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FOUNDATION SKILLS IN PRODUCT DEVELOPMENT

SOCIAL DISTANCING ID CARD

Internship Report

Submitted by

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MVJCE

In Partial fulfilment for the award of degree of
Bachelor of Engineering

In

Electronics and Communication

And

Computer Science - Data Science

2022-23

MVJ COLLEGE OF ENGINEERING, BENGALURU-560067

Certificate

This is to certify that the project entitled " **SOCIAL DISTANCING ID CARD**" is a bonafide work carried out by **SIVA BALAJI S (1MJ21EC139), MVV SURYA VAMSI (1MJ21EC066),SAI TARAK D (1MJ21EC117) and JAVVADI DURGA PAWAN (1MJ21CD019**) are bonafide students of MVJ College of Engineering in partial fulfilment for the III Semester of Bachelor of Engineering in **Electronics and communication and Data Science** of the Visvesvaraya Technological University, Belagavi during the year 2022-2023. It is certified that all the corrections/suggestions indicated for Internal Assessment have been incorporated in the Report. The Project Report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the III Semester.

Signature of guide   **Signature of HOD**   **Signature of Principal**

Mrs.Navya V K   Dr.Kiran Babu T S   Dr. Suresh Babu V
Assistant Professor   Head of the Department   MVJCE
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MVJ COLLEGE OF ENGINEERING, BENGALURU-560067
(Autonomous Institution Affiliated to VTU, Belagavi)

DECLARATION

We, **SIVA BALAJI S (1MJ21EC139), MVV SURYA VAMSI (1MJ21EC066), SAI TARAK D (1MJ21EC117) and JAVVADI DURGA PAWAN (1MJ21CD019**) students of third semester B.E, MVJ College of Engineering, Bengaluru, hereby declare that the major project titled **"SOCIAL DISTANCING ID CARD"** has been carried out by us and submitted in partial fulfilment for the award of **Degree of Bachelor of Engineering** in **Electronics communication and Data Science** during the year 2022-2023.

Further we declare that the content of the dissertation has not been submitted previously by anybody for the award of any Degree or Diploma to any other University.

Place: Bengaluru

Date:

Name   **Signature**

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CONTENTS

LIST OF FIGURES

CHAPTER1

INTRODUCTION

Social distancing ID card will remind people to maintain social distance whenever they are too close to someone else. This system will provide an automated way to ensure social distancing.

PROJECT OVERVIEW

Social distancing is a public health strategy attempting to prevent or slow the spread of an infectious disease when a healthy person comes into a contact with respiratory droplets from cough or sneezes of an infected person, they can catch the infection. The virus that causes covid-19 spread easily through physical contact from person to person. Therefore, it is important to reduce the ways people come in close contact with one another.

The importance of social distance concept was raised during the COVID period. But as COVID is not fully eradicated social distancing will still be prevalent in coming time. The problem with social distancing is people tend to forget about it every now and then. Remind every person each time is not feasible.

So here we develop a wearable social distancing ID card that will remind people to maintain social distancing whenever they are too close to someone else. This system will provide an automated way to ensure social distancing. The system makes use of an ultrasonic sensor along with an at mega microcontroller, a buzzer, some basic electronics components and pcb board to develop the system. The system provides an automated social distancing system.

The ultrasonic sensor uses ultrasonic waves return time to measure the distance of any reflecting surface. This sensor data is constantly monitored by the microcontroller. Based on the sensor values the controller knows the distance of the person ahead from the person wearing it. Now using this data, the controller operates a buzzer in accordance to the distance. The buzzer buzzing pattern varies as per the distance of object from the person. The closer the person the higher the buzzing intensity. This system ensures an automatic social distance ensuring ID card using ultrasonic sensor and at mega microcontroller.

1.1 ADVANTAGES

   i.   Flexibility

  ii.   Cost and Availability

 iii.   Security

 iv.   Data Integrity

  v.   Safety

 vi.   Easy to use

1.2 DISADVANTAGES

   i.   Fees applied with the use of a card.

  ii.   It gives liability issues if stolen or lost.

 iii.   The accuracy of information is small.

 iv.   Lack of technology to Support users.

  v.   It is potential for too much data on one card if lost or stolen.

1.3 APPLICATIONS

   i.   It can be used in schools to protect students and teachers from virus and from other communicable disease.

  ii.   It can be used in office places to protect the employee and other faculty from virus.

 iii.   It cab be used in public places like parks,fairs community functions etc.

CHAPTER 2

PESTEL ANALYSIS

External factors between the organizations environment that have impact on their operations should be identified. A popular tool use for identifying these changes is the PESTEL Analysis.

Fig 2.1 PESTEL ANALYSIS OF SOCIAL DISTANCING ID CARD

Fig 2.2 Pestel Analysis

2.1 POLITICAL FACTORS

COVID-19 belongs to a big family of virus that normal causes moderate to mild upper respiratory tract ailments. It was first reported in Wuhan China. The WHO was declared COVID-19 as a pandemic and a global coordinated effort is required to stop the spread of the virus the transmission of COVID-19 remains unclear through evidence from other viruses indicates that the disease may spread through direct or indirect with an infected person

   i.   Reviewing the existing smart distance monitoring system developed recently to prevent the spread of covid 19.

  ii.   Developing social distance system that allows the user to monitor social distances between people.

 iii.   Evaluating the developed social distance through studying the user acceptability performance localisation accuracy and power consumption.

2.2 ECONOMICAL FACTORS

   i.   Spiritual intelligence is the science of human energy management that clarifies and in the era of covid 19 in which everywhere there is a panic like situation and according the WHO social distancing will be proven to be the only solution;

  ii.   In this covid 19 environments, where everyone is conscious about the safety we came up with the idea of this novel device. Most of the time, people on the road side watch their front but were not able to look after what is going on behind them.

iii. The device will give alert to the person if someone in the critical range of 6 feet around him. The method is reasonably accurate and can be very useful in maintaining social distancing.

iv. Thus, the model is used is described, and the expected errors in the distance estimates are analysed and modelled.

v. With the help of artificial intelligence, this novel smart device is handy for maintaining a social distancing as well as detecting covid symptom patients and thereby safety.

