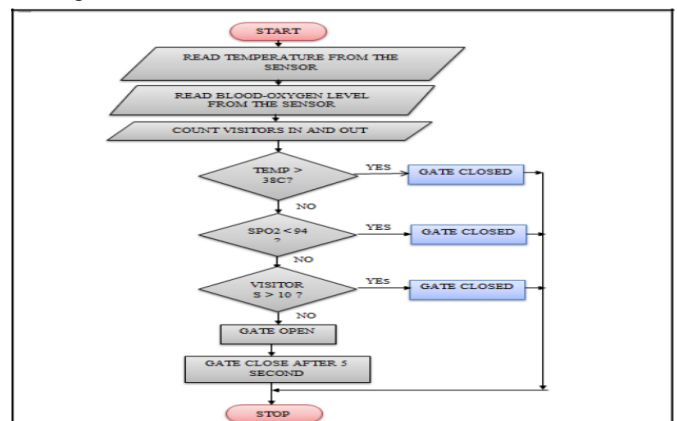

Fig. 1. Dataflow Diagram

III. PROPOSED SYSTEM

The system consists of two parts–

i. Hardware &

ii. Software.

a) **Hardware –** It includes Arduino-UNO that is connected with pump and sensor. It will help to detect temperature, oxygen level which then will be displayed on LCD.

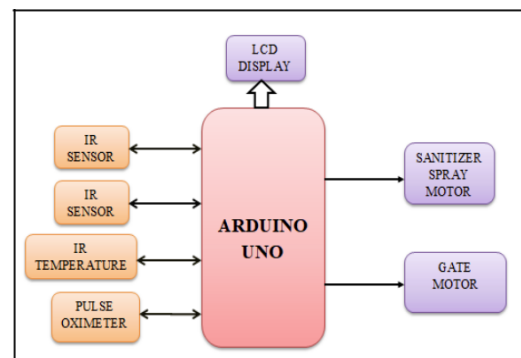b) **Software –** It includes Arduino IDE that will help to program the sensors to get the desired output.

Fig. 2. Block Diagram

IV. REQUIREMENTS

The technical requirements for developing our system are as follow:

Hardware :

- Atmel Mega328PA
- Display
- IR Temperature Sensor
- Pulse Oxi Meter
- Motor
- Sanitizer Pump
- IR Proximity Sensor

Software:

- IDE – Arduino IDE
- Languages – Embedded C

V. RESULT & DISCUSSION

Result part of Detection of Covid19 Using Arduino Uno Atmega328 Microcontroller presents the following:

☐ Near the gate, there are IR sensors. These sensors detect a person entering the gate. First of all the system checks the body temperature of the person. Then the person has to place his finger on the pulse oximeter sensor for few seconds. The blood oxygen level will be detected by the sensor. Then the system checks the number of persons already present in the room. The gate opens only if all the criteria are fulfilled. The person can enter the room if the gate is opened. As he passes through the gate the visitor count will be incremented automatically. The water pump which will spray the sanitizer.
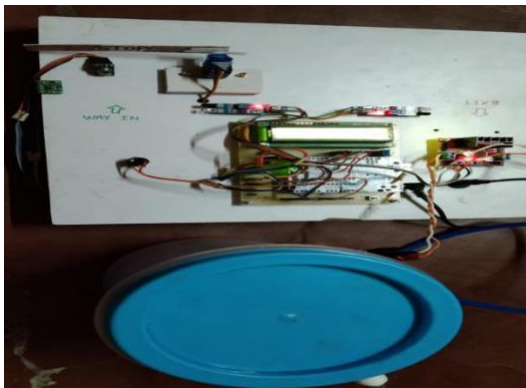

Fig. 3. Detection of Covid19 Using Arduino Uno Atmega328 Microcontroller

VI. FUTURE SCOPE

☐ Keeping track of people who are having symptoms of the virus.

☐ This can be used to control gathering of people in a certain area.

☐ This device can be used at the entry of malls, office, factories, schools, etc.

VII. CONCLUSION

This technology maintains social distance inside the gate, and as a byproduct, the body temperature of everyone who enters is automatically registered. The fully automated features of social distancing, as well as non-contact, body temperature monitoring, restrict person-to-person interaction, hence limiting the transmission of COVID19. It is recommended that we employ this type of system at all public exits, including a simpler system that solely uses the social distancing feature. Furthermore, a long-range, higher accuracy, MLX90614ESF-DCx versions of the infrared temperature sensor may be used.

VIII. REFERENCES

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