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Automatic Temperature Detectionfor Safety Entrance

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Abstract—*Covid-19 has made a huge impact on the society. The new restriction has been imposed regarding entrances of multiple people in various places include schools, colleges, hospitals, offices, shopping malls etc., To stop the spreading of infection, social distancing and thermal screening are being adapted everywhere. The thermal screening is currently being done manually and there is a huge chance of errors in human temperature detection. Moreover, thermal screening requires human intervention. Taking these into considerations this project is developed for safety entrance based on human temperature detection. In this entrance system the temperature of a person is checked at the entrance without human intervention, hence everything can be done automatically.*

Keywords: *ESP32, IR Sensor, OLED Display, Buzzer, MLX90614 (Contactless Temperature Sensor), Servo motor*

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I. INTRODUCTION

Since, Covid -19 pandemic is considered as the most critical worldwide well being disaster of the century and the best test that the man kind has gone through after second world war. The side effect of disease are fever and body pains.

Since December 2019 we have gone through many changes in our lives. The quantity of patients for most part was expanding step by step enormously. So, by watching this condition and by remembering all the rules we made some set ups like contact less sanitization and body temperature detector. It was programmed by non-contact waterless 70% alcohol based sanitized container showing that so by watching this extremely momentum condition and by remembering all these rules we made some investigated deal with contactless sanitization &body temperature detector identify gadget. The disease can spread even from the air infected with the virus. The disease was found in Wuhan, China with some confirmed cases and several deaths and later they are found in various places of China. This gives the clear idea the disease can easily spread from one place to another easily.

II. OBECTIVE

The main aim of this entrance system is to avoid the human involved intervention for checking the temperature of people at various places. The main theme of our project refers to embedded system technology that includes IOT in this entrance system by using contactless temperature sensor (MLX90614) the temperature of human is measured. This measured value is checked with the fixed threshold value, if the measured value is less than the threshold value is allowed inside. Otherwise that person is restricted by closing the door and pointing person with a buzzer indication. Here everything is done automatically by using internet by the user. In addition to this the count of predefined persons can only be allowed.

III. LITERATURE SURVEY

1. Here we have taken the some of the existing systems for measuring the temperature of a person without any contact they include "RFID based Contactless body temperature screening using Arduino MLX90614 IR temperature sensor"[1]. Here the process include when a person scans his RFID card and EM18 RFID Reader sends the data to the microcontroller Arduino Uno is using UART communication. Now the temperature of the person is measured using a non-contact infrared thermometer using the MLX90614 sensor. The temperature is measured one only when the person is less than 25 cm from the thermometer &ultrasonic sensor is used for this purpose. This temperature is noted against the name is read through RFID reader directly to an excel sheet. This is also an attendance system which stores the temperature of each and every person. As

this is not the completely contactless way of reading RFID tags, the possibility of spreading infection get exists. Also, lack of RFID users in most of the places leads to lowernumber of users.

2. Theother reference we have taken is "Design and Development of Arduino based contactless thermometer 1Md. Abdullah Al Mamun, Mohammad Alamgir Hossian, 3M. Muntasir Rahman, 4Md. Ibrahim Abdullah, 2Md. Shamim Hossian"[2] Here, Arduino uno, MLX90614 temperature sensor, OLED display and a battery is used in developing this system. The thermometer builthere has a wide range of -70^{o} Cto 380^{0}C temperature for measurement, as a result of 0.02 with an accuracy of 0.5^{0}c and is accessed by 2 wire serial SM bus compatible protocol. Unlike traditional thermometers, the proposed thermometer does not need any type of contact to measure the temperature. When Arduino is powered on, the MLX90614 measuresthe temperature of the body or an object in its range. This range is provided by a LED or IR light for accurate target of desired object or body. This temperature displayed on OLED display.

3. The other reference we took is " Automated Social Distancing Gate with Non-Contact Body Temperature Monitoring using Arduino Uno the entering person's body temperature is measured using the sensor MLX90612ESFF-BAA-000-TU-ND non contactIR temperature sensor and this temperature displayed on 4x20 blue LCD as soon the IR temperature sensor GP2YOA21YK detects the forehead at a distance of 150cm. A buzzer of 0.5 watt, 8 ohms is used for notify detection of the abnormal temperature i.e., 37.5^{0}C and above. Also the speaker is used for indicating thesame. Mlx90614ESF-BAA-000-TUND for better accuracy.

4. Sandra Costanzo(2020) An integrated sensor platform for non contact temperature monitoring is developed in this work. The solution, based on the combined integration of an infrared thermometer and a capacitive humidity sensor, this able to providea fast and accurate tool for remotely sensing both ambient and body temperature in the frame work of this pandemic situations, hence by avoiding any direct contact with the people. The information relative to the ambient temperature is exploited to derive a correction formula for the accurate extraction of body temperature from the measurement provided by the standard infrared sensor.

