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ijircce@gmail.com



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Monitoring Social Distancing Under Low Light Conditions

Heenakousar Naikodi, Muskan Sanadi, Pooja Kalbhairav, Mr. Sujay Gejji

UG Students, Dept. of E.C.E., SGBIT, VTU, Belagavi, Karnataka, India

Asst Professor, Dept. of E.C.E., SGBIT, VTU, Belagavi, Karnataka, India

ABSTRACT: The purpose of this work is to provide areal social distance monitoring solution in low light environments in a pandemic situation the ranging corona virus disease 2019 (COVID-19) caused by SARS-COV-2 virus has brought global crisis with its deadly spread all over the world. In the nonappearance of an effective treatment and vaccine the energies to control this pandemic strictly rely on personal defensive actions, example, hand washing, face mask usage, environmental cleaning and most importantly on social distancing which is the only approach to cope with the situation. Low light environments can become a problem in the spread of disease because of people's Especially, in summers when the global temperature is at its peak the situation can become more critical. Mostly, in this city where people have congested homes and no proper air cross-system is available. So, they find ways to get out of their homes with their families during the night to take fresh air. In such a situation, it is necessary to take effective measures to monitor the safety distance criteria to avoid more positive cases and to control the death toll.

KEYWORDS :Internet of Things Deep learning social distancing COVID-19 faster RCNN person detection transfer learning.

I. INTRODUCTION

Our project is Monitoring social distance under low light conditions. The stress on choosing this as the title is because, to initially give solution to a problem faced by almost everyone in pandemic. COVID-19 belongs to a big family of viruses that normally causes moderate to mild upper respiratory tract ailments.it was first reported in Wuhan, China, at the end of December 2020. The World Health Organization (WHO) has declared COVID-19 as a Pandemic, global coordinated effort is required to stop the spread of the virus.The transmission of CIVID-19 remains unclear, though evidence from other viruses indicates that the disease may spread through direct or indirect contact with an infected person.

During the ongoing COVID-19 disaster, the Internet of Things (IoT) as played a significant role in a diverse range of health care applications. In general,IoT network consists of a number of small-size,low-cost, and low-power consumption devices that can be attached to nay person or be embedded in any object social distancing is critical to people who are at a high risk for severe illness from COVID-19. Social distancing, I the maintenance of a safe distance of at least 1 meter from other people in indoor and outdoor spaces to minimize the spread of virus it also limits closed contact with others in outdoor and indoor spaces, as people can spread the virus before the know they are sick.

II. RELATED WORK

In this section, we briefly introduce previous work done on a social distancing in the context of the 2019 novel corona virus disease. As the disease spread at the end of December researchers started to pay their contributions in deadly situations. Social distancing was suggested as the alternative solutions. The different research studies were conducted to provide an effective social distancing solution. In the same background, Prem at el. [1] studied the consequences of social distancing measures on the progression of the COVID-19 epidemic in Wuhan, China. They use synthetic location-specific contact patterns to imitate an ongoing trajectory outbreak using age structure susceptible-exposed-infected removed models (SEIR) for several social distancing measures. They interpreted that a sudden rise in interventions will lead to an early secondary peak but it will flatten gradually with time. As we all can understand social distancing is important to cope with the current situation but economically it is drastic measure to flatten to curve against infectious disease. Adolph et al. [2] emphasized the situation of USA where they gathered state-level responses regarding social distancing and found the contradiction in the decision among policy makers and politicians which

causes a delay in imposing the social distancing strategies resulting in ongoing harm to public health. On the brighter side, social distancing helped a lot to control the spread of disease but it has also affected economic productivity. In the same background, Kylie et al. [3] have studied the association between transmissibility and social distancing and found that association diseases as transmissibility decreases within provinces of China. According to study, the intermediates level of activity would be allowed while avoiding an immense outbreak. Since the COVID-19 Pandemic began many countries are seeking for technology-oriented solutions.

III. PROPOSED METHODOLOGY

Construction

The hardware kit consists of ESP32, Ultra sound sensor, LED, Buzzer. The supply of +5V is given directly from the adapter to ESP32. Here ESP32 acts as Microcontroller and also as a gateway. The ultra sound sensor senses the distance between the people and it will alert the person by the Buzzer.