2.3 SOCIAL FACTORS

i. Over Crowding: The employee Bluetooth tag will help keep track on the time spent inside the licensed area and sound an alarm if the person enters a hazard zone all in real time.

ii. Away from designated zone: The employee tag will allow the employee to send out an signal in case of any danger or panic situation.

iii. Hand Wash: The system will automatically be able to time and interval of the activity be it hand washing sanitizing etc.

iv. Fire and safety: The receiver will always keep a count on the server in real time so in case of emergencies where the count is needed it can be immediately fetched.

2.4 TECHNOLOGICAL FACTORS

i. The wearable bases system is considered bases on one of the following approaches smart tags (RFID, GPS, OR BLUETOOTH) nodes. These methods need to be attached to a user to perform distance measurements and emit warning notifications when any user is located in a crowded place.

ii. A prototype of a compact and low-cost wearable electronic devices which is based on the received signal strength (RSS) of the WIFI signals emitted by others wearable device of the same type and then emitted the proximity distance between the users and issues a notification when the distance between the user is less than a predefined threshold value.

2.5 LEGAL FACTORS

i. The implementation of social distancing measure through legal regulations to contain an epidemiological outbreak has received little research attention we received and synthesized data on epidemiology mobility trend enforcement activities in the first 5 month of the covid 19 epidemic

ii. The regulation enforcement could be inferred form the increase in the number of infection verbal warnings given to operators of scheduled premises and to people in public gathering led to prosecutions.

iii. In parallel the number of reported COVID-19 cases become stabilised our analysis suggested that public compliance with social distancing regulations could be maintained through promotional efforts without enforcement by prolonged social distancing on the economy and citizens.

2.6 ENVIRONMENTAL FACTORS

i. In this social distancing card, our users can quickly understand what happened in the building at peak and understand what does it mean compared to the directives of WHO and optionally the companies' directives.
   a. Automating compliance:

ii. Probably a big portion of your employees is looking forward to coming back to work yet they also want to feel safe as an office manager your responsible for creating and maintaining that safe environment.

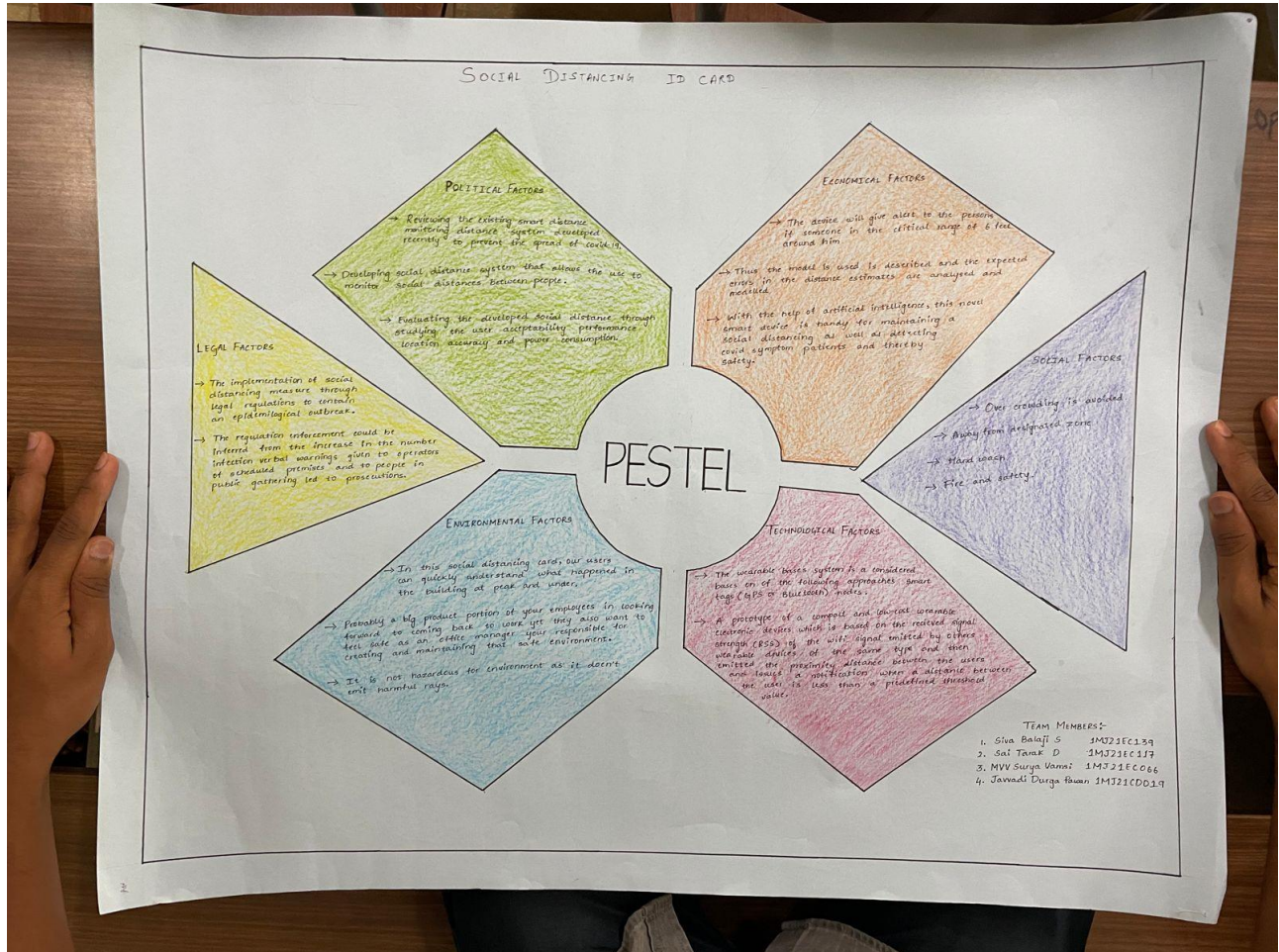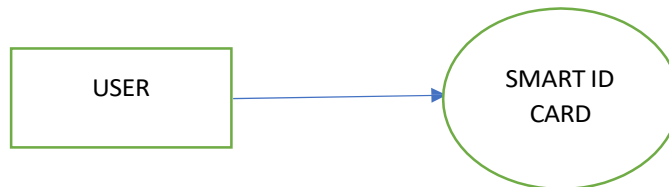iii. Its not hazardous for environment as it doesn't emit harmful rays.

