Project Title: Covid Patient Monitoring System

Course No- EEE318

Section-C1

Group no: 1

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Project's Name:

Covid Patient Monitoring System

Motivation:

1) Covid patients are increasing day by day

2)Less doctors and medical stuff in the country

3)An automated system can be useful for all

Sense :

1) Temperature

2) Oxygen saturation level in blood (Sp02)

3)Heart Rate

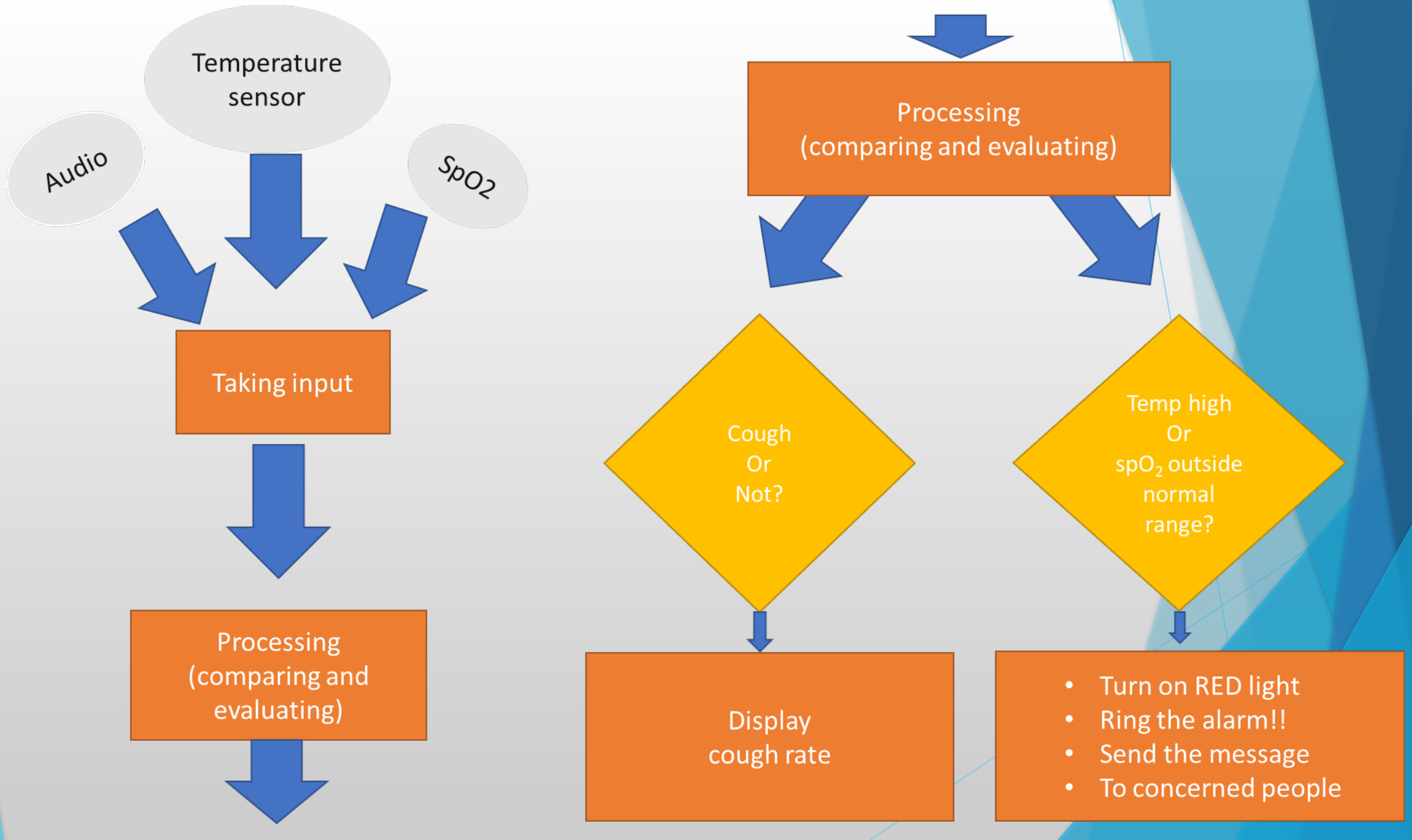
4) Cough

Think

- 1) Comparing the Sp02 level with normal range
- 2)Detecting the sounds whether cough or not
- 3)Comparing temperature with the normal range

