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COVID SAFETY ENTRANCE SYSTEM

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Abstract - COVID virus has infected practically every part of people's lives around the world in the last few years. This sickness is extremely contagious. Governments have implemented a number of protective and safety measures to minimize illness spread, such as wearing masks and social separation. This research presents a gadget that can automatically detect the presence of a face mask as well as health metrics and other aspects.

***Key Words*:** Covid, safety measures, monitor, verify, automation.

1.INTRODUCTION

COVID-19, the pandemic produced by the new coronavirus strand SARS-CoV-2, has infected over 10 million individuals and killed over 500,000 people. "Our key message is: test, test, test," said the World Health Organization (WHO). As governments struggle to fund or extend testing, the goal is to make aggressive and speedy testing of potential patients easier to facilitate to contain the spread. In this sense, point-of-care (POC) testing, in which testing is performed on-site and information is collected without the need to send samples to or use labs or other facilities, is of great importance. POC tests can help increase testing, particularly in low-resource environments where facilities are limited. They have the potential to shorten the time it takes to get actionable results and aid in the early detection of infected people. It is also critical that the user, who may or may not be an expert, be able to use these tests without trouble.

2. EXISTING SYSTEM

There is no suitable system in place to monitor people's health conditions at all times in the current system. Many people may be reckless, which will influence other people.

Many people relocate away from home for work due to economic concerns.

As a result, several industries employ a large number of people. Checking health problems is necessary. However, there were no suitable equipment for checking and monitoring a person's health in numerous locations.

3. PROPOSED METHODOLOGY

Many of them leave the house for various reasons such as work, shopping, and so on. We require gadgets in all locations to monitor people's health problems. In this particular situation, even minor carelessness can result in significant damage. In this proposed system, we implement a new device that can monitor a person's temperature and heartbeat, and if it is abnormal, the device will inform the desired person through LCD, and a buzzer will also alert them to their health changes. In this experiment, we used a mat lab to determine whether or not participants were wearing face masks. "Prevention Is Better Than Cure," as we all know. One of the preventative measures to prevent corona infection is to wear a face mask. An infrared sensor is utilised to detect the person, and motors are used to sanitise the hands and the surrounding surroundings. After that, keep an eye on the previously specified parameter. The changes are displayed on a Liquid Crystal Display. After all of these processes have been completed, a servo motor is used to open the door. If it is discovered that a person is not wearing a mask or that their health state has changed, the buzzer will sound an alarm, the door will not open, and all of this information will be displayed on the LCD.

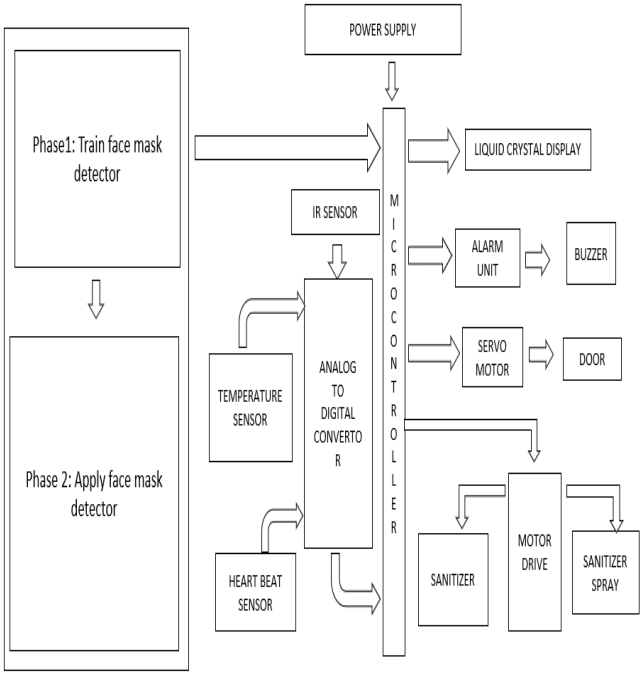

Fig 1: Block diagram

4. HARDWARE & SOFTWARE USED

4.1 Hardware:

- Arduino UNO
- Temperature Sensor
- Heart beat Sensor
- IR Sensor
- Water motor
- Servo motor
- LCD
- Buzzer
- Motor driver