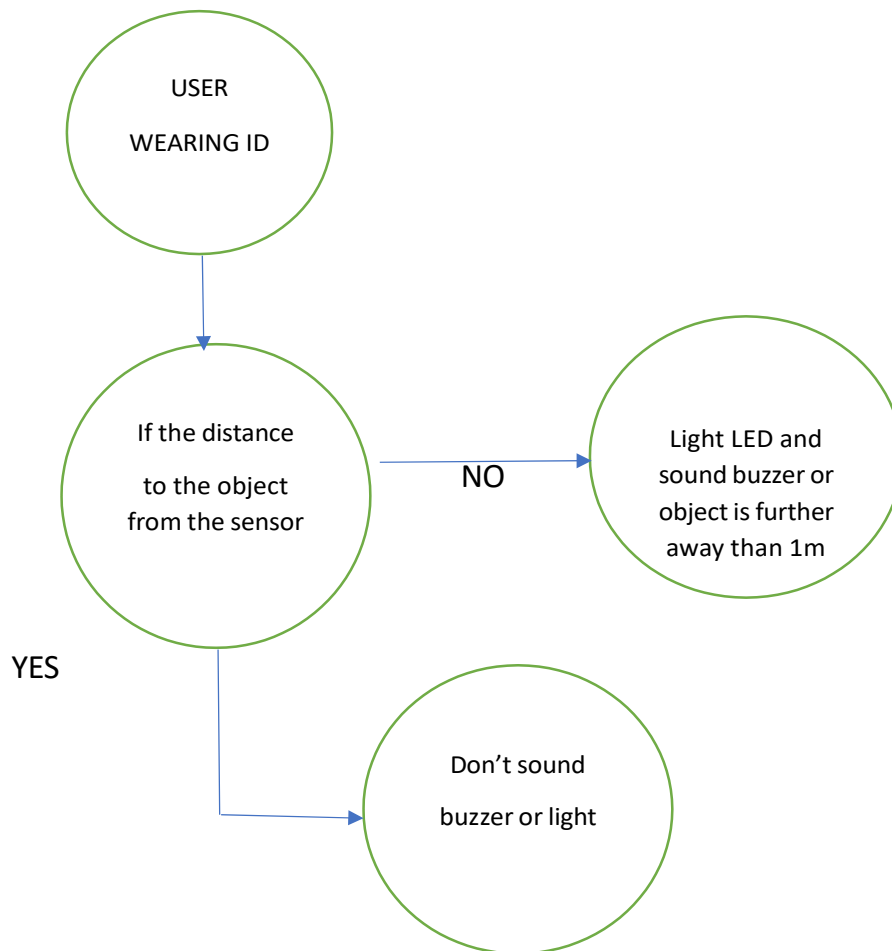Fig 2.3: PESTEL Analysis of Social Distancing Id Card

CHAPTER3

DESIGN ANALYSIS

3.1 DATAFLOW DIAGRAM

LEVEL 0

LEVEL 1

3.2 FLOWCHART

START

Read frames from raspberry pi camera

Check Persons?