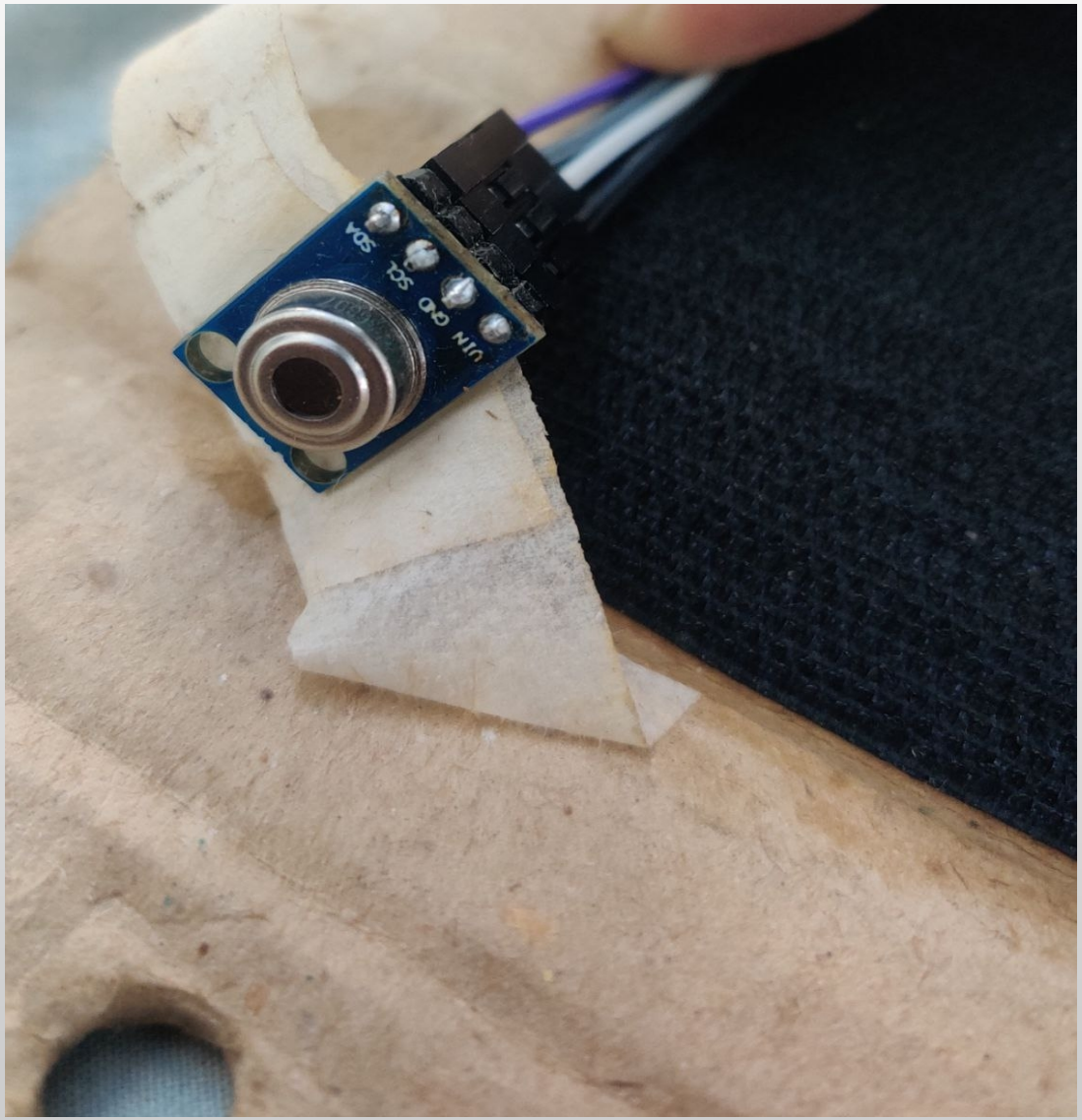
Do

- Send the SMS to the concerned people
- Count the total number of cough in minute basis
- Start the flow of oxygen
- Ring a buzzer
- Will monitor the overall health of the patient


Temperature sensor
Audio
SpO2
Taking input
Processing (comparing and evaluating)
Processing (comparing and evaluating)
Cough Or Not?
Temp high Or spO2 outside normal range?
Display cough rate
Turn on RED light
Ring the alarm!!
Send the message
To concerned people

Equipments Used in the Project:

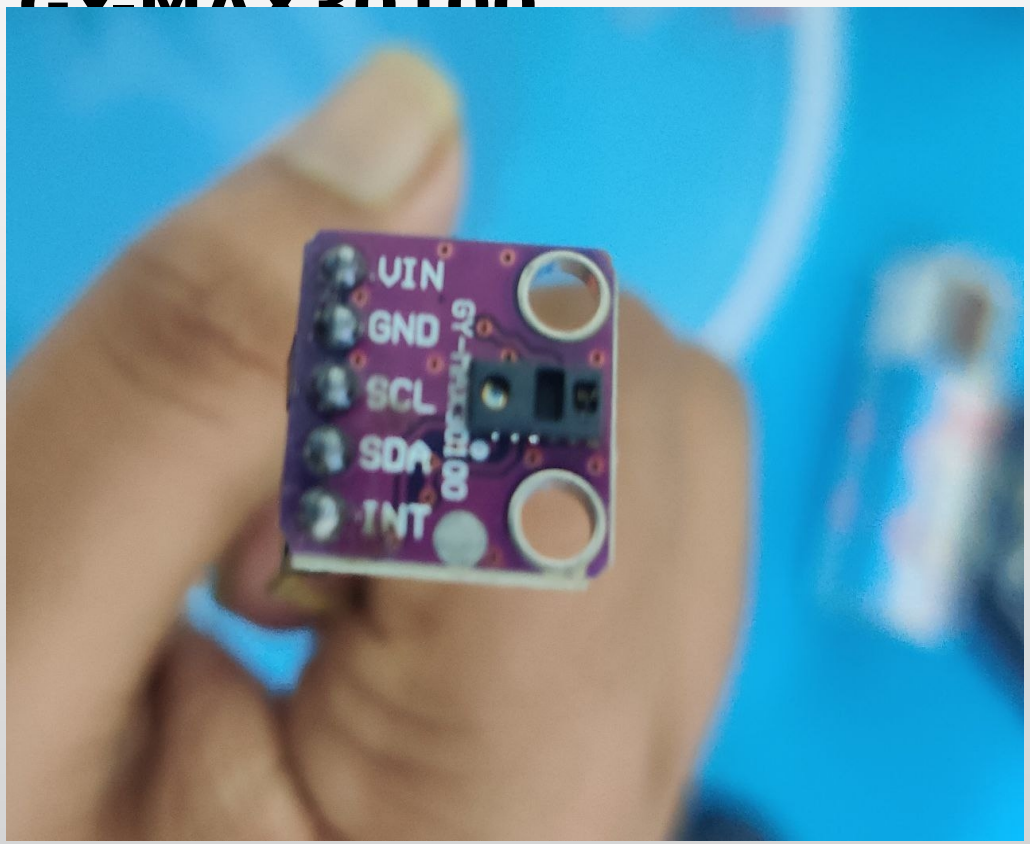
- **Temperature Sensor (GY-906)**



- **Temperature Sensor will measure the temperature of the patient via IR radiation**

