Smart Jacket for Social Distancing

Nakul Sharma Parth
Masters ofIntegrated
Product design
National university
Ahmedabad
nakul.sharma@anu.edu.in

Atulkumar Shah
Assistant Professor Design
Manager Makerspace
Anant National university
Ahmedabad
parth.atulkumarshah@anu.edu.in

Milind Chitale
Associate Professor Design
Director Makerspace
Anant National university
Ahmedabad
milind.chitale@anu.edu.in

Nikita Bavishi Shah
Assistant Professor
Mechanical   Anant
Sal College of Engineering
Ahmedabad
nikita.bavishi@sal.edu.in

--*************************--------------------------------

Abstract:

As we all know about Covid19 virus and what it did to all of us and changed the way of living. In today's time when the world is on the verge of unlock, it is mandatory to maintain a social distance with each other at crowded places like schools, offices, malls and markets. The problem comes when we are always conscious about the distance to maintain and slowly forgets that and come close to each other, which spreads the virus. To overcome this, why not to have something smart in today's smart world which makes us aware of the social distance. We all know how important social distancing is and how drastically it came into practice, for not breaking this rule one should be reminded every time we break the distance.

Keywords —**Social distancing, covid19, smart products, sensors, fashion, safety, awareness**

--*************************--------------------------------

I. INTRODUCTION

Smart social distancing jacket comes with a smart inbuilt alarming system, making us and everyone aware about the social distance between us and other people. The idea is to spread instant awareness at crowded places such as malls, offices, schools, colleges and hospitals.

II. PROBLEM DEFINITION

Now when we are in the unlock stage after covid19 lockdown, majority of the shops, offices and institutions has started functioning as they were before. But if we see after taking all the precautions and measurements there are still covid19 cases which are increasing day by day. One reason can be the carelessness and lack of awareness of social distancing. We normally go out and get close to people assuming that he/she is wearing mask so it is safe to go close and shake hands, this big mistake sometimes leads to the spread of the virus.

III.   LITERATURE REVIEW

Smart social distancing jacket comes with a motive of awareness and carefulness, which helps us in building sense of self security and awareness [1]

The idea came from studying different people and their behaviour in the crowd during covid19 unlock. [1]

To design and create social distancing jacket we initially tried mat lab and we developed an algorithm after the process. [2]

As per the news and other research the virus spreadson a higher rate through crowd.The new circuit can be made through 3d print technology and can be placed in the jacket so that it gets fixed on the pockets. [3]

Using the Arduino board with a sound buzzer andLED light system was the easy way to connect and code, these elements will be good enough to make us and the other people aware about the

distance. To get the smart product, the design and aesthetics was inspired from future design process.

Right Hand Arm sensor

Left Hand Arm sensor

Back sensor

Arduino Board with Inbuilt LED

IV. WORKING

The system works on sensors and controller interface wherewe have selected the distance

sensors HC04 ultrasonic sensor which can detect the accurate distance. There will be 3sounds in the buzzers which will buzz an alarm with respect to the sensors sense on the arm on the left and right hand and also at the back. As we have kept the distance of 2 feet it will sense the sensor and the result will be displayed on the LCD which is going to fit at the wrist of the arm, where the LCD will show the distance of all the three sensors accordingly, to add more we have added a sound to maintain safe distance and few other alarming sounds in the buzzer to give a quick indication. The Arduino board will be fixed at the back below the buzzer with the LED inbuilt so that the other person from the backside canbe indicated by looking at thelight. Similarly, the other two sides on left and right side the user will get noticed by asound.

