



## Contactless Thermal Scanning With Door Control And Automatic Hand Sanitizer

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### ABSTRACT

The design depicted shows the preventive measure that can be taken during the COVID-19 pandemic in the whole world. . Right now, sanitizers are the most important goods. According to WHO's new standards and regulations, a high level of sanitization is required to live. The design provided a solution to the problem. The design incorporates an automatic hand sanitizer and temperature detection system, allowing users to sanitise their hands whenever they wish, without having to touch the sanitising equipment. The touchless temperature sensor gives the body temperature of the person. The design also includes gate control system and if the body temperature is above 38° then buzzer will blow and then person can't enter inside and count shows on software, if temperature is below 38° then motor will automatically open.

Keywords: ATmega328P, Ultrasonic sensor, Temperature sensor(MIX 90614), PIR sensor.

### 1. Introduction

Since December 2019, the globe has been in a state of high anxiety; the numbers are growing by the day, and no vaccination has been fully tested against the pandemic agent. Yes, COVID-19 was previously unknown to the race before breaking out in Wuhan, China. Because he comes from a huge family, he is subject to constant mutation, which prevents researchers, microbiologists, pharmaceuticals and other scientists from studying him to draw the line of conclusion on the vaccine. Keeping in mind, the situation worldwide, sanitization commodities should be installed in each and every corner of the sphere, be it an industry, a corporate office, an educational institute or a shopping mall. In this work, an automatic hand sanitizer with temperature sensing design prototype has been made.

### 2. Problem Definition

The illustration depicts the global preventive measures that can be done during the COVID-19 pandemic. Right now, sanitizers are the most important goods. According to WHO's new standards and regulations, a high level of sanitization is required to live. The design provided a solution to the problem. The design incorporates an automatic hand sanitizer and temperature detection system, allowing users to sanitise their hands whenever they wish, without having to touch the sanitising equipment. The person's body temperature is determined using a touchless temperature sensor. If the temperature rises beyond 38°F, a siren will sound, and the user will be unable to enter the building and count shows using software, If temperature is below 38° then motor will automatically open.

### 3. Methodologies

As we switch on the device, the sensors attached to the microcontroller gets activated. We have two systems to work simultaneously to each other. The automated sanitizer comes first, followed by the contacting temperature sensing. The microcontroller has an ultrasonic sensor and a PIR/ultrasonic sensor for detecting human/object ranging and motion, respectively. PIR/ultrasonic sensor has a range of around 5m – 12m and any detection in the specified range will activate the sanitizer and it will sanitize the surroundings with activation of spray pump 1 accompanied with a blower so that the sanitizer reaches the surrounding . On the other

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hand, the ultrasonic sensor has a range of less than 30cm, thus any movement near(30cm) the device will trigger the spray pump 2, and the sanitizer will reach the hand through a short pipe. Sanitization takes place simultaneously with sensor activation, keeping the area clean and free of viruses, germs, and other infectious agents. The temperature sensor detects the person's body temperature as soon as it is touched, and the temperature is displayed in degrees or Fahrenheit on the LCD display (as it is programmed to convert C to F). The buzzer sounds a warning and the RGB led attached turns red if the temperature sensed is higher than the usual body temperature (98.6 F), if the sensed value of the sensor is equal or below 98.6 F then the buzzer is off and the RGB led is green. Depicting a symbol of safe and safety. Node mcu will send the temperature tested count to firebase Google cloud platform.

#### 4. Implementation

The Arduino Uno is microcontroller board used on microchip ATmega328P microcontroller that controls the input (ultrasonic sensor ,PIR sensor and temperature sensor)And output ( motor pump, DC motor and LCD display).First in hardware ultrasonic sensor is used as input device which sense the object in 300 cm to400 cm where it has four pins first is VCC and second pin trigger is connected to the ATmega328P pin number 10 and echo is connected to pin number 11 then another which is temperature sensor it is also used as input device which first pin is connected to ATmega328P on eight the pin and another is connected to the ninth. In our design LCD 16x2 display is used as output device where D7 is connected to ATmega328P pin number 2, D6 is connected to 3, D5 is connected to 4, D4 is connected to pin number 5 and RS and E is connected to pin number 7 and 6 respectively where it display that the number of high temperature persons and the number of low temperature person which it is denoted as HT and LT. Motor drives are also used to control the motor and connected to the pin number A0 and A1 of the ATmega328P .

#### 5. Result

Creating and designing of an Contactless Thermal Scanning With Door Control And Automatic Hand Sanitizer..



Fig. Final modal of a project.

#### 6. Conclusions

As stated earlier the device circuit is made in a software and simulated accordingly. While prototyping the hardware some power distribution to each module can be a hindrance, to overcome the problem, relays must be installed to drive the spray pumps/submersible pumps, so that the sensors, led and other minute modules get enough power supply from the inbuilt 5 V and 3.3 V ports of the Adriano microcontroller. It can be manufactured in any household at a very low cost and can be installed anywhere be it in offices, educational institutes, public transport, regular shops etc. To draw a concluding line to the project it can be said that in a war with an invisible enemy the device is a weapon for survival in this pandemic situation.

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