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Safety Regulation Checks at Entrance for Covid-19 Safety

Tejaswini R. Kekare[a], Akshay M. Sonar[a], Rushikesh R. Ghodake[a], Pankaj J. Gurav[a], Prof. Vaibhavi V. Purohit[b]

[a]*UG Student,Electrical Engineering Dept. Ashokrao Mane Group Of Institution, Kolhapur, India 416112*

[b]*Assist. Prof. Electrical Engineering Dept. Ashokrao Mane Group of Institution, Kolhapur, India 416112*

A B S T R A C T

Today we are facing problems due to the covid-19. This system comes into use, this system allows only limited people into the room. The temperature of people is checked before entering the room. First, the system will check the body temperature of the person using the contact-less IR temperature sensor. The sensor will be placed on the gate. Then the person has to place his or her finger on the pulse oximeter sensor for a few seconds. The sensor will detect blood oxygen level. Both the sensors will be interfaced with the Arduino board. Then the system will check the number of people already present in the room. The gate will only be open if all the criteria are fulfilled, i.e., body temperature is less than the set point, pulse oxygen is greater than set point and the person in the room is less than the criteria. If person's temperature is more than set the temperature, then the door won't open.

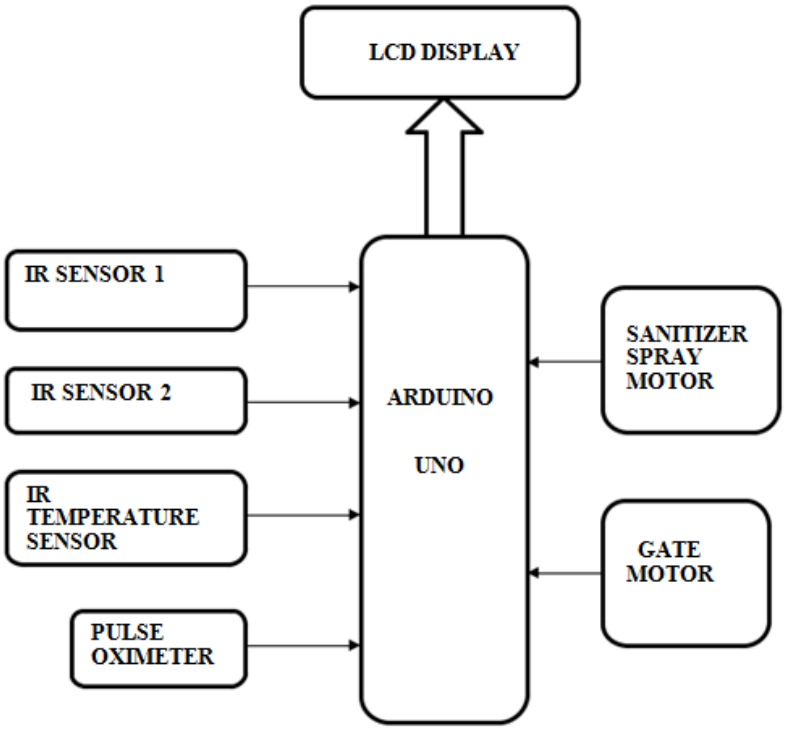
Keywords: Covid-19, IR temperature sensor, Pulse oximeter sensor, Arduino, Gate

1. Introduction

COVID-19 has created several impacts on the society, the new restriction has been obligatory as within the variety of users allowed in a very specific area in offices, shops, etc. to take care of social distancing. Besides social distance, regular temperature check at the entrances of malls, outlets and, therefore, the workplace is obligatory. The system provides an entire answer to the new social distancing criteria set by the government to fight against the covid-19 corona virus. During this project, we tend to stimulate area space wherever such necessary precautions are taken, we tend to create use of associate IR sensors to sight the doorway of someone, once the system detects entrance, it'll check the temperature of the person; if the temperature is a smaller amount than body temperature, the person is allowed entry, otherwise, the entry is denied. Solely planned numbers of individuals area unit allowed within the area. Body temperature of individuals allowed within the area in addition because the number of individuals actively gift within the area may be set/viewed victimization the liquid crystal display. We tend to additionally use a pulse measuring device to sight the blood element of the person. If it's but the obligatory limit, then the person is not allowed to enter. There'll even be a sanitizer to clean the person before he/she enters the space.

Block diagram:

* *Corresponding author.*
E-mail address: *tejaswinikekare2122@gmail.com*



2. Methodology

The system provides a complete solution to the new social distancing criteria set by government in an order to fights against the covid19 corona virus. There will be 2 IR sensors placed near the gate. One a sensor will be inside the gate and the other will be outside the gate. These sensors will detect the person coming near the gate. First, the system will check the body temperature of the person using the contactless IR temperature sensor. The sensor will be placed on the gate. Then the person has to place his finger on the pulse oximeter sensor for a few seconds. The sensor will detect the blood oxygen level. Both the sensors will be interfaced with the Arduino board. Then the system will check the number of persons already present in the room. The gate will only open if all the criteria are fulfilled, i.e. body temperature is less than set point, pulse oxygen level is greater than the set point and the person's in the room is less than the criteria. Then the gate opens the person can enter the room. When a person passes throu gh the second IR sensor the visitor count will be incremented automatically. There will be a water pump which will spray the sanitizer. It will be interfaced to the Arduino using a relay. Similarly, the gate motor will be interfaced with the Arduino using a motor drive IC.