Measure distance to heading person
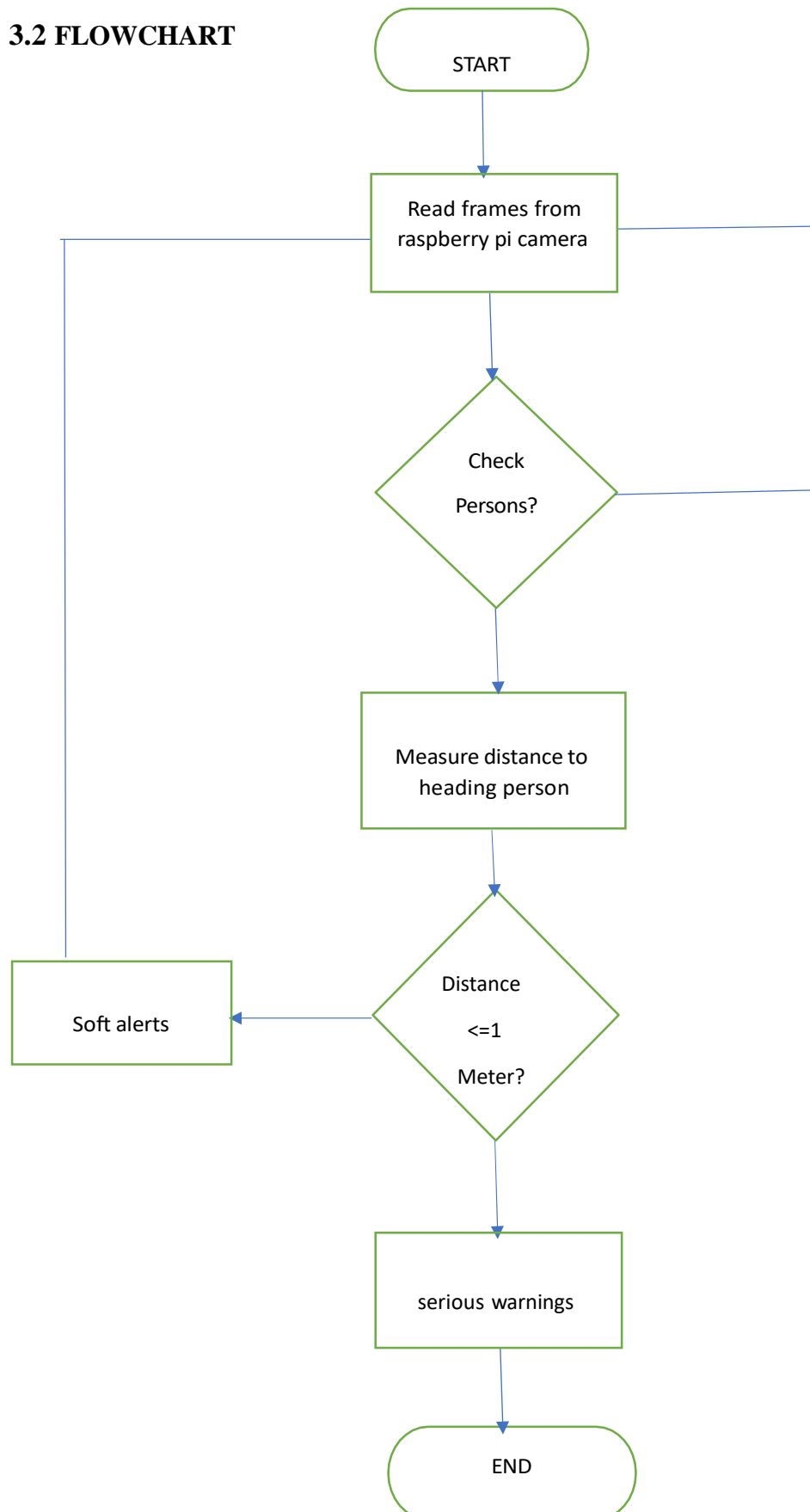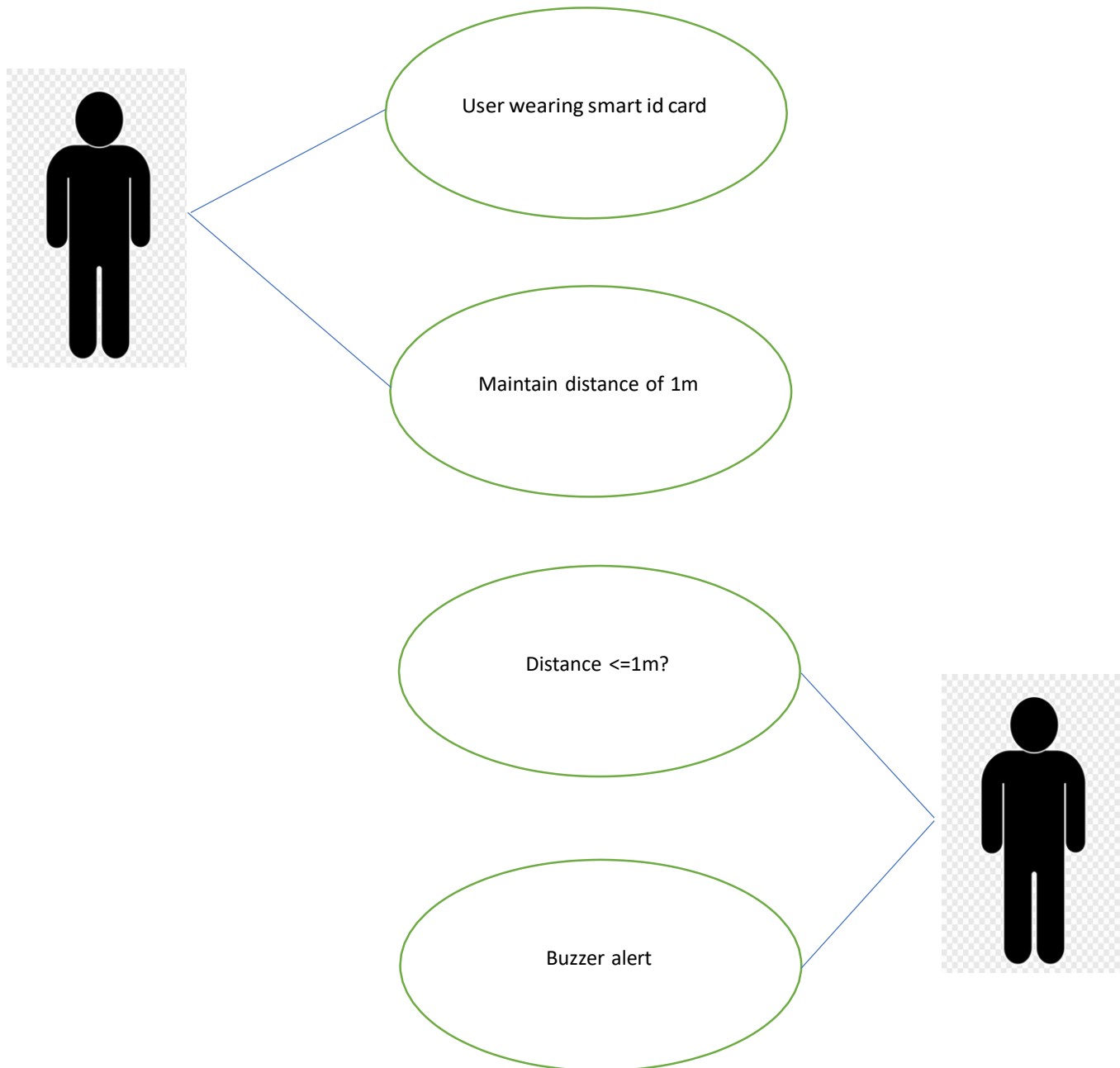
Distance <=1 Meter?

Soft alerts

serious warnings

END

3.3 USE CASE DIAGRAM

CHAPTER4
REQUIREMENT ANALYSIS

4.1 FUNCTIONAL REQUIREMENTS

FR1: User should wear the smart ID card.

FR2: Maintain the required distance.

FR3: If the distance exceeds more than the requirement there is a serious

warning. FR4: Buzzer alerts.

FR5: It aims to decrease or interrupt transmission by minimising contact between potentially infected individuals and healthy individuals or low levels of transmission.

4.2 PERFORMANCE REQUIREMENTS

PR1: To prevent the social transmission of COVID-19 this paper prevents a new smart social distance system that allow individuals to keep social distance between others in indoor and outdoor environments avoiding exposure to COVID-19 and slowing its spread locally and across the country.

PR2: The proposed smart monitoring consists of a new smart wearable prototype a compact and low-cost electronic device based on human detection and proximity distance functions to estimate.

PR3: The social distance between people and issue a notification in the social distance is less than a predefined threshold value the developed social system has been validated

4.3 ECONOMICAL REQUIREMENTS

ER1: This ID card is affordable.

ER2: It is affordable with the minimum cost.

ER3: This ID card consists of ultrasonic sensor, buzzer, controllers and some electronic components and affordable with the minimum prize.

4.4 STAKEHOLDERS REQUIREMENTS

SR1: It can be used in crowded areas to reduce the transmission of diseases.

SR2: It can be used in companies, school, colleges, and private sectors.

SR3: This reduces the transmission of diseases by using the ID card.

4.5 ENVIRONMENTAL REQUIREMENTS

ER1: Smart ID cards are able to store and protect relatively large amounts of data.