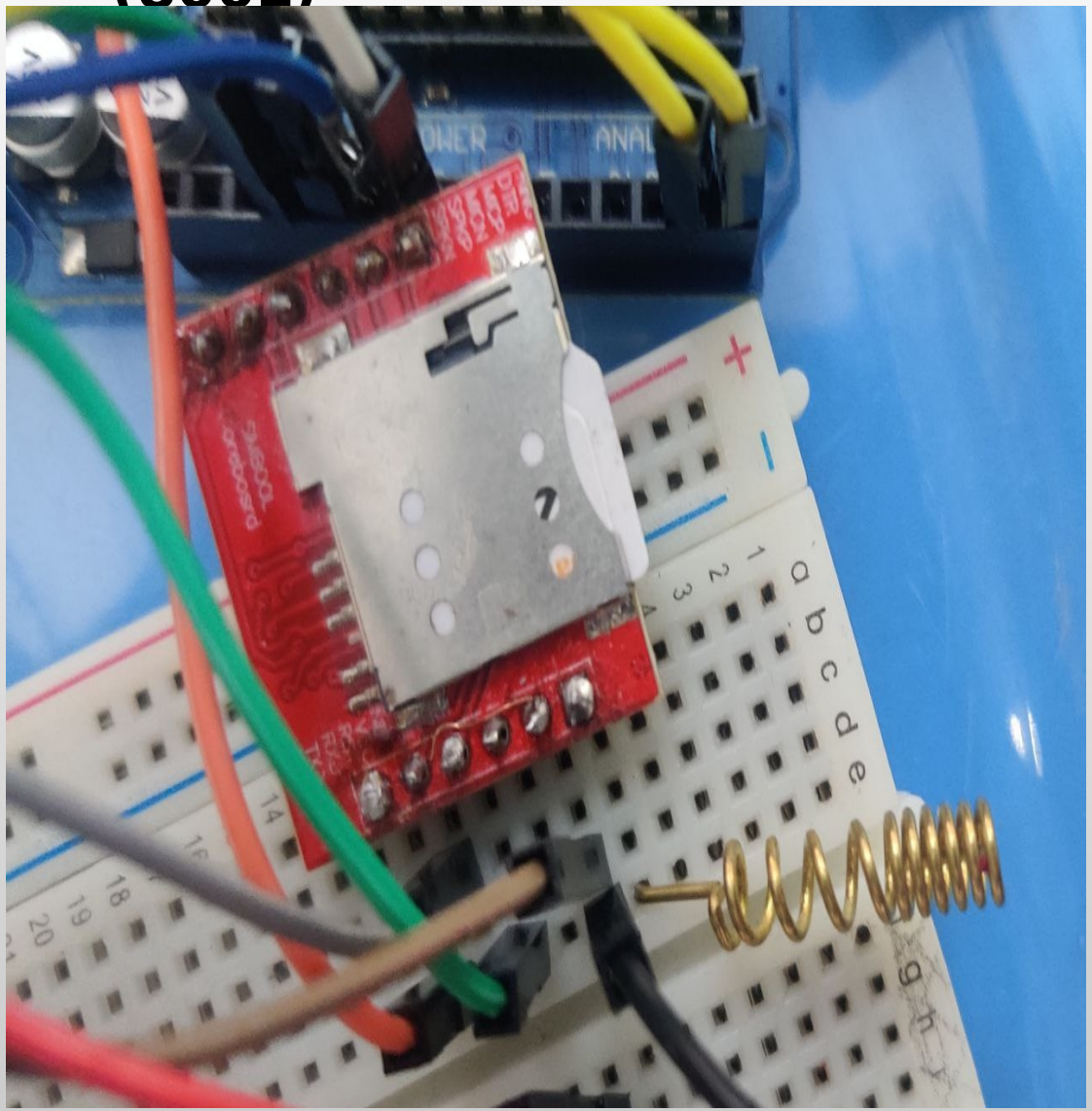
- **IR Radiation ∝ Body Temperature**

Oxygen saturation level sensor GY-MAX30100



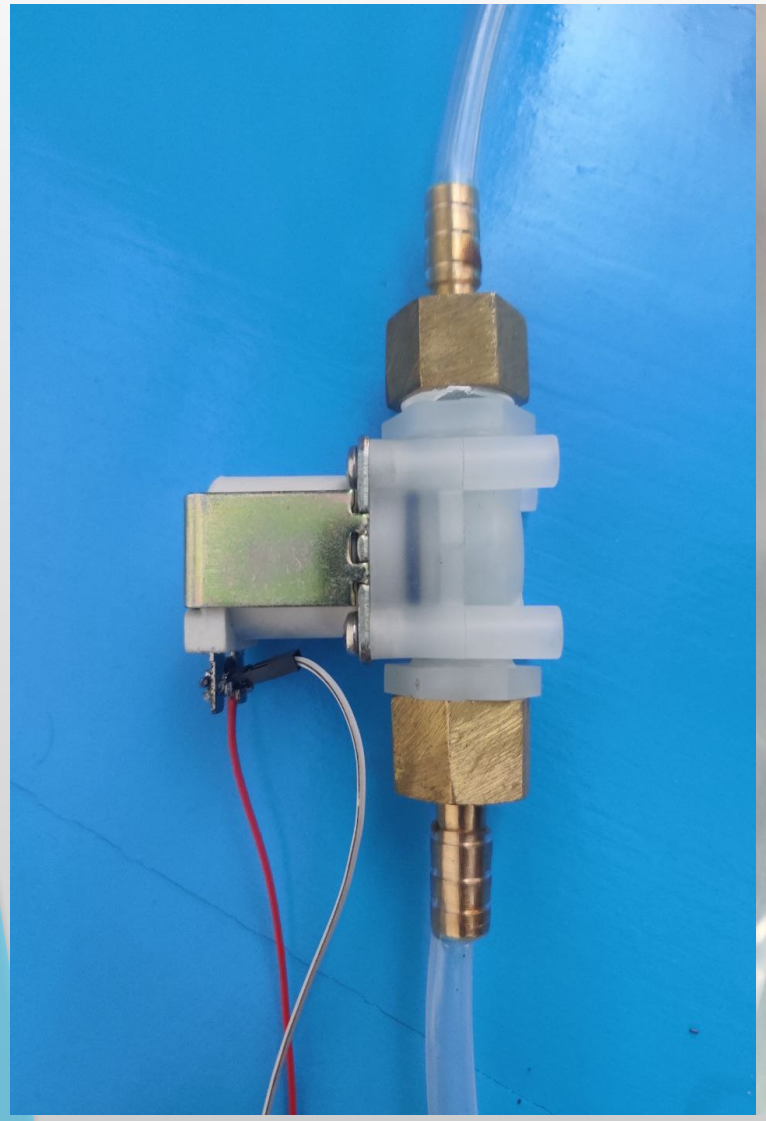
- Oxygen saturation level is measured through 2 led in build in the sensor.
- One led is emitting red light and another emitting infrared light, from which heart rate and oxygen saturation level is measured.