3. Important Hardware Components

1. Controller	ATMEGA328 (Arduino Uno)
2. Display	LCD 16x2
3. IR Temperature Sensor	MLX 90614
4. Pulse Oxi Meter	MAX 30100
5. Motor	30RPM 12V DC GEARED MOTOR
6. Sanitizer Pump	12V WATER PUMP

Controller:

The Arduino UNO might be a microcontroller board supported the ATmega328 (datasheet). It's fourteen digital input/output pins (of that half-dozen is also used as PWM outputs), half-dozen analog inputs, a sixteen megahertz crystal oscillator, a USB association with associate degree, an influence jack,

AN ICSP header, and a electric switch. It contains everything needed to support the microcontroller; merely connect it to a laptop with a USB cable or power it with an AC-to-DC adapter or battery to urge started.

LCD:

•5x8dotswithcursor

•Built-in controller (KS0066orEquivalent)

•+5Vpower supply (Alsoavailablefor+3V)

•1/16dutycycle

•B/Ltobedrivenbypin1,pin 2or pin15,pin16 or A.K(LED)

•N.V.optional for +3V power supply

IR Temperature Sensor:

Our latest infrared temperature measurement module is the MLX90614. This sensor measures the surface temperature by detecting infrared radiation energy and wavelength distribution. The IR temperature probe consists of an optical system, photoelectric detector, amplifier, signal processing and output module. The optical system collects the infrared radiation in its field of view and the infrared radiation energy is converted in to corresponding electrical signals when converging on the photoelectric detector. After being processed by the amplifier and signal processing circuit, the signal is converted in to a temperature value. The MLX90614 is self calibrating and has a low noise amplifier integrated in to the signal processing chip. The chip itself is a 17 bit ADC and DSP device, giving accurate and reliable results.

Pulse Oxi Meter:

Heart Rate click carries Maxim's MAX30100 integrated pulse oximetry and a heart-rate sensing element. It's associate optical sensing element that derives its readings from emitting 2 wavelengths of sunshine from 2 LEDs a red associated an infrared one then measurement the absorbance of pulsing blood through a photo-detector. This explicit crystal rectifier color combination is optimized for reading the information through the tip of one's finger. The signal is processed by a low-noise analog signal process unit and communicated to the target MCU through the mikro-BUS I2C interface. Developers of end-user applications ought to note that the readings may be negatively wedged by excess motion and changes in temperature. Also, an excessive amount of pressure will constrict capillary blood flow, and so diminish the dependability of the information. A programmable INT pin is additionally obtainable. The operates at the three.3V power offer.

Main Applications:

1. Medical observance Devices
2. Fitness Assistant Devices
3. Wearable Devices.

DC MOTOR:

SPEED AND LOAD CHARACTERISTICS:

The relationship between torsion vs speed and current is linear as shown left; as the load on a motor will increase, Speed can decrease. As long because the motor is employed within the space of high potency long life and sensible performance may be expected. However, victimization of the motor outside this varies can lead to hot temperature rise and deterioration of motor components. If the voltage is continuous applied to a motor during a latched rotor condition, the motor can heats up and fails during a comparatively short time. Thus, it's vital that there's some kind of protection against hot temperature rises. A motor's basic rating purpose is slightly under its most potency purpose. Load torsion may be determined by measure this drawn once the motor is connected to a machine whose actual load price is understood.

Sanitizer Pump:

This product can be used in many fields, such as computer cooling systems, garden fountains, aquariums, car cooling system, humidifiers, air conditioners, and many other cooling and circulation systems.

IR Proximity Sensor:

The useful Infrared detector is an add-on for your line follower golem and an obstacle avoiding the golem that provides your golem the flexibility to notice a line or close objects. The detector works by detective work mirrored light-weight returning from its infrared LED. By measurement the quantity of mirrored actinic radiation, it will notice a light-weight or dark (lines) or perhaps objects directly ahead of it. Aboard a red LED is employed to point to the presence of an object or notice lines. Sensing vary is adjustable with the constitutional rheostat. The detector contains a 3-pin header that connects to the microcontroller board or Arduino board via feminine to feminine or feminine to male jumper wires. Mounting a hole for simply connect one or an additional detector to the front or the back of your golem chassis.

4. Conclusion

Due to covid-19, we tend to all faces several issues. Thus, we have to avoid thronged places. We've designed one system that gives a resolution for this downside. It permits a solely restricted number of individuals into space, checks the temperature and blood-oxygen level of the folks. It monitors condition in real-time take steps to limit and mitigate safety risks. And conjointly recommendation folks of protocol for social distancing. We will use this method for entrance for malls ,restaurants, colleges, industries and, offices.

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