4.2 Software:

- Embedded C
- Arduino IDE

5. COMPONENTS

5.1 Arduino UNO:

The Arduino Uno is an Atmega328-based microcontroller board. It features 14 digital input/output pins (six of which can be used as PWM outputs), six analogue inputs, a 16 MHz crystal oscillator, a USB port, a power jack, an ICSP header, and a reset button. It comes with everything you need to get started with the microcontroller; simply connect it to a computer by USB or power it with an AC-to-DC adapter or battery. The Uno is unique among previous boards in that it does not include the FTDI USB-to-serial driver chip. Instead, it uses an Atmega8U2 that has been coded to act as a USB-to-serial converter. In Italian, "uno" means "one," and it was chosen to commemorate the imminent introduction of Arduino 1.0. Moving forward, the Uno and version 1.0 will be the reference versions of Arduino. For a comparison with prior generations, the Uno is the latest in a series of USB Arduino boards and the reference model for the Arduino platform.

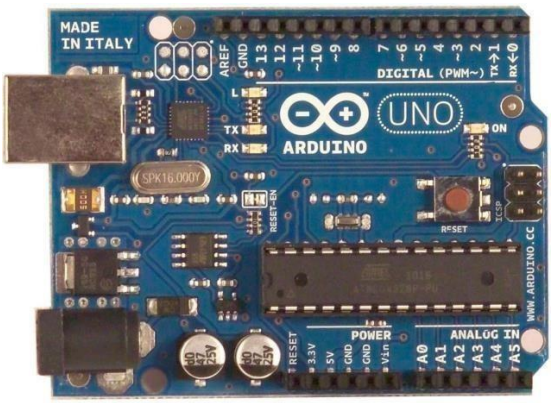

Fig 2: Arduino UNO Board

5.2 HEART RATE SENSOR

When a finger is placed on the heart beat sensor, it produces a digital output of heat beat. The beat LED flashes in unison with each heart beat while the heart beat detector is operational. This digital output can be directly connected to the microcontroller to measure the BPM rate. At each pulse, it works on the idea of light modulation by blood flow via the finger.

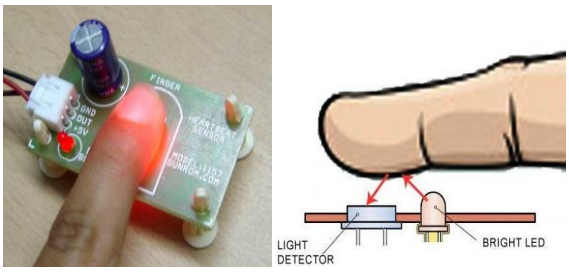

Fig3: Heartbeat sensor

5.3 TEMPERATURE SENSOR

The first slave is wired to an LM35 temperature sensor. This detects the temperature of an engine and displays the temperature level.

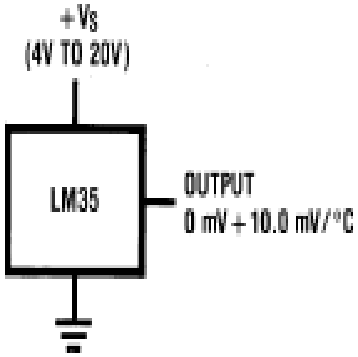

Fig4: Temperature sensor

5.4 INFRARED SENSOR

The most common sensor used by amateur roboteers is infrared sensors. Understanding how they behave can assist you in meeting many of your needs, and it will suffice to address the majority of the problem statements for India's robotics events. If you have a good operational understanding of Infrared sensors, you can easily address all of these problem statements and exercise granular control over your robot's performance, whether it's a typical white/black line follower, a wall follower, obstacle avoidance, micro mouse, or an advanced flavour of line follower like red line follower, etc.

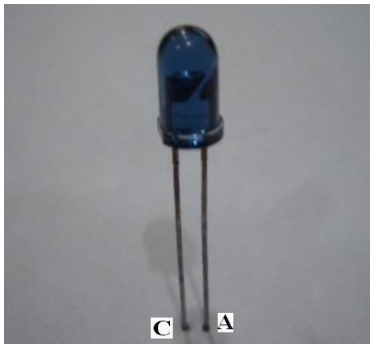

Fig5: IR module

5.5 MOTOR DRIVER

The L293 and L293D are quadruple half-H drivers with high current. At voltages ranging from 4.5 V to 36 V, the L293 is designed to provide bidirectional drive currents of up to 1 A. At voltages ranging from 4.5 V to 36 V, the L293D is designed to provide bidirectional drive currents of up to 600 mA. In positive-supply applications, both devices are designed to drive inductive loads such as relays, solenoids, dc and bipolar stepping motors, as well as other high-current/high-voltage loads. TTL is supported on all inputs. Each output has a Darlington transistor sink and a pseudo-Darlington source, making it a complete totem-pole drive circuit. Drivers are enabled in pairs, with 1,2EN enabling drivers 1 and 2 and 3,4EN enabling drivers 3 and 4. Those drivers are disabled when the enable input is low, and their outputs are off and in the high-impedance state. Each pair of drivers forms a full-H (or bridge) reversible drive suitable for solenoid or motor applications with the proper data inputs.