ER2: When applied in universities they can acts as multi-purpose multi functions and smart ID cards.

ER3: This would avoid the waste of resources and maintain environmental sustainability. Reasoned action into a frame works in corpora ting the nation of environmental concern in order to explore the factors that affect students' behavioural intention to use university smart ID cards.

ER4: This study employs a quantitative method for primary data collection via a structured questionnaire for university students.

ER5: The perceived usefulness and subjective norm of university smart ID card systems significant predictive power on potential users' attitudes and intentions of adopting the ID card.

4.6 TECHNICAL REQUIREMENTS

TR1: A prototype of a physical distancing alarm based on a distance sensor and a micro controller in the form of an identity card was developed.

TR2: In the several steps are conducted in developing of this system namely designing the instrumentation system and testing the performance of the system.

TR3: System performance is tested through variation in the distance and angle of the objects.

TR4: The measurement results show that the system can defect objects in front of the sensor up to a distance and the angle for a distance.

4.7BEHAVIORAL REQUIREMENTS

The person is wearing the ID card and he have to maintain the required distance if the distance is not maintained then the buzzer alerts.
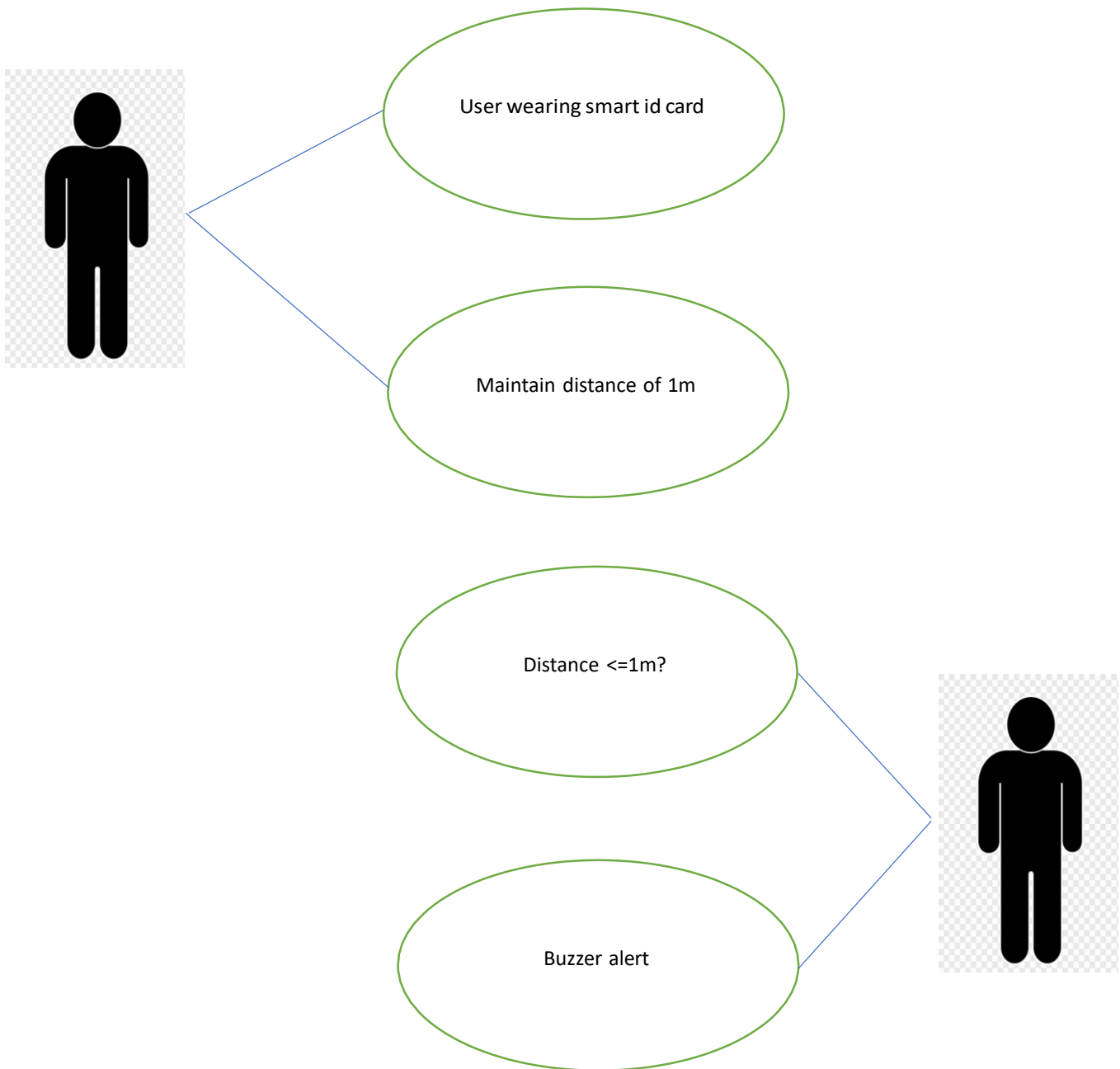
CHAPTER-5

CONCEPTUALIZATION

5.1 INTRODUCTION

In public health, social distancing, also called physical distancing, is a set of non-pharmaceutical interventions or measures intended to prevent the spread of a contagious disease by maintaining a physical distance between people and reducing the number of times people come into close contact with each other. It usually involves keeping a certain distance from others (the distance specified differs from country to country and can change with time) and avoiding gathering together in large groups. This can be maintained by wearing social distance in ID card.