GSM module (800L)



- This module was used to send message for emergency of a patient.

Solenoid Valve

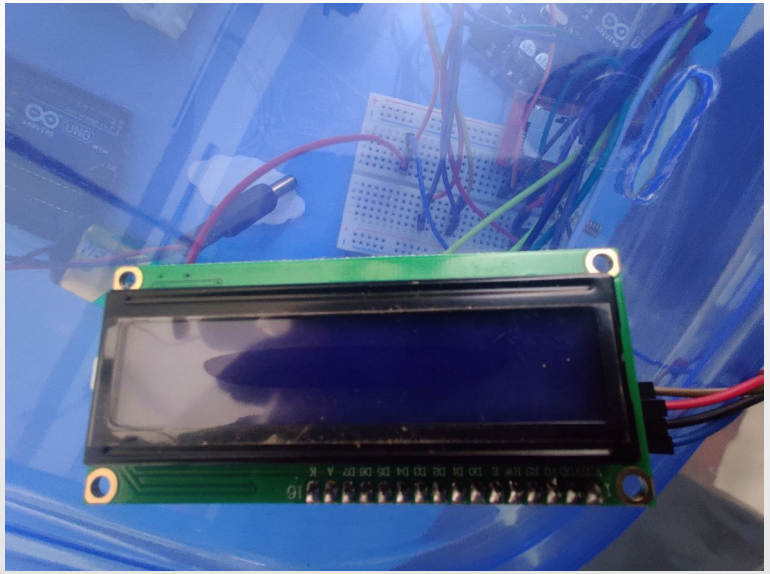


Relay Switch

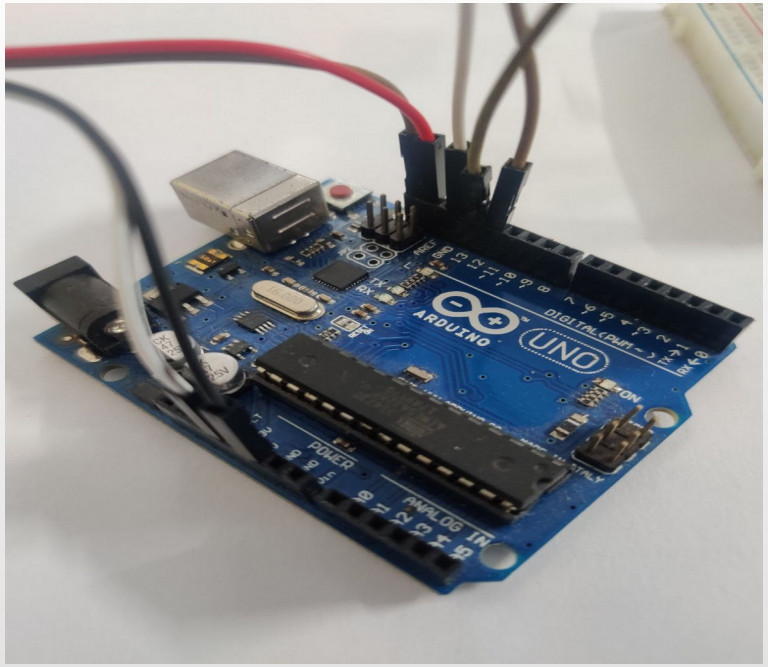
- Solenoid valve, electrically controlled valve which is controlled by current flow into it acts as a SPDT switch for our project.

- This valve will ensure oxygen flow when needed which is controlled through the relay switch

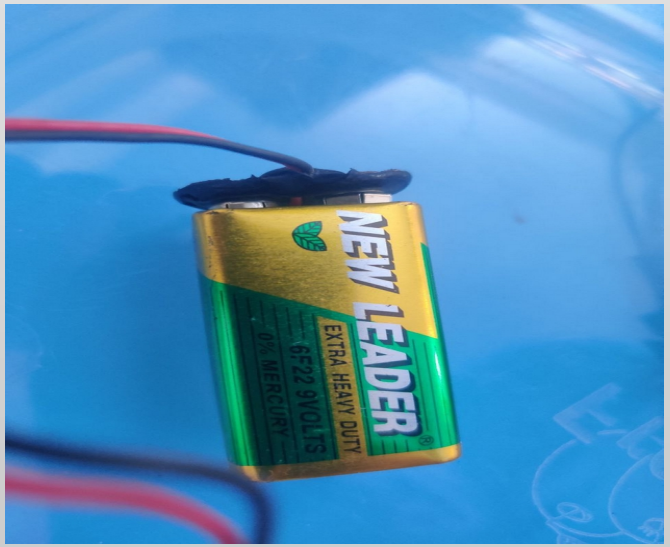
Display



Arduino uno



Source (9V battery)



