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AUTOMATIC DISINFECTANT SYSTEM

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Abstract: ***COVID-19 is a disease caused by the SARS-CoV-2 virus that primarily attacks a person's respiratory system. Some milder symptoms can include fever, aches, and chills, but it can also lead to more serious conditions such as pneumonia. A person who has pneumonia or even slight shortness of breath might not know when to go to a hospital, especially as they start to get even more overwhelmed.***
We have developed a system where we can check thermal temperature and oxygen level in the body of a person, so that they can be warned if they are going through any of the symptoms.
This system will use mlx90614 sensor to record thermal temperature of the person and max30102 sensor for recording oxygen level of the body. To use mlx90614 with accuracy we placed an ultrasonic sensor, so that when the person is in accurate range of mlx90614, the sensor will read temperature. And if the body temperature is above 37 degree Celsius then it will blow a buzzer and if the oxygen level (SpO2) is below 90 then also it will blow buzzer and also when both temperature and oxygen level are not in under respective threshold the alarm will blow.
The controller we are using is Arduino Uno and Software we are using is Arduino IDE. We are also using a pressure pump and nozzle to create mist of sanitization liquid. To detect a person's hand under sanitizing mist we are using another ultrasonic sensor.
Our system is capable to sense and display the thermal temperature reading of the body as well as the SpO2 level of the body. So when a person comes to the system he will have to place his hand near the mlx90614 sensor, then the ultrasonic will detect the person is in precise range of the sensor and record the temperature of the person. If the temperature is less than 37 degree Celsius then it will blow the buzzer once indicating it is safe and if it is more than 37 degree Celsius then it will continuously blow the buzzer with 1 second interval for 10 times indicating that the person is not safe and should contact hospital as soon as possible. Similarly for oxygen level (SpO2) below 90% it will indicate blow the buzzer indicating the person is having strong symptoms and should contact hospital immediately.
So by using our system we can ensure a safe environment in offices and institutes.
Keyword: Arduino, Spo2

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I INTRODUCTION

The aim of the project is to design a Safety room in which we can instantly check whether the person is safe to enter in building or not.

The whole world is facing the pandemic now but we can't stop our work. In the offices and schools and colleges we can use this project to check if the person entering is safe or infected. So by using our project we check the thermal temperature of every person and also sanitize whole body including the objects he carries.

Applications

- To construct a safe work environment.
- To sanitize every person entering the building.
- To check thermal temperature of every person to ensure double safety.

II LITERATURE REVIEW

"Design of a non-contact body temperature measurement system for smart campus" Published in: 2016 IEEE International Conference on Consumer Electronics-China (ICCE-China)

The non-contact body temperature measurement system uses thermopile sensor to detect body temperature without any contact. This will collect the extreme body temperature reading which can be used to detect infected or at risk patients.

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“Study on Epidemic Prevention and Control Strategy of COVID -19 Based on Personnel Flow Prediction” Published in: 2020 International Conference on Urban Engineering and Management Science (ICUEMS)

In this paper we have seen which strategies can be applied in this pandemic situation its risk as well as prevention and control of the situation. By studying this we understand the Need of strategies to be applied in prevention of covid-19.

“Smart solution for reducing the COVID-19 risk using smart city technology”

Published in: IET Smart Cities (Volume: 2, Issue: 2, 7 2020)

In this paper we have studied various possible solutions for reducing the risk of Covid-19. The solutions mentioned are sanitizing tunnel, Ultra violet radiation tower, etc. By using this smart solution we can reduce the risk of Covid-19.

From the above literature survey it can be summarized that it is possible for create a body and object sanitizer and a thermal reading checker to ensure a safety work environment. Especially in this pandemic situation.

The plan is to combine the sanitization and thermal reading process into a small box to ensure safety of everyone.

There are various drawbacks:

[1] Big and Bulky design.

[2] We have to make it affordable

III AIM AND OBJECTIVES

Aim and Objectives:

To automatically sanitize on hand

Use ultrasonic sensor for detection and mlx90614 for thermal reading

To display thermal and oxygen level

To reduce manpower and implement physical distancing

Using product is easy

Methodology:

If any persons enters the system it will be detected.

Detection is done by basic Ultrasonic and PIR sensor.

Then the pump is started so that sanitizer is sprayed all over.

In between boy thermal temperatures is recorded.

If the body temperature is higher than normal buzzer will start.

And if it is normal then the door connected to actuator will open and person is allowed to enter the building.