5.2 CONCEPTUALIZATION ON SOCIAL DISTANCING ID CARD

It is a wearable social distancing ID card that will remind people to maintain social distancing whenever they are too close to someone else. This system will provide an automated way to ensure social distancing.
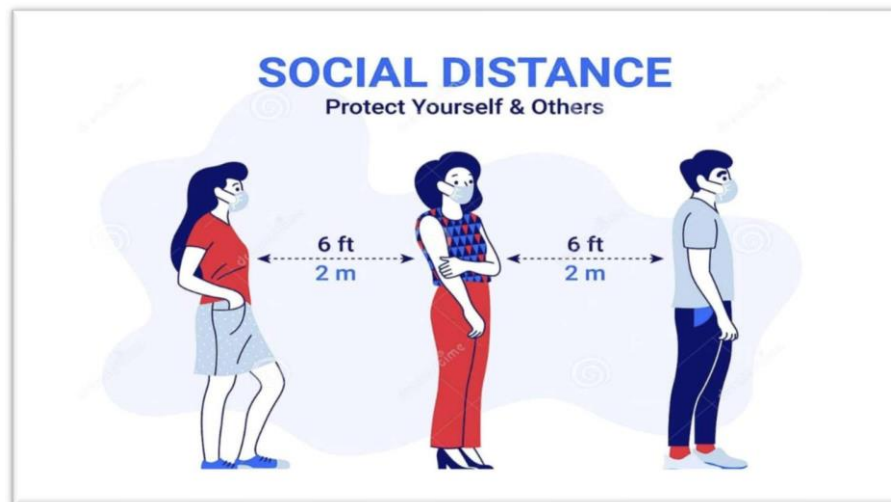

Fig 5.1 social distancing

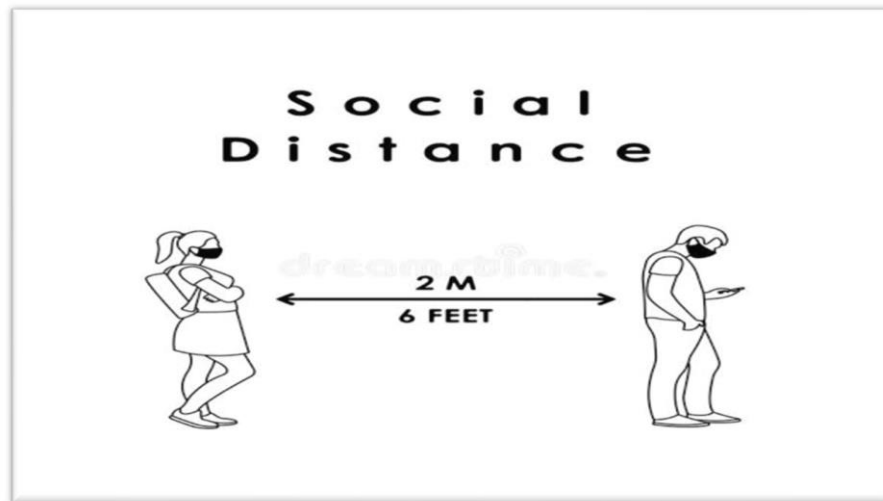❖ Everybody should maintain the minimum required distance to prevent themselves from the diseases.

Fig 5.2 minimum distance

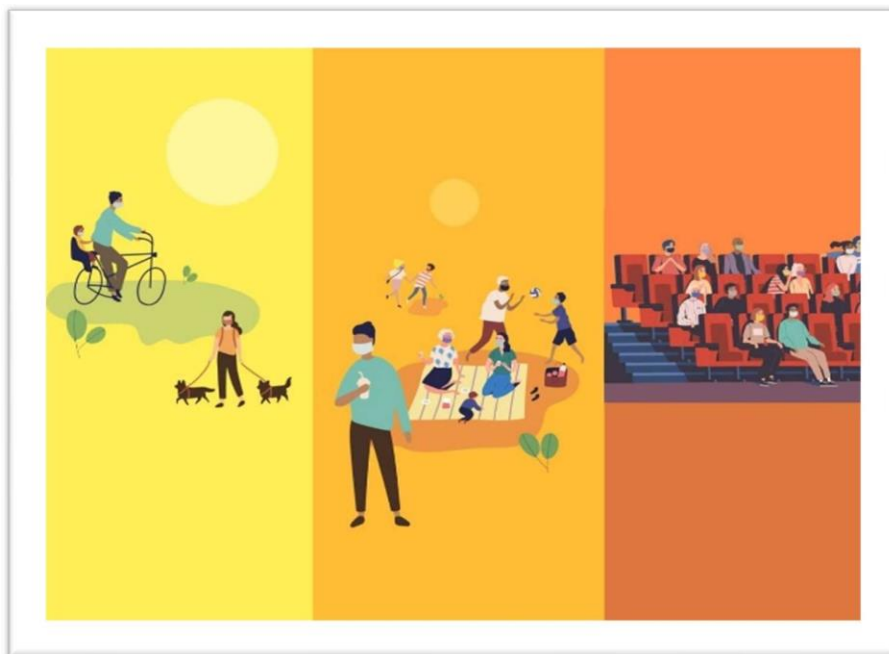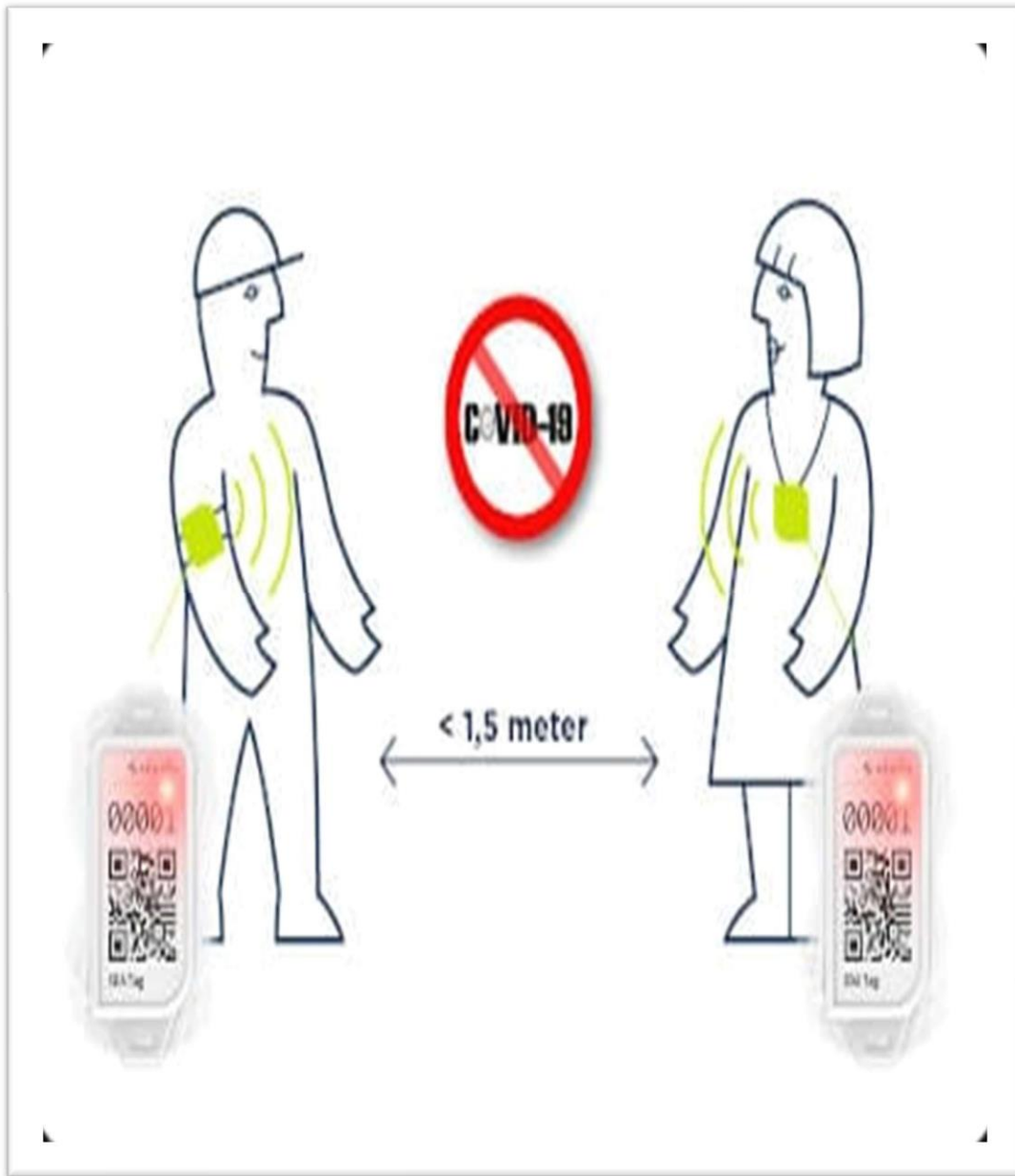❖ The minimum required distance of 6feet is maintained

