COVID Primary Detection System Using Sensor Network

Prerit Shambharkar[1], Chetna Patil[2], Mrunali Deulkar[3], Ashwini Shete[4], Prince Kamkar[5], Prof. Harish Gorewar[6]

[1, 2, 3,4,5,6] *Department of Information Technology, KDK College of Engineering, Nagpur, Maharashtra, India*

Abstract - **This Primary Detection of Covid using Sensor Network is a project developed using Internet of things using C++ programming Language. The main aim of the project is Primary detection of the COVID virus, Covid have some general symptoms like Fever, Cough, Cold, Joint Pain etc. All the data will be stored are collected using the Arduino Uno Microcontroller. It will primarily detect the symptoms of the Covid the of the person and so he/she will be allowed to enter in any campus, college, offices, mall like places. From this kind of data, we can detect efficiently the Covid. If the Covid is detected in primarily then we can cure it easily and earlier.**

Index Terms- **Arduino Uno, Windows, Camera (OV7670), IR sensor, Non-contact thermal screening sensor (MLX90614), Sop2 (MAX30100), LCD Display (16*2) I2C, Microphone Condenser.**

1.INTRODUCTION

Our project is based on Internet of Things, our project generally do is, if we want to enters any hospital or in malls firstly is gives a sanitizers to the person who want to enter, then by sensors we collect that persons data such as Pulse Oximeter (SOP2), Thermal Screening, Heart Rate, etc. If the person is suffering from any kind of disease such as cough, cold or fever, then we are able to detect the primary symptoms for Covid-19.

The main purpose of Covid Primary Detection System using Sensor Network is to detect the Primary symptoms of Covid. There is generally few symptoms like Fever, Dry Cough, Dry Cold and Pain in the body. The main intent behind the development of the project is to detect the Covid Primarily and Proper treatment is to be done priorly. It can collect the data of the person such as SOP2, Heart rate, Body Temperature, etc., and get the result that is the person have the symptoms of Covid or not. Now a days as the Covid cases are increasing rapidly peoples are fear that is this symptom are of Covid or it is something other. It is

local to the institute and collect data of all the persons data and check whether the person is safe or not, the track of data will be maintained in the database, if the person has the symptoms of the Covid, then the buzzer will be activated the not allowed to entered in the institute, office, malls, etc., like places. It can be implemented on the outside door or the entry point of the institute, office, malls, etc., and can be operated. All the data of Camera,SOP2 ,Heart Rate, Body Temperature, and by asking about the cough and cold from the person, then all the data is collected by the Arduino Uno Microcontroller and processed and operate the buzzer as if the person is affected or not. This is the user Friendly and easy to Operate.

2. MAIN MODULES OF THE SYSTEM

- SOP2 + Max 30100
- LCD 16*2
- Non-Contact Thermometer
- Camera
- Buzzer
- Arduino Uno
- Jumper wire
- Microphone condenser
- LED light

3. TECHNOLOGY USED

- C++

4. PURPOSE

The purpose of our project is to detect the COVID virus symptoms and keep the track of the person where the person is visited so we can stop the spread of Covid-19.

5. OBJECTIVES

- SOP2 detect the amount of oxygen level in haemoglobin.
- Thermal screening used to detect the person's body temperature.
- Infrared (IR) sensor is a device that counts and identify any activity in its surrounding environment and by sanitizer machine it will give sanitizer to person.
- Voice recognition using Microphone Condenser take input some data of the person by just speaking.

6. LITERATURE SURVEY

All the researchers aimed to design and develop a system to provide a generalized solution to the primary detection system network to provide the information of the basic Covid virus symptoms of the person who wants to enter in any public area, then through the sensors have used, we collect that persons health information such as Pulse Oximeter (SOP2), Thermal Screening, Heart Rate.

If the person is suffering from any kind of disease such as cough, cold or fever, then we are able to detect the primary symptoms for COVID-19. [1] 2020 Development of IoT heartbeat and body temperature monitoring system for community health Volunteer, IoT heartbeat and body temperature monitoring system is designed for Volunteer when they visit each house for a regular health checkup. The system has two parts, first is portable measuring device and another is android application. The portable measuring device used to measure the heart rate and body temperature of a person. This device uses an Arduino board that joins to both heartbeat sensor and temperature sensor. It shows the reading of a heartbeat and temperature of a body on LCD display. [2] 2018 Heartbeat Monitoring Using IOT, System helps to monitor certain parameters like body temperature, heart rate, SpO2 without physical contact that is useful in deciding the health status of a human heart. [3] 2020 IOT Based Health Monitoring System, The SPO2 (Oxygen Saturation) sensors used for knowing the patient's body temperature, coronary heart rate, eye movement and oxygen saturation percentage of the patient. This system uses ARDUINO-UNO board this is an open-source microcontroller board. temperature course's Knowledge is required during a certain time

is needed in scientific medical. [4] 2017 Smart health monitoring system, is for a patient who continuously needs to be in a proper observation who cannot be provide outside hospital for such a patient's Smart healthcare is very important and useful. it is also important at rural area or village where the facilities are less. [5] 2017 Real Time Patient Monitoring System based on Internet of Things, in this, we have suggested a system that intelligently monitors a patient's health. The system will monitor the patient's health condition directly through the sensors that are connected to the networks. Some of the sensors are used for collecting the biological act of a patient. The meaningful and important biological information is then sent to the IoT cloud.