A. Figures and results

As we can see that **figure 1**indicates the Arduino board which is connected with 3 ultrasonic distance sensors HC04 as Left-hand arm sensor, right hand arm sensor and back side sensor. In the figure we have kept our hand to test the distance and if the distance is in the limits the buzzer will start buzzing and at the same time,we can see the distance in the LCD. The buzzer is connected and getting signal from all three sensors through the Arduino board which help to set the alarm for the people and indicate them to maintain a safe distance.
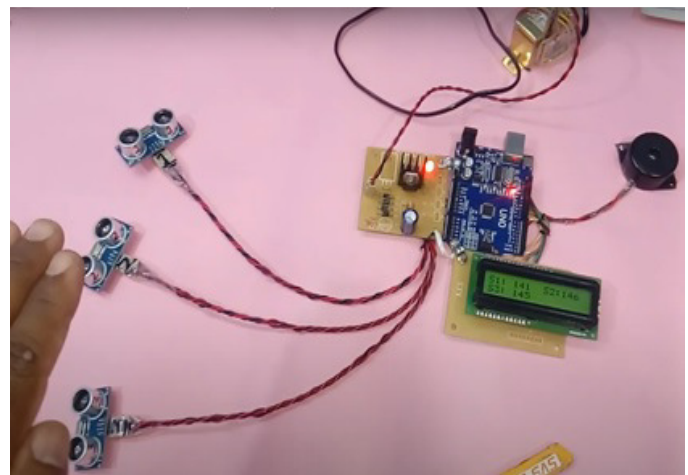

Fig **1** Circuit and components for Smart Jacket

B. Components used

1)Arduino Uno
2)3 - Ultrasonic distance sensors
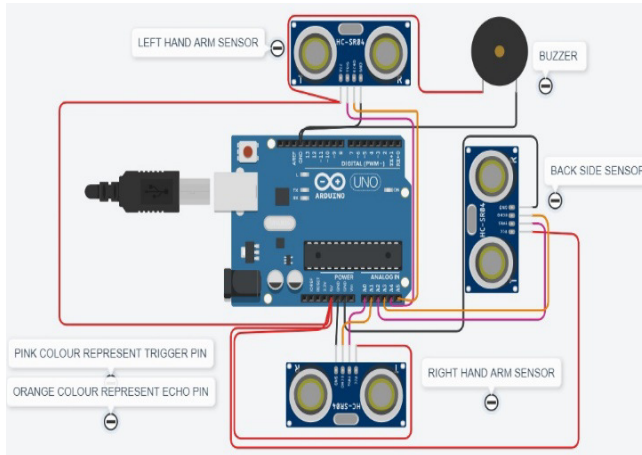3)LCD 16*2
4)Buzzer
5)9-volt Battery

Fig **2 Circuit Connection diagram**

V. APPLICATION OF THE SMART JACKET

Smart jacket will measure the distance between the user and other people at a crowded place. It will also represent a fashion sense which will be dust and weather proof. And it will give you the safety and awareness by installing the GPS chipset module later on in the nearby future, to get the exact location of the person wearing the smart jacket.It can also charge the mobile and other handy device as we are going to connect a small 9-volt battery that can be directly connected to the jack in case of emergency one can charge our phones. The jacket can be available in various sizes and colours. It is made of cotton fabric so one can easily wear in any season.

VI. CONCLUSION

Design process of the smart social distancing jacket includes the brainstorming and study of body movements, comfort and ergonomics of the user. The active crowd movement and people's interaction with each other helped me studying the behavior and challenges which comes when the distance is very less between them at a crowded place. Jacket runs and functions on Arduino board system which comes with and inbuilt LED system and connects to buzzer system to indicate us immediately. The process made me learn about the public behavior in crowd and the usability and functionality factor. At the final stage we identified what components to use and how to identify the working of Arduino board with distance sensors, LED and buzzer.

ACKNOWLEDGMENT

REFERENCES

[1] DEVELOPMENT OF SMART JACKET in International Research Journal of Modernization in Engineering Technology and Science Volume:02/Issue:04/April-2020 e-ISSN: 2582-5208
[2] Android and Mat Lab Based Function Generator in International Journal of Research and Analytical Reviews, Volume 6, Issue2 June 2019 Page 6-11, Paper Id IJRAR1AWP002
[3] Development of 3D Printer Using PID Controller in International Journal of Research and Analytical Reviews, Volume 6, Issue2 June 2019 Page 31-33, Paper Id IJRAR1AWP00