5. Vinod BG(2020), In response of pandemic outbreak, there is need for checking temperature of the visitors to detect fever beforethey enter the room or city via airports etc., there is a need of thermal screening every where before granting access to the visitors. There is a risk of cress infections due to manual testing. The MLX90614 is a high performance TR sensor that can be usedin automatically make a temperature check up and decide whether to grant door access. This paper is mainly consists of three subsystems: they are Human presence detection system, Temperature measurement system and automatic door access control with the display.

IV. IMPLEMENTATION

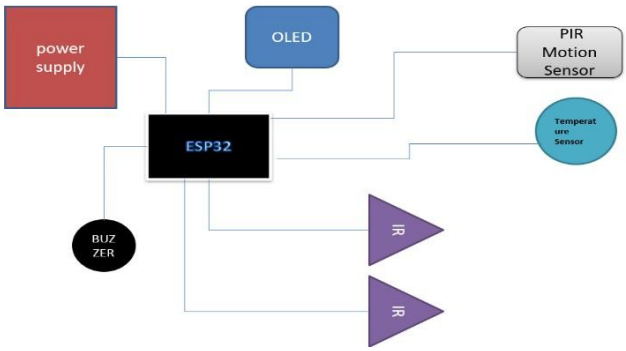

Fig. 1: Block Diagram

Here the person's presence is checked at the entrance and also at the place where the person is leaving from the room, Hence we require two IR sensors to notice the presence of that person. The person himself must check his temperature by keeping his hand near the temperature sensor. As the temperature is displayed and remaining all the alerts and instructions according to his temperature are given to a person are displayed in OLED display. If any of the out of rule is restricted by buzzing the buzzer and the door gets locked to restrict the entrance. The whole system gets worked with internet by connecting the kit to hotspot to the particular user's device who has security username and password. Hence this acts as the security system in this entrance system from connecting the kit with the unauthorised user.

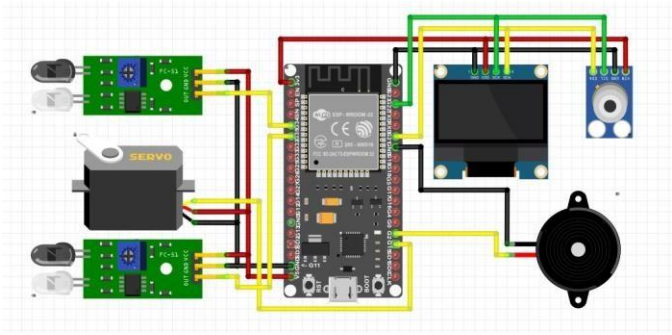

Fig. 2: Circuit Diagram

Now, let us see the connection between all the components throughthe table representation as shown below:

OLED To ESP32

GND	GND
VDD	3.3V
SCL	D22
SDA	D21

MLX90614 To ESP32

GND	GND
VDD	3.3V
SCL	D22
SDA	D21

BUZZER To ESP32

Plus (+)	D4
Minus (-)	GND

IR1 To ESP32

VCC	5V
GND	GND
OUT	D34

IR2 To ESP32

VCC	5V
GND	GND
OUT	D35

SERVO To ESP32

Plus (+)	5V
Minus (-)	GND
Signal	D2

V. RESULT

VI CONCLUSION

The covid 19 pandemic is considered as the most world wide well being disaster of the century and there may be chance of getting this type of pandemics in future. For these the best test that the mankind looked since the second world war. The normal side effects of this disease are fever, cough, and if the temperature screening is done the conceivable spread of the infection can be restricted partially. This framework empowers a completely programmed contactless temperature evaluating for entrance access. Right now, the temperature screening is done physically and it not just turns out to be exceptionally troublesome with regards to enormous scope yet their can be carelessness of the watchmen as well. In places like air line stations and metro stations , the large number of individual show up and leave which are dangerous spots for spreading of infection. In the event that the computerised temperature screening measure is utilizedin such area, it makes the screening cycle quick, as well as stops the spread of contamination generally. This framework entrances can like has been carried out in the shopping centres', film, grocery and many other places. This type of framework can be implemented into previously existing program entry ways like e.g. Glass entry ways with an extremely less adjustments. The manual framework where in observing is required, it also require heaps of cash to keep up and were costly, utilising the above framework the clients can meet these expenses and reliance on manual framework.

VII FUTURE SCOPE

We can implement this model in future with the camera module in order to detect the person with no mask. Same as having improper temperature levels if a person not wearing mask can be restricted by buzzer indication and noticing him with the help of camera module.

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