A
Project Report
On
"Pneumonia Diagnostic Infrastructure"

Prepared by

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A Report Submitted to

Charotar University of Science and Technology

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Submitted at

Department of Computer Engineering

DEPSTAR

At: Changa, Dist: Anand –

388421 October 2020

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CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY

CERTIFICATE

This is to certify that the report entitled "**Pneumonia Diagnostic Infrastructure**" is a bonafide work carried out by **Nachiketa Buddha (17DCE004)** under the guidance and supervision of **Asst. Prof. Hardik Jayswal** for the subject **CE446: Software Group Project - IV** (CE) of 7thSemester of Bachelor of Technology in **DEPSTAR** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidat himself, has duly been completed, and fulfills the requirement of the ordinanc relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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ABSTRACT

- Pneumonia has been labelled as the single largest cause of child mortality for the children under five in developing countries around the world. We propose a novel method to continuously monitor parameters like Respiration Rate, Heart Rate, Blood Oxygenation (SpO2) and Body Temperature in a non-invasive and non-obtrusive manner behind the ear. The data is streamed using Wi-Fi/BLE to the parent's smartphone or a smart gateway device which uploads it to a server. This project also explores the opportunities for presenting patient vital signs from such a device to the remote health care workers and doctors. The device also enables doctors to track if medication is effective by seeing changes in the various physiological parameters. This will enable health workers in rural areas that are extremely understaffed to assist more children. The device would also have alarm modes to alert parents to sudden onset of fever or difficulty breathing.

ACKNOWLEDGEMENT

The development of this project has given us wide opportunity to think, implement and interact with various aspects of management skills as well as the new emerging technologies. Every work that one completes successfully stands on the constant encouragement, good will and support of the people around. We hereby avail this opportunity to express my gratitude to number of people who extended their valuable time, full support and cooperation in developing the project. We express deep sense of gratitude towards our Principal, Dr. Amit Ganatra and project guide Assistant Prof. Nilesh Kumar Dubey, Asst. Prof. Gaurang Patel and Asst. Prof. Hardik Jayswal, for the support during the whole session of study and development. It is because of them, that we was prompted to do hard work, adopting new technologies.

Thank You,

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Chapter 1:

Project Definition

- Pneumonia has been labelled as the single largest cause of child mortality for the children under five in developing countries around the world.

- We propose a novel method to continuously monitor parameters like Respiration Rate, Heart Rate, Blood Oxygenation (SpO2) and Body Temperature in a non-invasive and non-obtrusive manner behind the ear.

Chapter 2:

Description

- Pneumonia has been labelled as the single largest cause of child mortality for the children under five in developing countries around the world.
- We propose a novel method to continuously monitor parameters like Respiration Rate, Heart Rate, Blood Oxygenation (SpO2) and Body Temperature in a non-invasive and non-obtrusive manner behind the ear.
- The data is streamed using Wi-Fi/BLE to the parent's smartphone or a smart gateway device which uploads it to a server.
- This project also explores the opportunities for presenting patient vital signs from such a device to the remote health care workers and doctors.
- The device also enables doctors to track if medication is effective by seeing changes in the various physiological parameters.
- This will enable health workers in rural areas that are extremely understaffed to assist more children.
- The device would also have alarm modes to alert parents to sudden onset of fever or difficulty breathing.

Chapter 3

Hardware & Software Requirements

- Hardware Requirements
    1. Micro-controller – ESP 32
    2. MAX30105 – Pulse Oxymeter
    3. AD8232 – ECG Sensor
    4. LM35 – Temperature Sensor
    5. HR202 – Humidity Sensor
    6. PLSNSR1 – Heart Rate Sensor

- Software Requirements
    1. Android Version (above lollipop)
    2. iOS 6 or above
    3. Any standard web browser

Chapter 4:

Flowchart

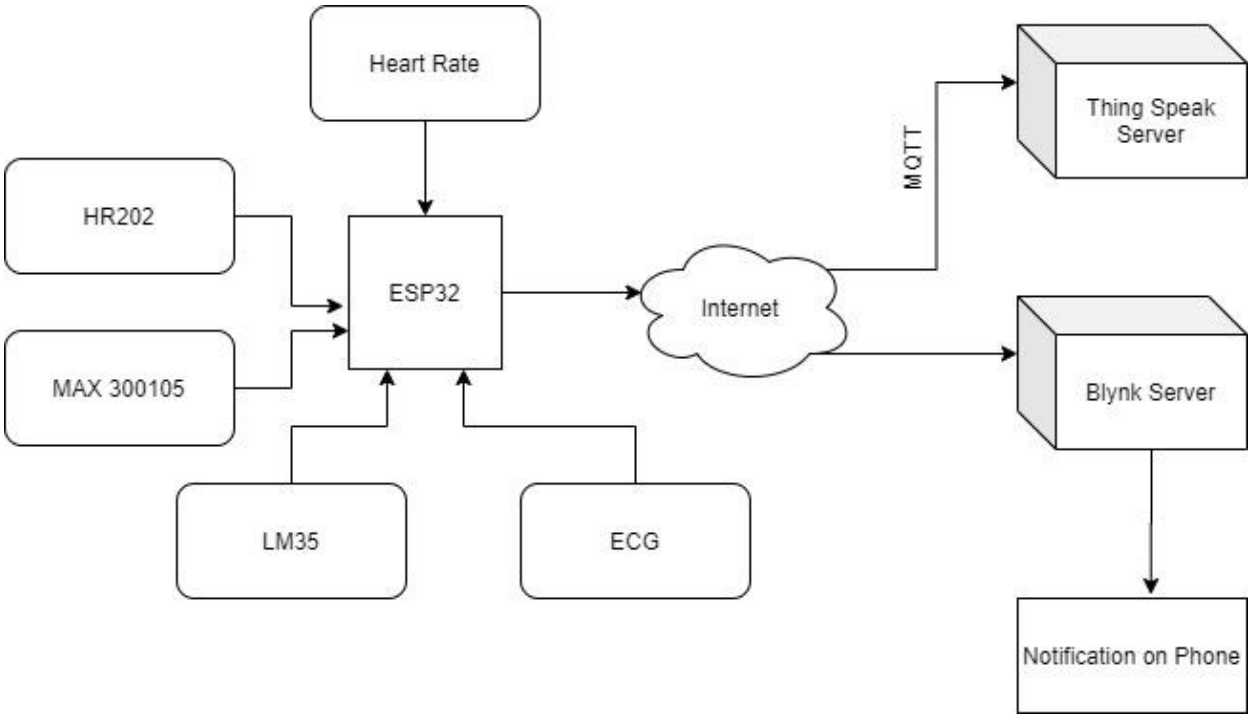

Fig 1.0: Flow chart

Chapter 5:

Implementation Screenshots

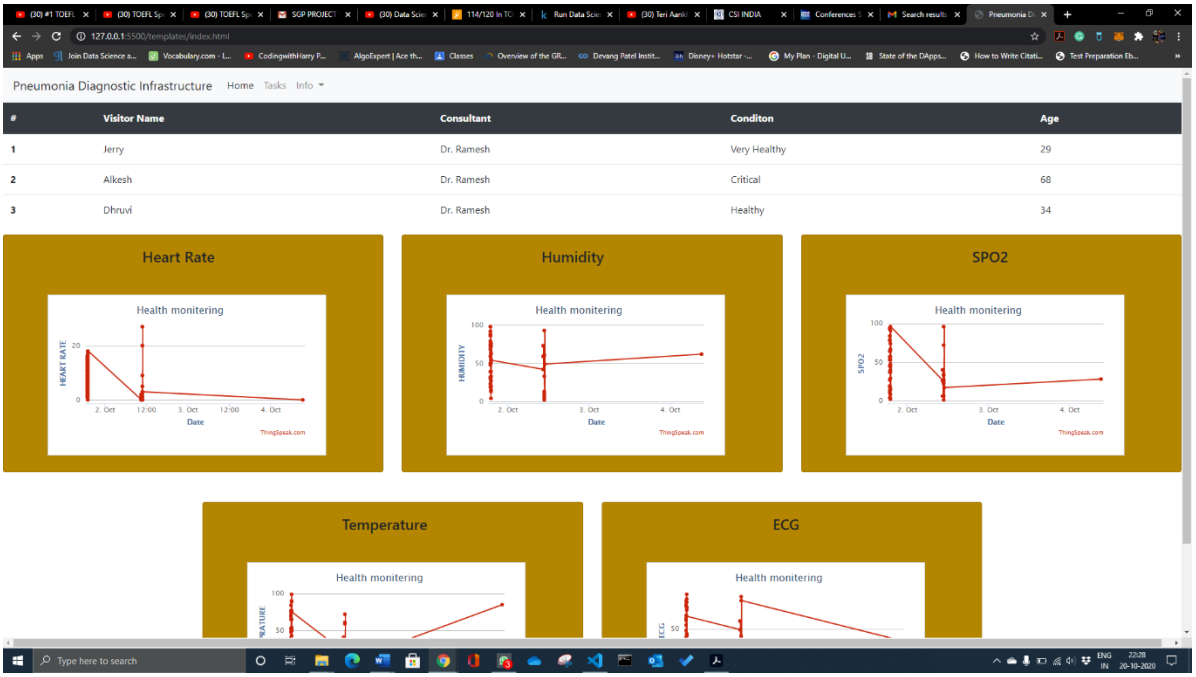

Fig 2.0: Dashboard

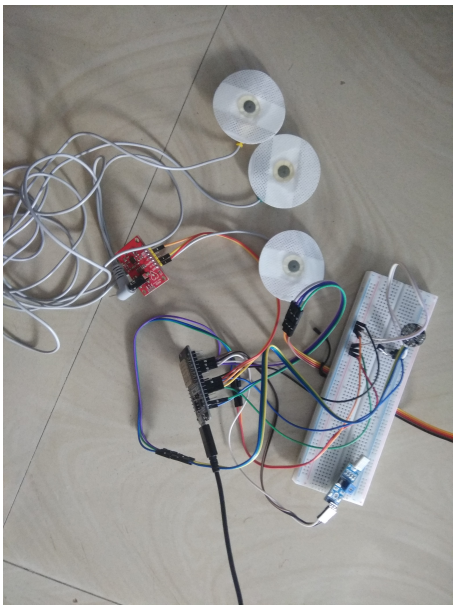

Fig 3.0: Circuit

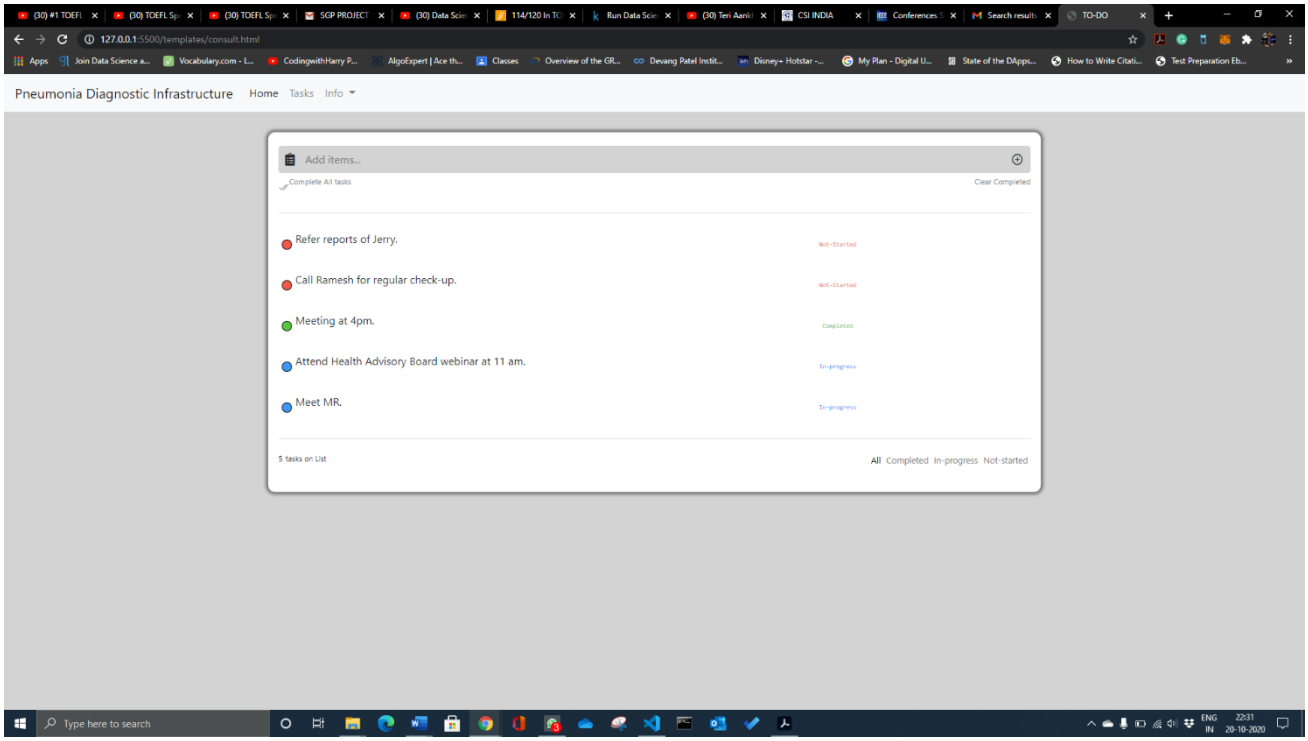

Fig 4.0: To-do List

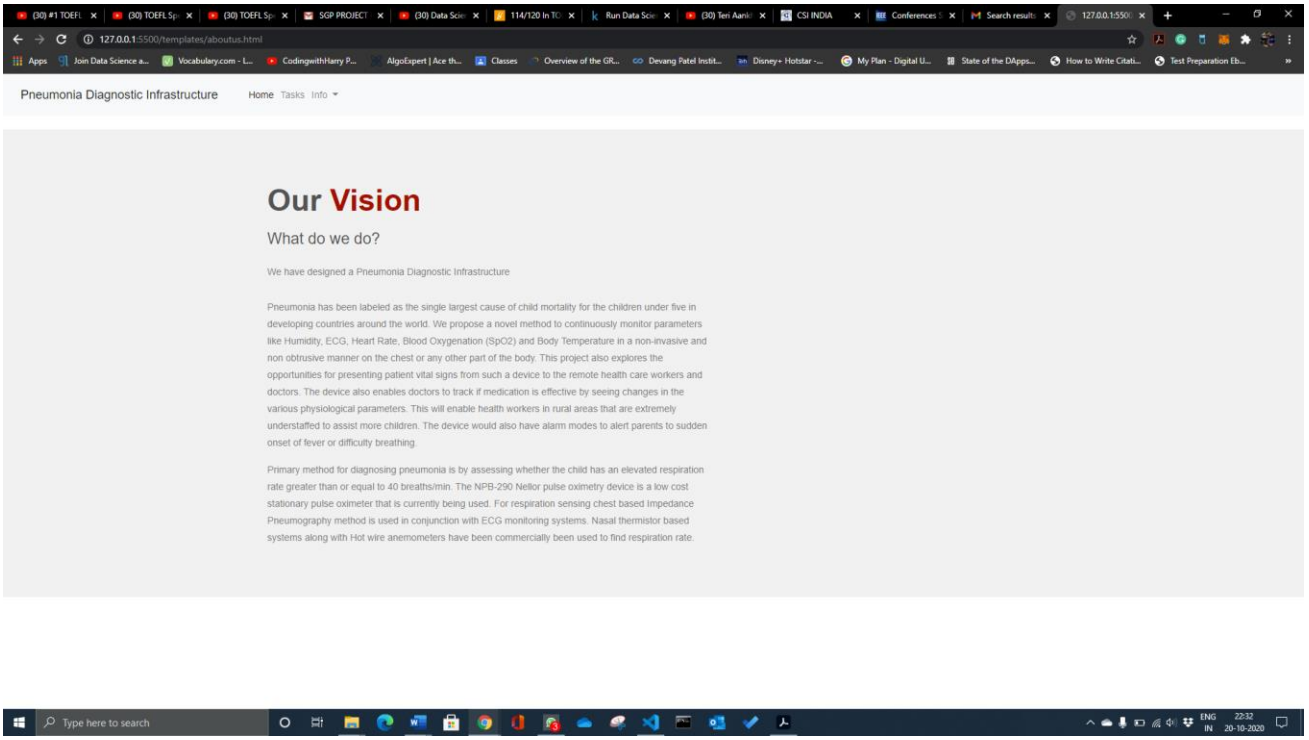

Fig 5.0: About Us

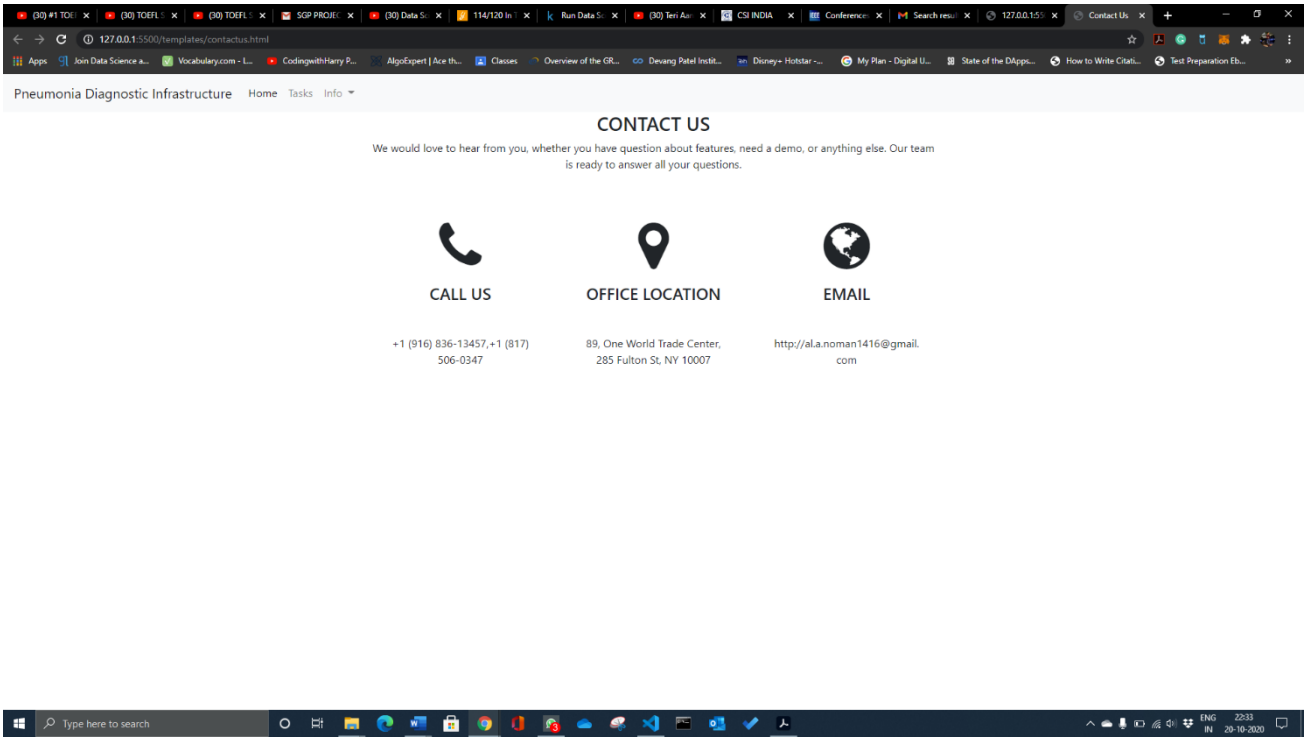

Fig 6.0: Contact Us

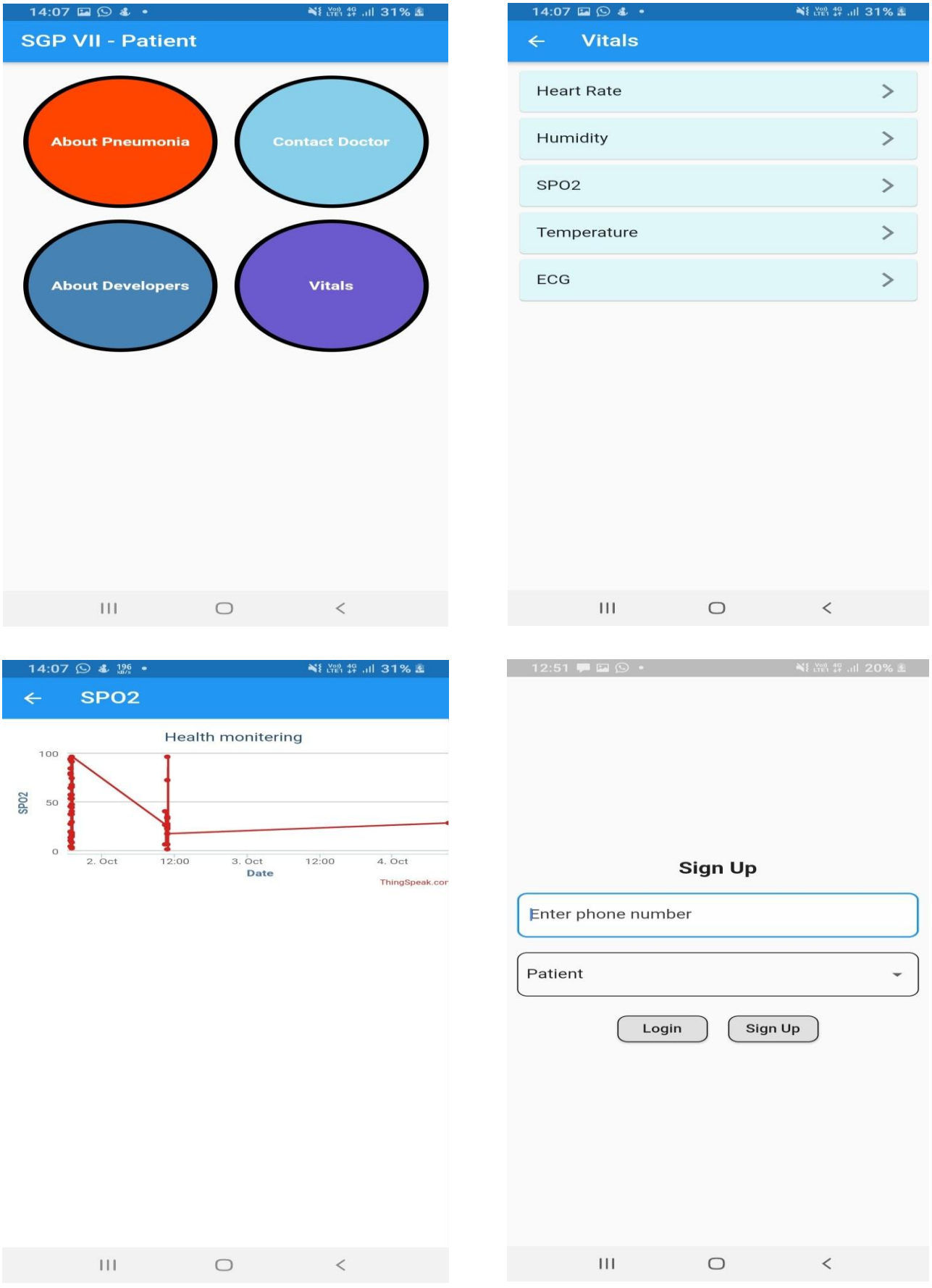

