International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 06 | June - 2021 ISSN: 2582-3930

HIGH ALERT SURAKSHA USING EMBEDDED PLATFORM FOR MALLS

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ABSTRACT

World is facing crisis from the Covid-19 disease. The outbreak of this disease is affecting so many lives. Hence to prevent the spread of this disease especially in the social places like malls is need of the time. Here we are presenting a design and development of a system to prevent the spread of Covid-19 disease in the malls. Our system consists of a sanitizer dispenser, PIR sensor, IR temperature sensor, Pulse Oximeter sensor for monitoring the health factors. The measured values from the sensors are processed by the core controller ATmega328p IC. A speaker is used to give the instructions. If all the values are in limit then the person can go inside the mall. Hence only asymptomatic customers can go inside the mall hence preventing the spread of Covid-19. We have also added a PIR sensor to each cart in the mall with Piezo Buzzer to make customers conscious about the social distancing.

***Key Words*:** PIR sensor, IR temperature sensor, Pulse Oximeter sensor

1. INTRODUCTION

The world is facing an unprecedented threat from the COVID-19 pandemic caused by the SARS-CoV-2 virus (referred to as the COVID-19 virus). This virus has affected so many lives. It has affectd so many sectors of the countries which resulted in the deflation in the economy. The various sectors includes shopping and entertainment. Malls in the country contribute significantly to the retail economy hence the reopening of malls was essential. As the malls, markets and other social places are reopened it is essential to take the preventive measures. Among the social places shopping malls get frequented by large number of people for shopping, entertainment and food. Because of the deadly virus people are scared to enter the malls. Hence customers need to believe that malls are safer social spaces than the conventional high streets. Maintaning regulated and monitored environment, adhering to high standard of safety and hygiene combined with social distancing precautions and technology driven solutions is necessary.

It can be seen that the COVID-19 symptoms such as pneumonia, heart pulse rate, oxygen level and temperature rise due to fever can be used to determine the condition of the patient. Hence to prevent the spread of COVID-19 infection, it is important that required social distancing and other preventive measures are followed. The preventive measures include an entrance with mandatory hand hygiene (sanitizer dispenser), thermal screening provision and oxygen level monitoring. Because of this only asymptomatic customers can go inside the mall hence preventing the spread of COVID-19. As the social distancing is also the crucial factor in case if preventing the spread of COVID-19 a PIR sensor is attached to each cart in the mall. This will make customers conscious about the social distancing.

2. LITERATURE SURVEY

In [1], This paper tells about design and development of an intelligent wearable device, for COVID-19 positive patients that is capable of predicting and notifying the increase in severity of the virus. The device uses ESP 32: Node MCU, MAX 30102: Pulse Oximeter and Heart rate sensor, LM35: Temperature sensor and a vibration sensor. This device will monitor the patient's body condition such as heart pulse rate, oxygen saturation level, body temperature, hand movements due to restlessness and process this information simultaneously. Consequently, when the virus is predicted to advance to its next stage, an alert will be sent to the person taking care of the patient. Hence, this device will inform when the patient is advancing from mild to the moderate or serve condition of COVID-19. The paper gives a deep understanding on the use of this device.

In [2], the paper says about emergence of the novel Coronavirus(SARS-CoV-2), which has caused unexpected challenges to health of the people of this world, the paper also aims at reducing the transmission rate of the disease. The paper also gives a complete comparison between hand sanitizers and soap, foam vs gel, and it says that high concentration of ethanol can reduce the amount of virus particle present in the hand and hence proves the effectiveness of alcohol based hand sanitizer. It also says about the temperature measurement which is also a important factor in case of the covid19, hence use of an automatic temperature sensing gun in the public places is must .

In [3], This paper exhibits the design and development of a mobile patient-monitoring system by using four sensors in one system. In earlier times, in areas of large disasters, healthcare service providers conducted vital signs measurements manually, recorded them on papers and communicated over the radio, but when the number of patients drastically increased it led to chaos among the healthcare providers. The system consists of mainly four sensors: Electrocardiogram (ECG) module, blood pressure sensor, temperature sensor and a pulse oximeter module. The sensors will be integrated into one system using Arduino. The data collected from the sensors will be sent to a WiFi module called NodeMCU ESP8266, through which the data will be uploaded on cloud, which will allow the healthcare provider to view it.

3. PROPOSED SYSTEM

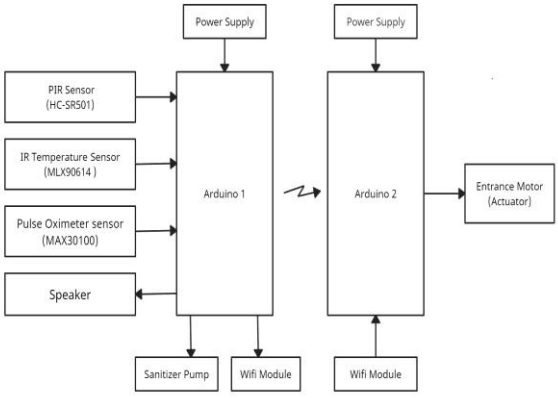

Fig.-Block diagram

- The system contains a sensing unit and a actuating unit. The sensing unit consist of a arduino uno sanitizer pump, PIR sensor, IR temperature sensor, Pulse oximeter sensor, Wifi module and a speaker.
- The measured values from the sensors are processed by the core controller. The ATmega328p IC is used as a core controller. These values are sent to the actuating unit through the Wifi module.
- The actuating unit consist of a arduino uno, Wifi module and a actuator (Gate). If all the values are in the limit then the actuator (Gate) will open.

3.1.SOCIAL DISTANCING UNIT

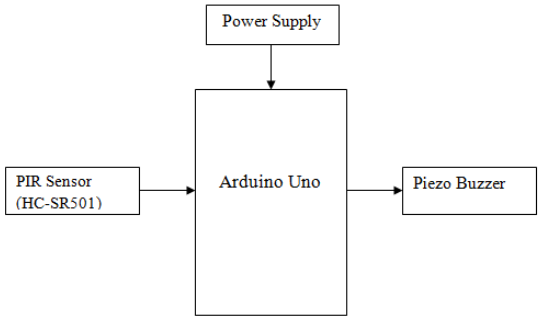

Fig.-Block diagram for social distancing unit

- Attaching PIR sensors to each cart in the mall with Piezo Buzzer
- PIR sensor will sense the distance
- If person enters in the range of sensor ; buzzer will make sound to make customer conscious about social distancing

Fig.-Cart with PIR sensor

4. CONCLUSION

This system can monitor smooth flow of people at entrance gates of the malls. It ensures convenient sanitization, thermal screening and oxygen level monitoring without human interruption achieving the Smart City Development. It also ensures social distancing inside the malls.

5. ACKNOWLEDGEMENT

We take this opportunity to thank our project guide, Ms.M.M.Deshpande for her guidance and support throughout the course duration. Her efforts to clear our concepts and to help us were valuable for the development of this project. Her role as a project Guide helped us to meet all our deadlines.

6. REFERENCES

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