Cough Rate Detection System

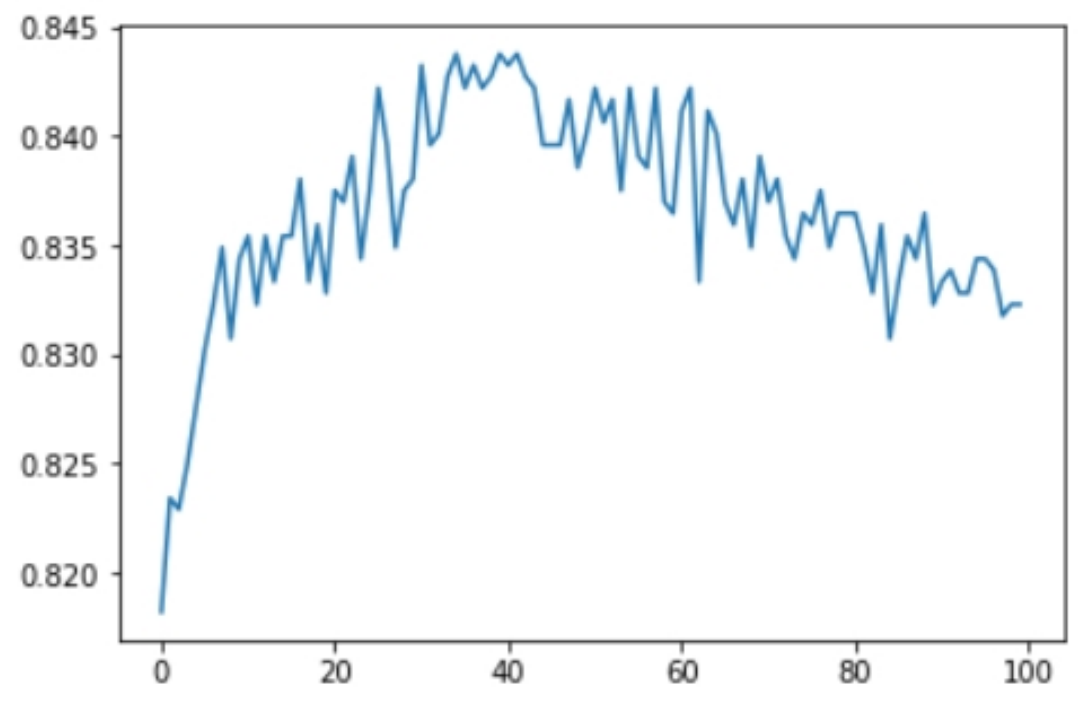
- For Cough Rate measuring, YAMNet model was used.
- AudioSet dataset was used as dataset.
- True event: Coughs
- False events: Sneeze, Sniffle, Breathe, Hiccup, Gasp, Silence, Speech

Training Results:

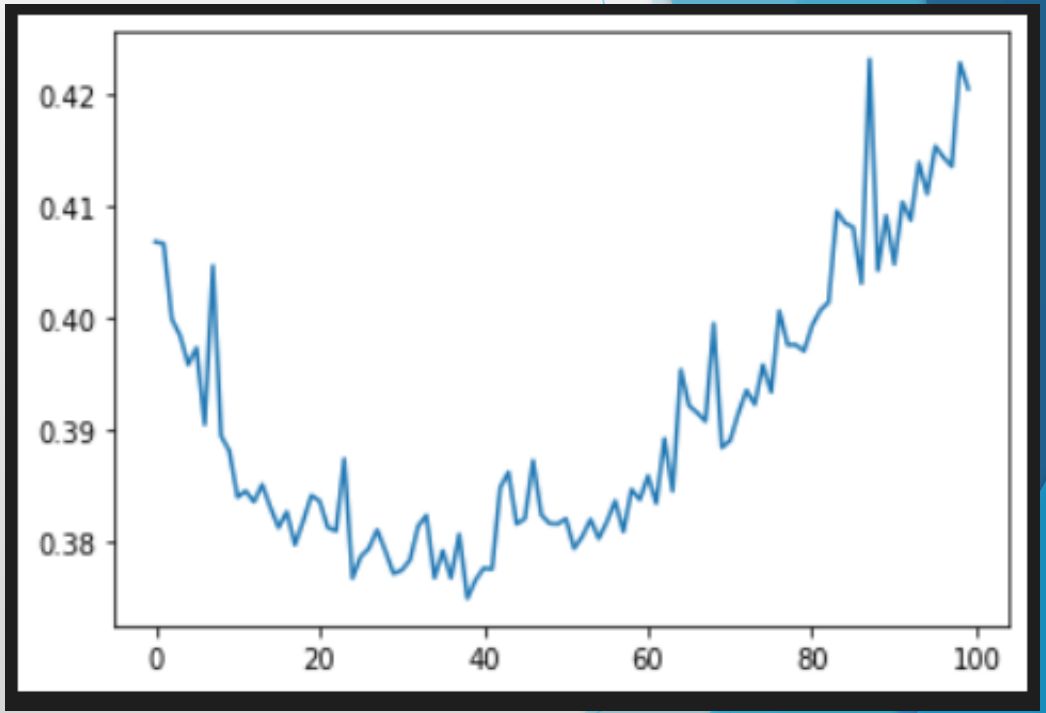
After training our model to detect cough, we got