Fig 5.3 Crowded Places

Fig 5.4 working of social distancing id card

- ❖ People are not maintaining the minimum required distance.
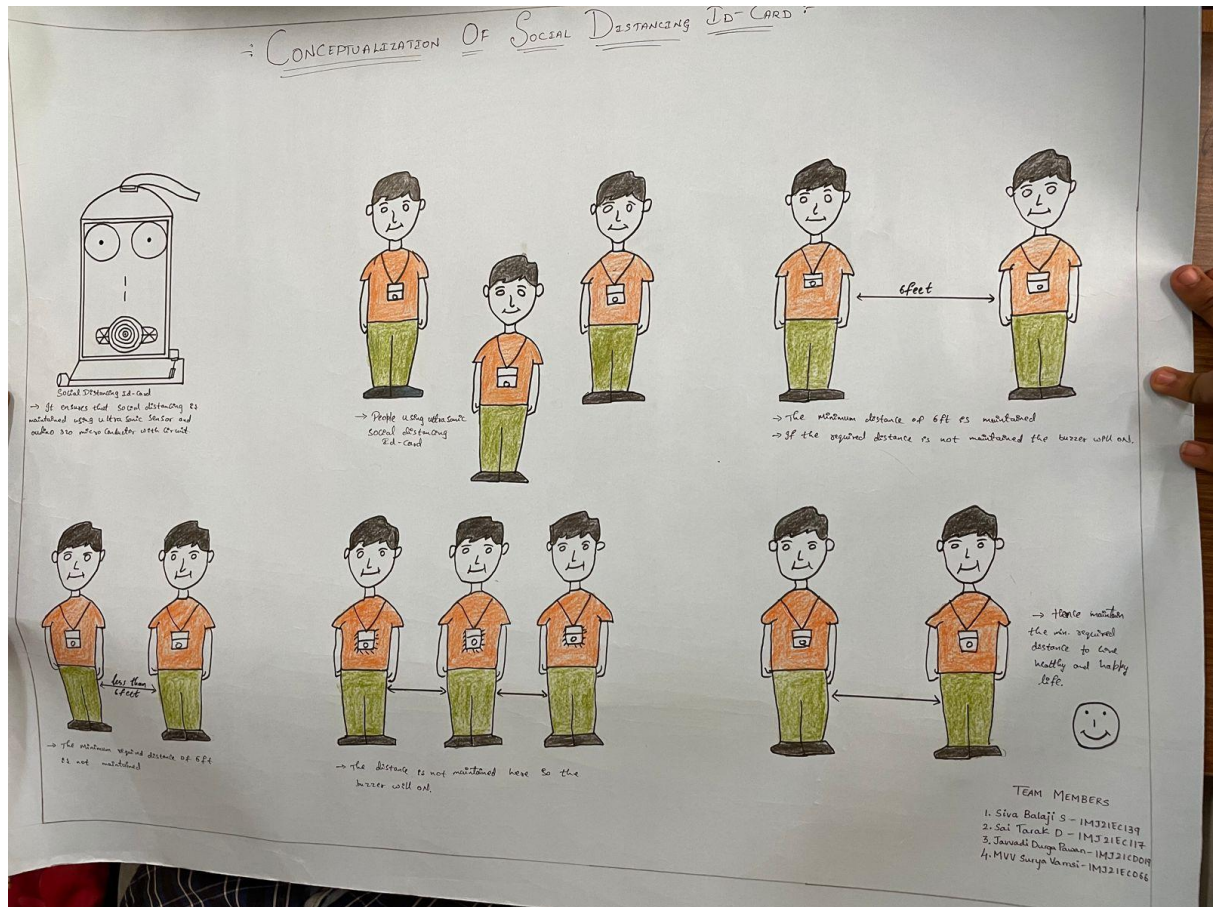- ❖ Since they are not maintaining the distance, the buzzer will on.