IV BLOCK DIAGRAM OF THE SYSTEM AND ITS EXPLANATION

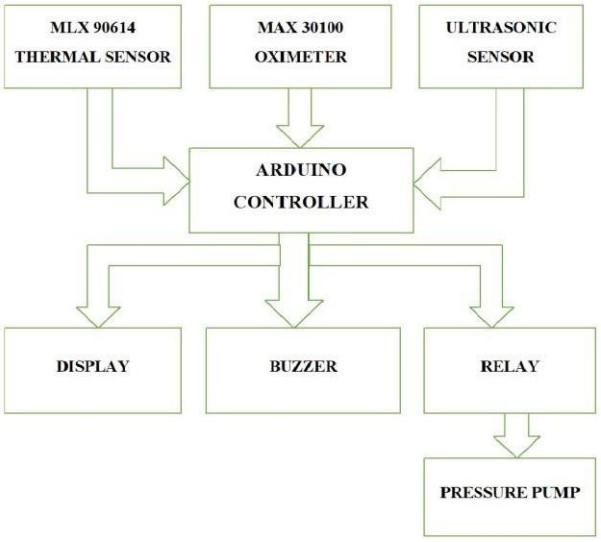

Figure 1: Block Diagram

V HARDWARE DESIGN

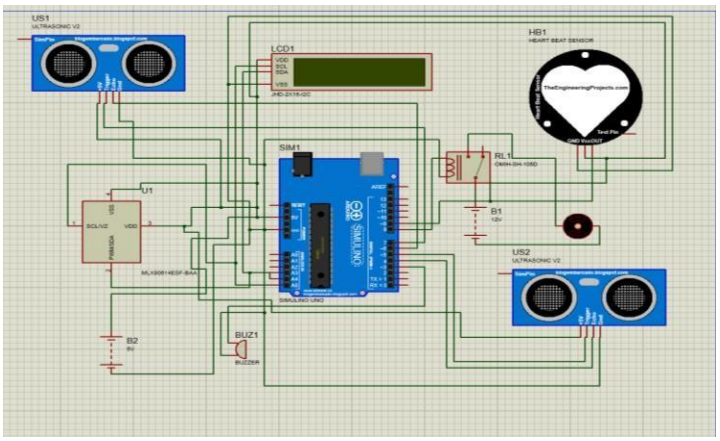

Figure 2 Simulation diagram of the Automatic Disinfectant system

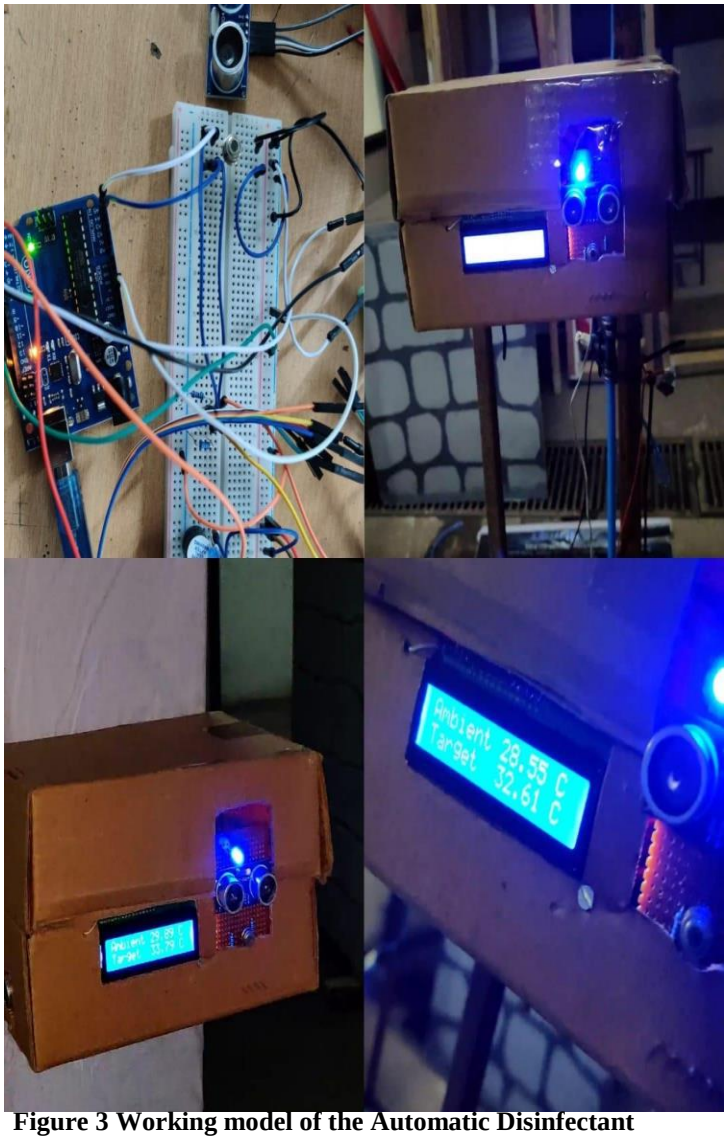

Figure 3 Working model of the Automatic Disinfectant system

VI CONCLUSION

The proposed model is easy to use, low-priced and does not require any special training.

This model combines the temperature sensor, the oximeter and the sanitizer.

As the whole system is becoming smart, the requirement of manpower will decrease, thus benefiting everyone.

The time efficiency will increase phenomenally since this system will eliminate the waiting queues.

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[1] "Design of a non-contact body temperature measurement system for smart campus" 2016 IEEE

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