7. PROPOSED WORK

The purpose of COVID PRIMARY DETECTION SYSTEM USING SENSORS NETWORK is to detect the basic symptoms corona virus. As the world is fighting through this Covid-19 situation so our project is aimed to detect the primary symptoms of Covid-19. In this project what we have done is if any person enters in any hospital, malls or any other public places ,crowded area firstly we ask them for a sanitizer then by using the sensors that we have used in our project such as SOP2 (it is also known as oxygen saturation, it is used to detect the amount of oxygen level in hemoglobin in the body),Thermal Screening(it is used to detect the person's body temperature and is has been widely used by worldwide to restrict the person with high body temperature to enter in any specific area) and heart rate. By using this sensor, we gather the person's health information and according to that gathered information it will decide if person is suffering from any health issue such as dry cough, cold, fever. In our Project as the very initial stage we select the domain we are using C++ language to build a software of this project, title, literature review of a project and then move towards the project planning in this we decide the module of a project, overall costing, Technologies that we are going to use in project, then goes towards the analysis phase, in this we done the project integration and the required resources tools analysis. In Design phase we build the architecture of the project including hardware resources. And In the maintenance phase we discussed the problem of a project and tries to find out the solution in a problem.

We implement this project by following the flowchart we had design to build a project. According to flowchart firstly we start the project and then there is an Activation of Arduino Uno kit it is an open-source microcontroller board based on the Microchip ATmega328P microcontroller. After the Activation of Arduino Uno kit there is a sensor that we used to collect the person's health data i.e., Temperature sensor, SOP2 sensors, Heart rate sensor, the sensors will check person's temperature of body, oxygen level and heart rate information, respectively. Using the sensors, it will detect is person's body temperature is high or normal, oxygen level is okay or not in normal condition, heart rate of a person's is normal or not. According to that gathered information it will decide that person's any covid symptoms or not. And then the system will count the number of normal and abnormal condition and according to the count it will decide is person infected or not. Consider if person's temperature is normal but oxygen level and heart rate is in abnormal condition then the person will be considered as an Infected otherwise the person is uninfected it will depend on the highest count of a gather data. If the person is infected then the buzzer will be activated and it will represent that person has a primary symptom of COVID19 and if all of sensors gathered data represent the normal condition i.e., Body temperature is normal, oxygen level is in normal condition, heart rate of a person's is normal. Then the output will be displayed on LCD display. And it means that the person is uninfected and has no symptoms of COVID 19. In this way this project has built.
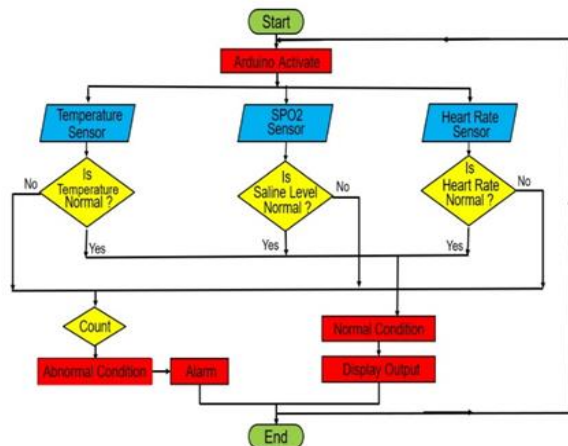
8. DIAGRAMATIC FLOW

Fig.- Flowchart for working of our project

9. HARDWARE/SOFTWARE REQUIREMENT

- Buzzer
- Microphone
- SOP2 + Heart Rate
- Non-contact Thermometer
- Arduino Uno
- C++
- Camera
- LCD Screen (16*2) I2C

10. ADVANTAGES

1. Does not allow the affected person to entered in the public places.
2. If there is no electricity, it can run on battery.
3. So, it always works.
4. Easy to use.
5. Can be install in any entry point and tracking of that person can be monitored.

11. DISADVANTAGES

1. It may be time consuming.
2. For some persons it is difficult to use.

12. FUTURE SCOPE

- We can add BP sensor and other sensor so it can be used as Health Monitoring System in hospital.
- We can connect it through internet for and collect and monitor the person or keep the track of the person where the person is visited and how many times.
- Helps in vaccination.

13. CONCLUSION

This Covid Primary Detection System Using Sensor Network can be able to detect the Covid virus in the earlier stages and the person can be cured in the earlier stage. In future we can upgrade this for vaccination and for tracking of the person.

REFERENCES

[1] Whitmore, A. Agarwal, and L. Xu, "The Tnternet of Things– A Survey of Topics and Trends,"

Information Systems Frontiers, vol. 17, no. 2, pp. 261–274, Apr. 2015.

[2] S. S. Mostafa et al., "Correlation of Heart-rate and Cardiac Cycle Duration under Different Body Positions and Breathing," International Conference on Advances in Electrical Engineering (ICAEE), pp.246-251, 2011.

[3] Temperature Sensor datasheet, http://www.ti.com /lit/ds/symlink/lm35.pdf.

[4] Heartbeat Sensor datasheet, http://www.sunrom. com/p/heart-beat-sensor-digital-pulse-out.

[5] T. Jain, "Smart Health Care System", major proj. thesis, M.tech (ES), Devi Ahilya University, Indore, India, June 2016, Unpublished.