Fig 5.5 Conceptualization of social distancing ID

CHAPTER-6

INDUSTRIAL DESIGN

The Industrial Designers Society of America (IDSA) defines Industrial Design as "Industrial design (ID) is the professional service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer. Industrial designers create the physical design of various products that make it both practical to use and interesting to look at.
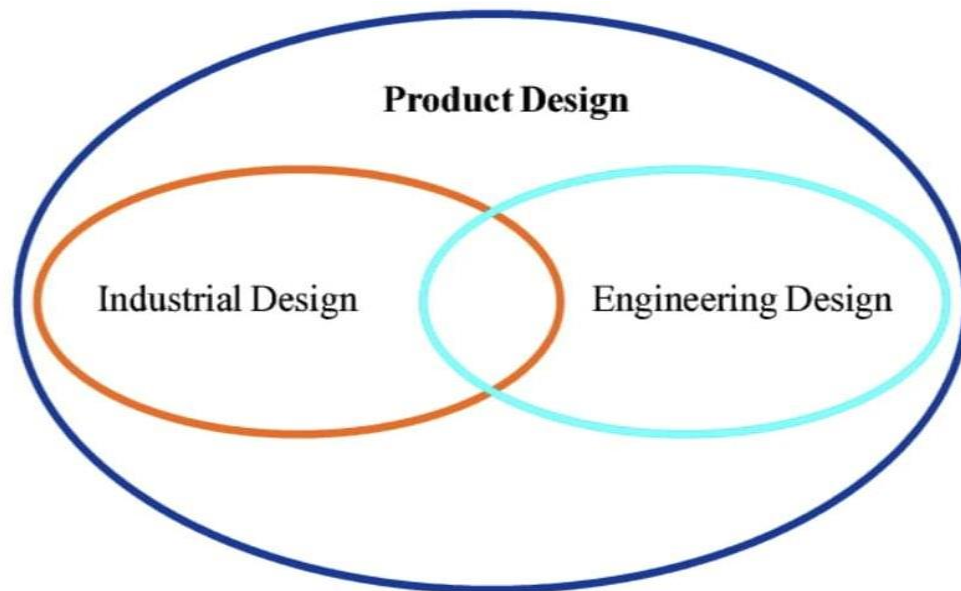
Science/engineering+art+design
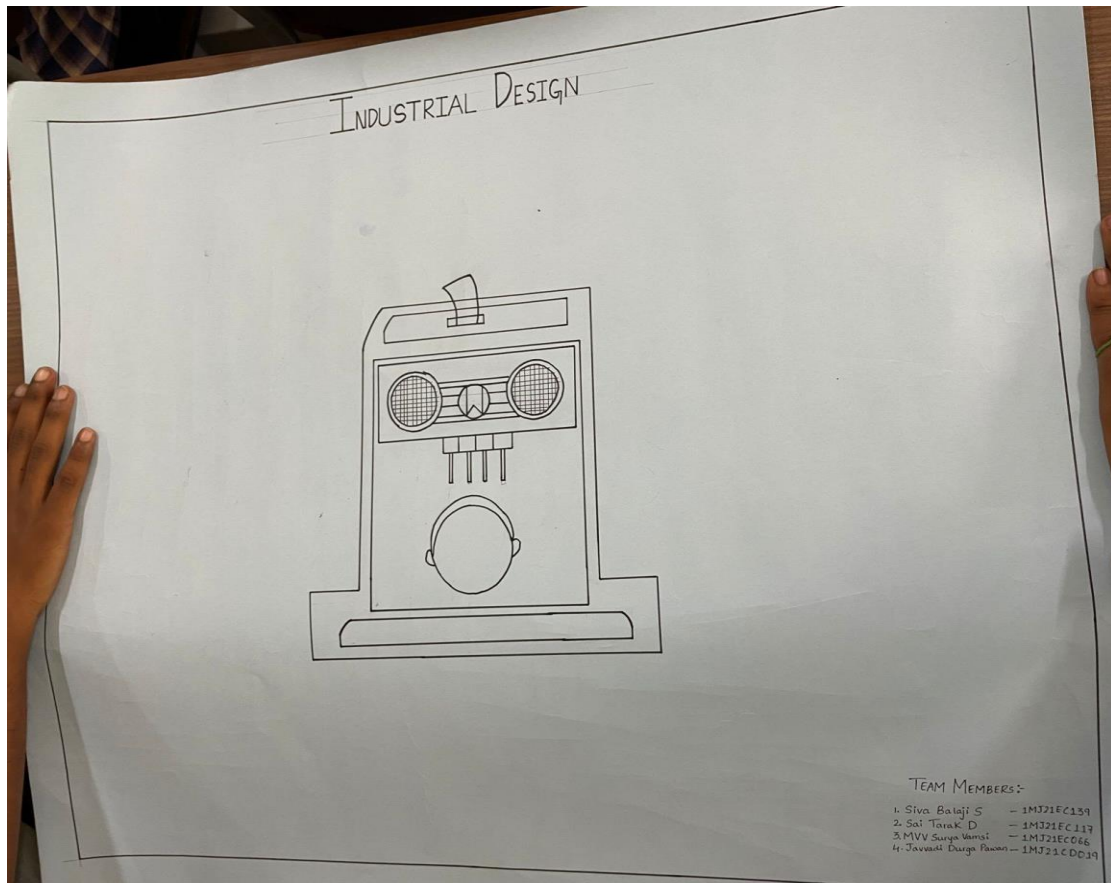

Fig 6.1 Product design

Fig 6.2 Industrial design

CHAPTER-7

RESULT

Fig-7.1: Working model photograph.

CHAPTER-8

CONCLUSION

We would like to conclude this by saying that this is a very effective safety device which everyone can use in their daily life without any difficulties to protect them from virus and keep themselves safe and secure from viruses. Limiting our contact with people will slow down the virus transmission and flatten the epidemic curve so that we can reduce the number of cases occurring at the peak of epidemic. As a whole the system proposed is used to measure the distance between the two persons and warn the other person who is wearing it and the social distancing norms also done accordingly Maintaining social distance is the most effective strategy to keep COVID-19 from spreading. So here we develop a wearable social distancing ID card that will remind people to maintain social distancing whenever they are too close to someone else. This system will provide an automated way to ensure social distancing. The system makes use of an ultrasonic sensor along with an at mega microcontroller, a buzzer, some basic electronics components and pcb board to develop the system. The system provides an automated social distancing system. As a result, the created SD-Tag is an effective social distance monitoring system that can be used both indoors and outdoors to reduce the spread of infectious diseases. Other than existing solution, the proposed system is wearable and make the person to make sure that he/she is in safe distance without getting in contact with other people which may reduce the rate of transmission of viruses not only COVID-19 but also other influenza viruses.

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