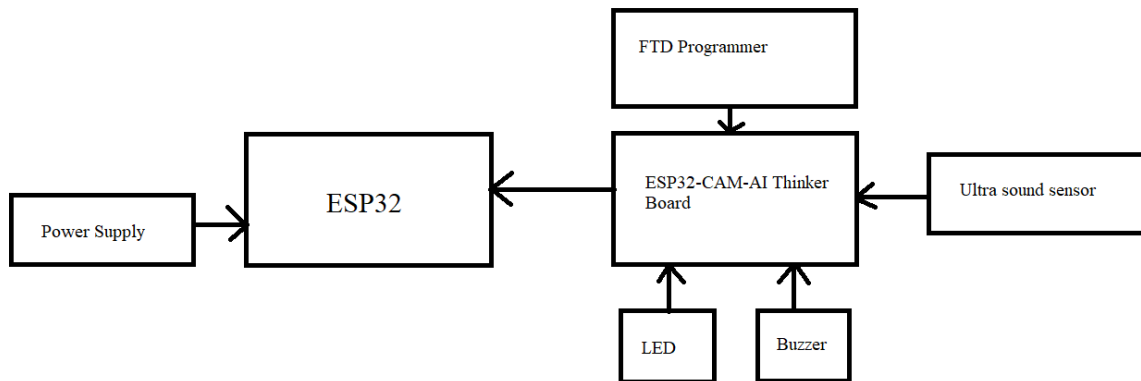


Fig.1 Block Diagram

Working

Ultra sound sensors respectively for the function of detecting the distance. If a person coming near to us crossing the desired distance, then the buzzer will alert the us. And the red LED will on, it indicates that we are in danger zone. If not, then the Green LED will on. it indicates that we are in safe zone. The mentioned part can also be upgraded with the help of camera. by the camera we can detect the face of the person who is coming near to us.

IV. RESULTS

This system works efficiently and fulfils the objective of Monitoring social distancing under low light conditions. it alerts the person that whether he is in safe zone or in danger zone. When the USB cable is connected to the ESP32 then the Ultra sound sensor starts the detecting the distance. Red and Green LEDs are used to indicate the person whether he is in safe zone or in danger zone.



Fig.2 Expected Result

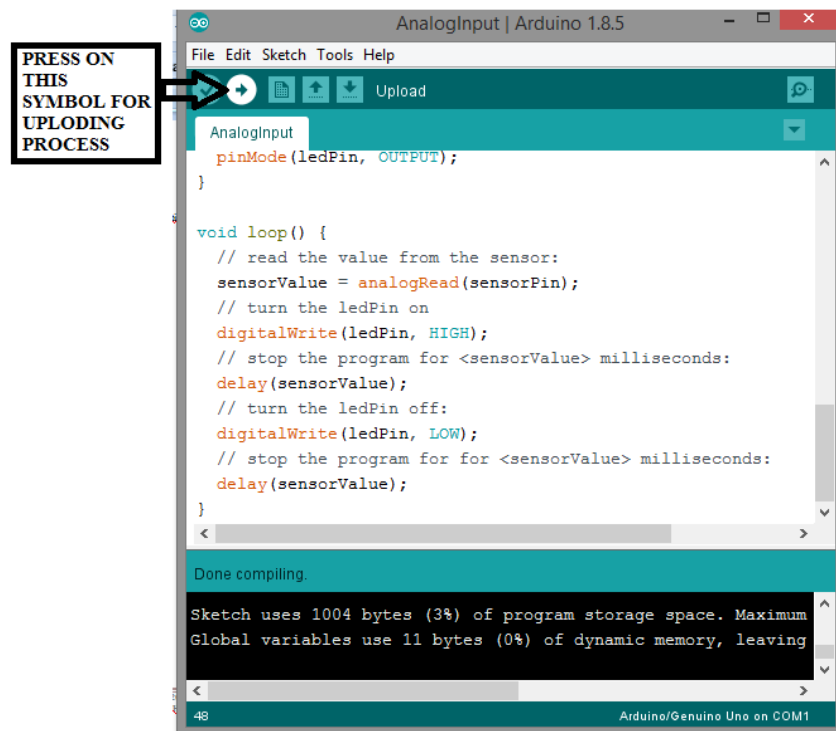


Fig.3 Expected Result (cont.)



V. CONCLUSION

Here we have used camera for monitoring social distancing with the help of ultra sound sensor and ESP32. The advantage of this system is that it does not only help in maintaining social distancing but also give alert whether person is in a range having COVID symptoms or not. The accuracy of the system can be increased by improving the design of the sensor.

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