5.6 SERVO MOTOR

Normally, this is a simple DC motor that is controlled for specific angular rotation using additional servomechanism (a typical closed loop feedback control system). The servo system of today has numerous industrial applications. Servo motors are also commonly used to control the direction of motion in remote controlled toy cars, and they are also frequently used to move the tray of a CD or DVD player. Aside from these, there are hundreds of servo motor applications that we see every day. The main benefit of using a servo is that it provides angular precision, meaning it will only rotate as far as we want it to before stopping and waiting for the next signal.

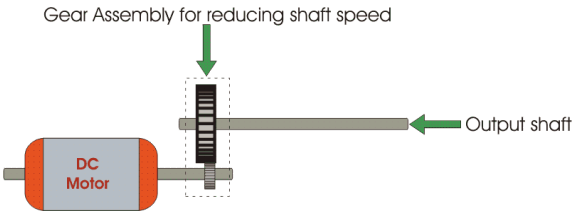

Fig6:Servo motor

5.7 LIQUID CRYSTAL DISPLAY

In applications where LEDs are used, liquid crystal cell displays (LCDs) are used. Displays of numeric and alphanumeric characters in dot matrix and segmental displays are among these applications.

Fig7: LCD

5.8 BUZZER

A buzzer, also known as a beeper, is a signaling device that makes a rasping noise when powered by stepped- down AC line voltage at 50 or 60 cycles. A ring or a beep are other common sounds used to indicate that a button has been pressed.

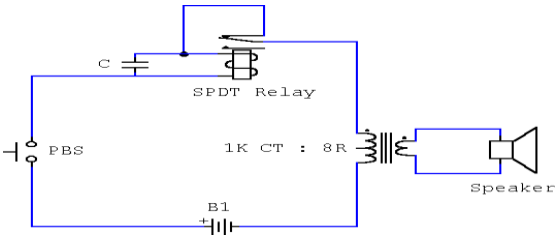

Fig8:Buzzer circuit

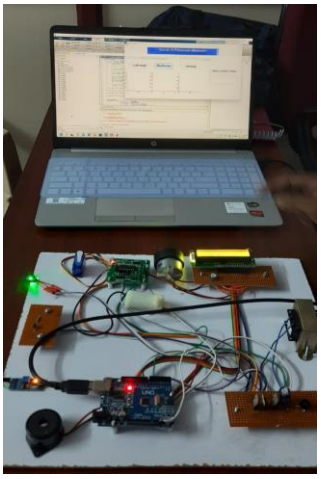

Fig 9:Final output projection

5.9 ARDUINO IDE

The Arduino Software (IDE) includes a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions, and a series of menus. It communicates with Arduino and Genuino hardware by uploading and downloading programmers.

5.10 EMBEDDED C

The C Standards committee created Embedded C as a set of language extensions for the C programming language to address commonality issues that exist between C extensions for different embedded systems. To support exotic features like fixed-point arithmetic, multiple distinct memory banks, and basic I/O operations, embedded C programming has traditionally required nonstandard extensions to the C language. The C Standards Committee extended the C language in 2008 to address these issues by establishing a common standard that all implementations must follow. Fixed-point arithmetic, named address spaces, and basic I/O hardware addressing are among the features not available in standard C.

6. CONCLUSION AND FUTURE SCOPE

This project's goal was accomplished successfully. Body temperature measurement has been designed and developed for remote health monitoring at the door entrance. The system is very user-friendly and provides accurate measurements. The foundation of our algorithm is a newly designed GLCM cascade framework. In addition, we propose a new dataset called "MASKED FACE dataset," which includes training and testing images. We pre-train our models with the WIDER FACE dataset and fine-tune them with the MASKED FACE training set to overcome the overfitting problem caused by a lack of training samples. On the MASKED FACE testing set, we evaluate our masked face detection algorithm and find that it performs admirably.

In future, the terms of sizing and integration with more measurement devices, such as electrocardiography, the device and system can be improved (ECG).

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