- Test Accuracy= 88.43 %
- Precision= 93.58%
- F1 score= 84.4%

Training Results:

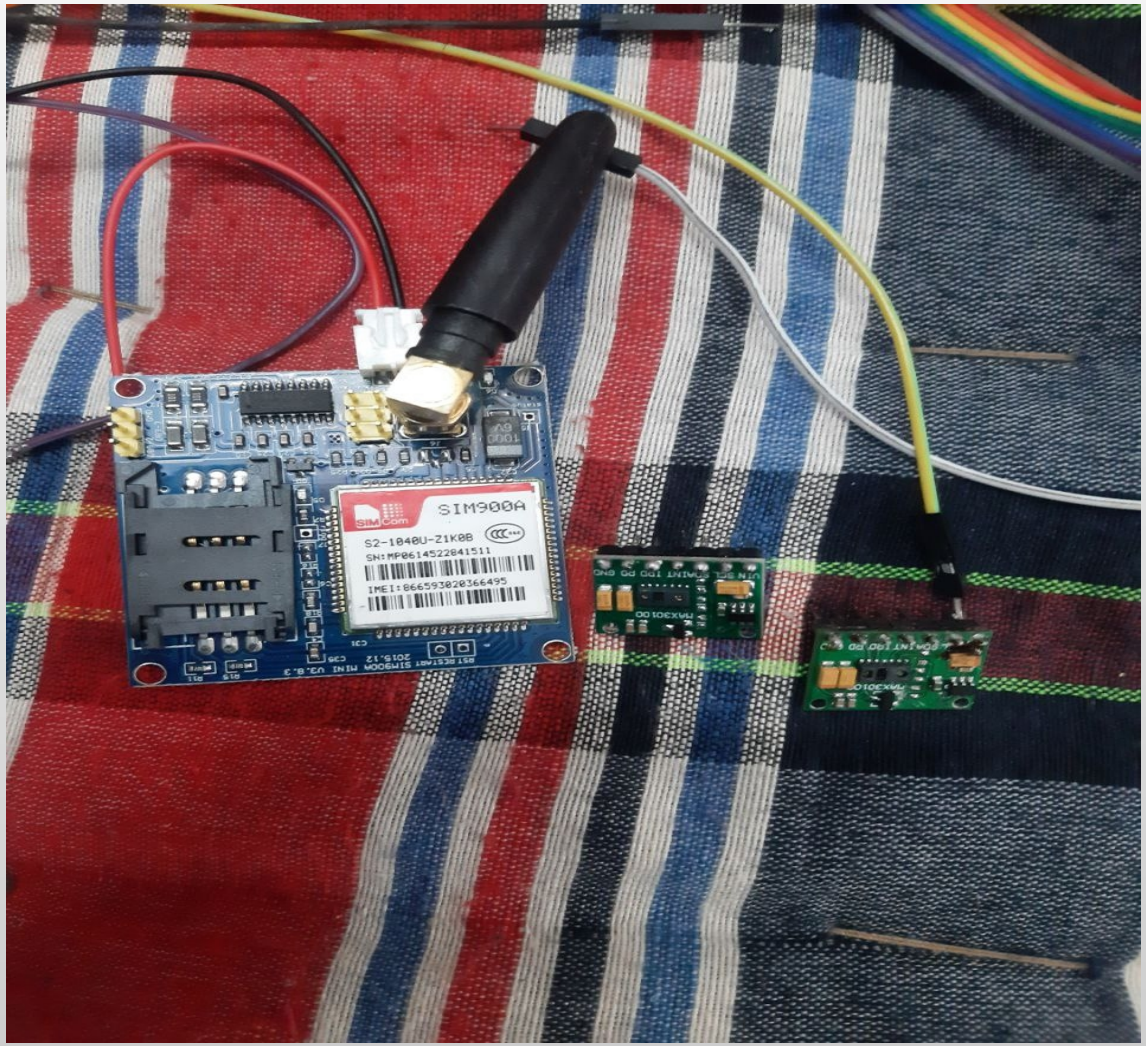


Validation Accuracy Vs Epochs



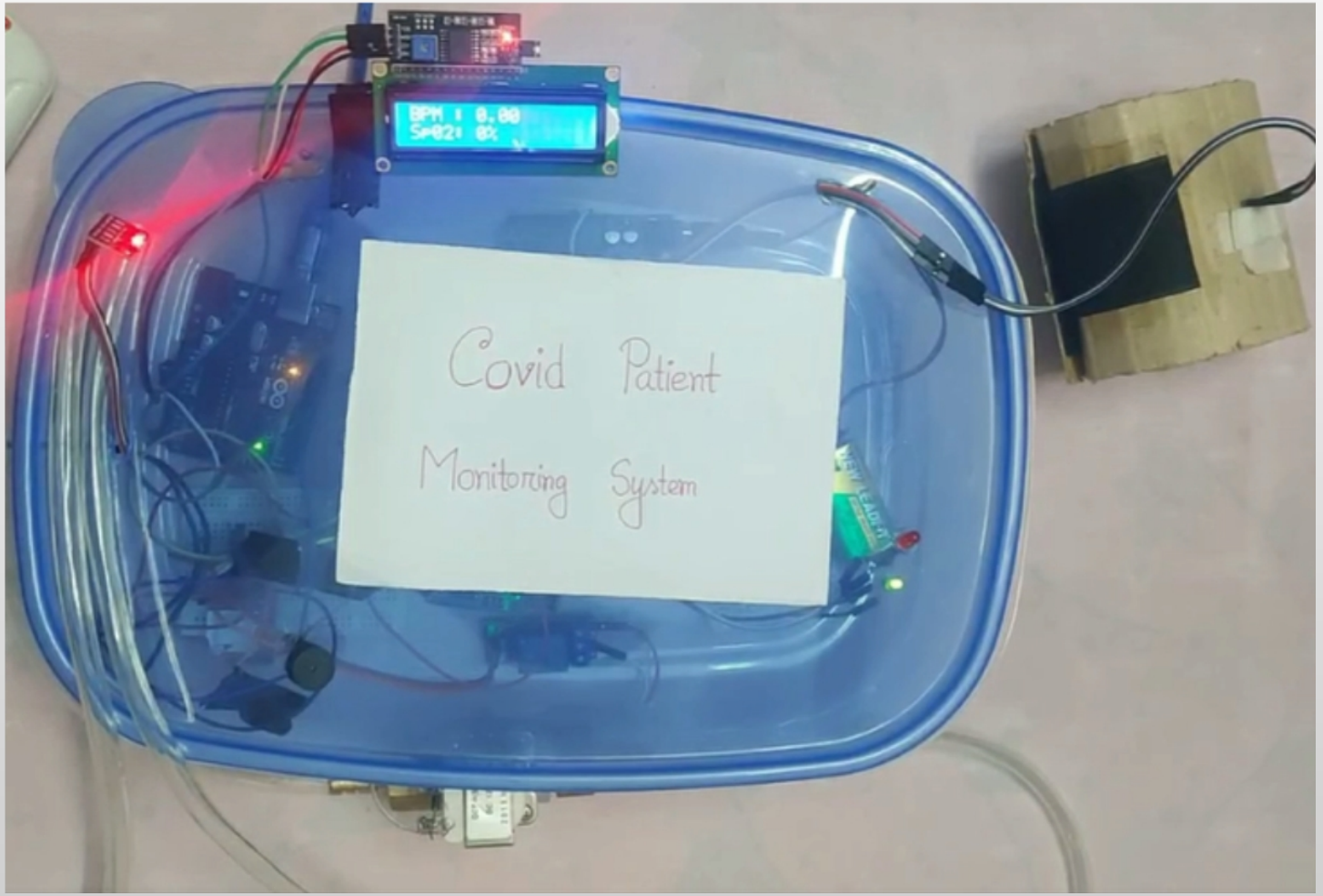
Validation Loss Vs Epochs

Defected Sensors:



- While doing our project many of our sensor was defected. We get most frustrated result from SPO2 sensor. 2 of our sensor was defected. They were not giving any value for our oxygen saturation level.

Final Assembled System:



- This whole module will work as an automatic covid monitoring system. This system will perform all the task we discussed and hopefully can reduce the dependency of all time hospital monitoring.

Limitations

- Oure gy-GY-MAX30100 sensor was giving very fluctuating values.
- Temperature sensor works well only in close range.
- We evaluated our system for an artificial patient as we don’t get touch of any Covid patient.