Fig 7.0 (a,b,c,d): Mobile App Snapshots

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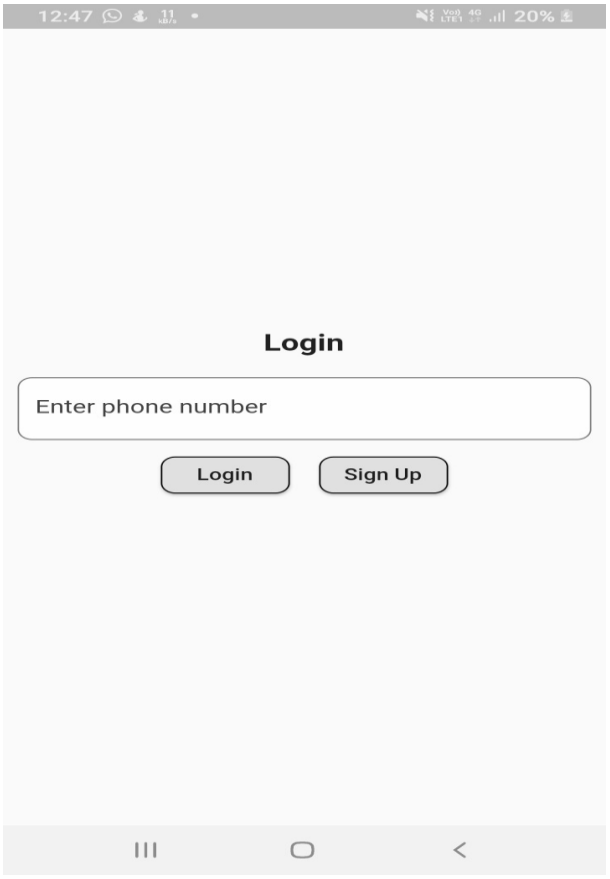
About Pneumonia
Pneumonia has been labeled as the single largest cause of child mortality for the children under five in developing countries around the world. We propose a novel method to continuously monitor parameters like Humidity, ECG, Heart Rate, Blood Oxygenation (SpO2) and Body Temperature in a non-invasive and non obtrusive manner on the chest or any other part of the body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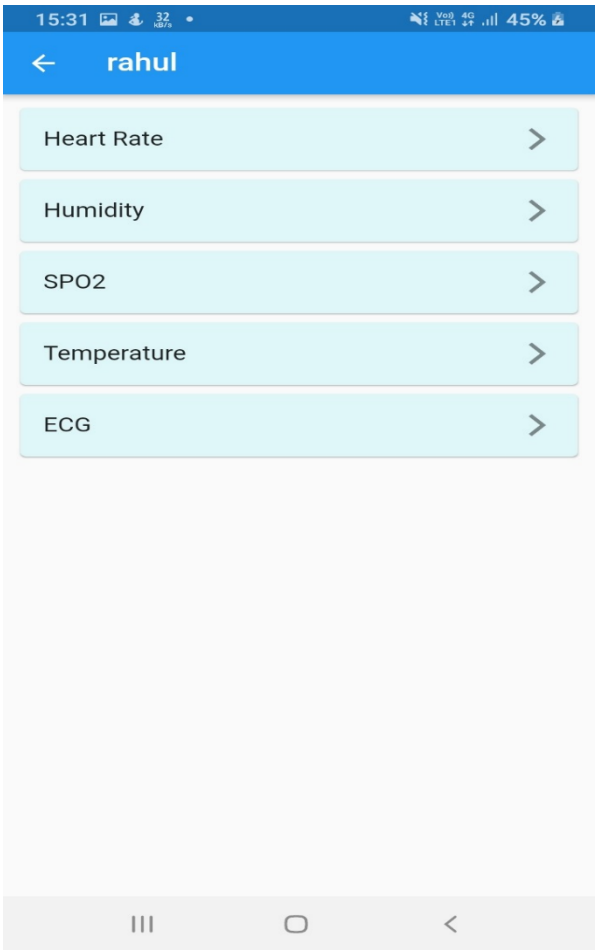
Login
Enter phone number
Login
Sign Up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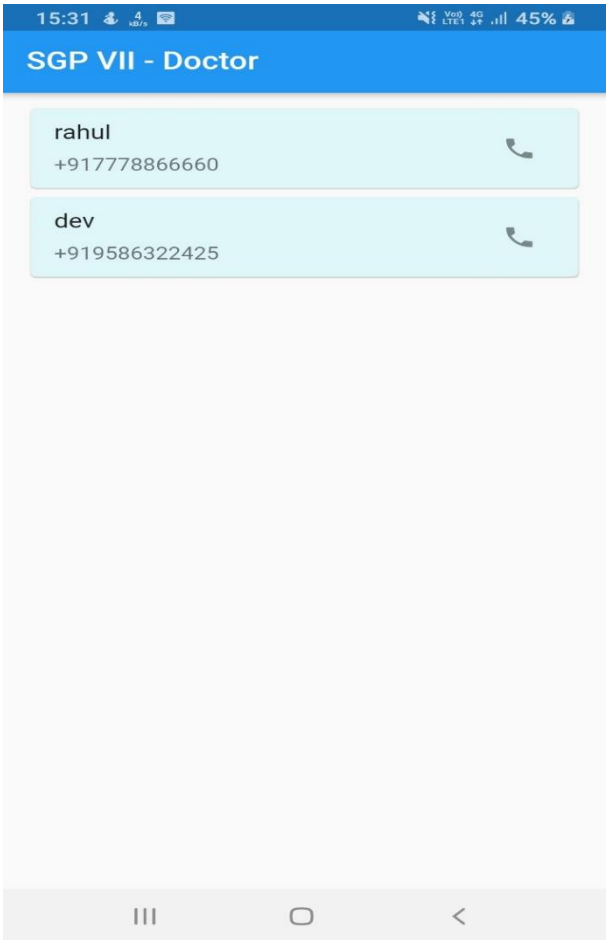
Heart Rate
Humidity
SPO2
Temperature
ECG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Chapter 6:

Limitations

- Heavy reliability on internet connection
- Heavy reliability on the swiftness of the sensors

Chapter 7:

Outcome

- This project presents a benchmark in cultivating efforts so as to bridge the gap between higher mortality rate of pneumonia patients and emergency healthcare facility.

Chapter 8:

Future Enhancements

- Making the application industry specific.
- Addition of certain extra vital elements can be diagnosed.
- Constant improving in User Experience and UI.
- Addition of app-inbuilt health advisory.

Chapter 9:

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