

# Digital Thermo-oximeter Using IOT

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**Abstract:** Our project Digital Thermo-oximeter is IOT based project which will help out to collect all the physical data of the patients like the temperature, pulse rate and SpO2 level. All the data is collected throughout the sensors. This may be helpful for the doctors to attend the patients those who are in emergency. And it's easy to improve the patient's health. All this process is done and monitor by using Raspberry Pi 3 B+ module. It can be able to get live through camera and showcase the data on the online platform due to the IOT. Google cloud will play the major role in this. By this process collected data will be helpful for the better improvement on health of the emergency needed patients.

**Key Words:** Keywords: Online platform, Google cloud, Raspberry Pi 3 B+, Live present.

## 1. INTRODUCTION

As we know that during the period of Covid-19 the condition was so difficult to handle all the patients which are in Intensive Care Unit (ICU). There is major requirement of doctors to handle the patients but various problems are occurred and it was getting too much challenging for them. Because of that there is lack of things in the hospitals like space, maintenance etc. All the time doctors, nurses or the ward helpers need to monitor the patients particularly. Also, some patients are stayed in home and doctors need to attend them physically. So, avoid all this time-consuming process we are going to represent this system. It may also be reduced the cost of consumption.

### 1.1 Aim of our project

The aim of our project is to implement a system which will show the status of a human body parameters like temperature, SpO2 level and pulses. The Raspberry Pi is able to show the accurate values of the mentioned parameters. Hence it can be useful to use in the Hospitals, Companies, in transport systems etc.

## 2. METHODOLOGY

### 2.1 Project Model:

It includes Raspberry Pi 3B+ for the digital thermo-oximeter making purpose. By the combination of hardware and software simultaneously and also interfacing the sensors like LM35(temp. sensor), MAX30100(pulse sensor) and the

MCP3208(analog to digital converter) it can be made. In this project all the health-related data is going to transfer via Wi-Fi network on the platform or app with the help of cloud computing.

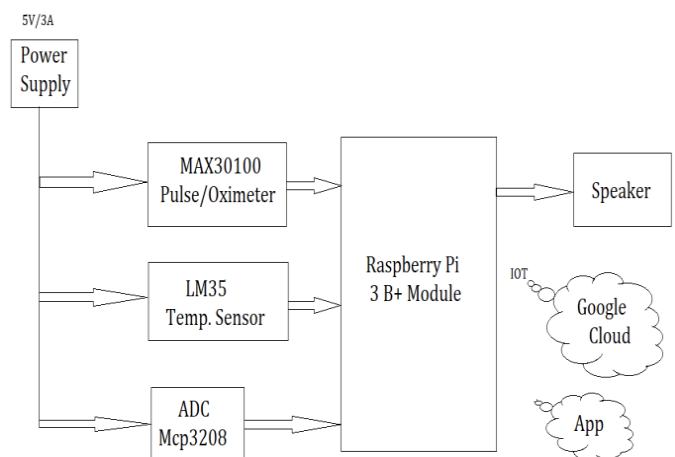


Fig-1: Block Diagram

## 3. MODELING AND ANALYSIS

The hardware and software requirements for the implementation of this project is as shown below:

### Hardware Components:

- Raspberry Pi 3B+ module
- Temperature sensor (LM35)
- A to D converter (Mcp3208)
- Heart pulse rate monitor sensor (MAX30100)

### Software Used:

- Putty Software
- Things on board (IOT platform)
- Google Cloud (for data storage purpose)

### 3.1 Raspbian

Raspbian OS is basically based on Linux and can be easily optimized to work effectively with Raspberry Pi computer also it is free to download and use.

This can be useful to run the programs on the specified hardware. The Raspbian also includes the various tools for python programming, browsing etc.

The Raspbian desktop is also known as “Lightweight X11 Desktop”.

### 3.2 ThingsBoard:

- Things board is nothing but a IOT platform which is available open. This will help for scaling the IOT projects, management and development of it.
- This platform will collect all the upcoming data and also visualize to it. By analyzing the incoming data, it triggers the alarms by processing the complex events or process. It designs the dynamic response and presents all the information and the device on the dashboard.

### 3.3 Google Cloud:

- The google cloud platform provides the service of infrastructure. Mainly the GCP (Google Cloud Platform) is suitable for computing services provided by google.
- It is a platform of public cloud computing which is able to give various services like computer, networking, application development, storage and more. This can be run on the same infrastructure of cloud that google can uses it internally for its end-user products, such as Photos, You tube, Search, Gmail etc.
- The services of the Google Cloud Platform can be able to accessed by software developers, IT professionals and cloud administrators over to the internet.

## 4. PROTOTYPE MODEL

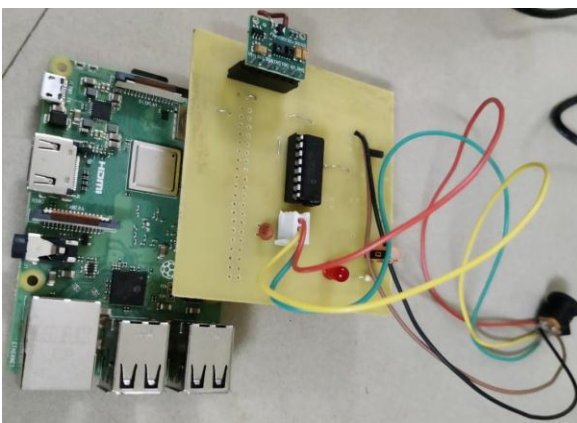


Fig -2: Model

## 5. RESULT:

All the overview of the project is the collected information is thrown on the online platform i.e., Things board. It will look like the following figure no.3 which contains the thermometer, the SpO2 level and BPM showing parameter. Doctor will get the information of the patients with the help of google cloud and app without face-to-face contact with them. In-case there is a situation like COVID-19 pandemic people can easily communicate with doctors without leaving home.

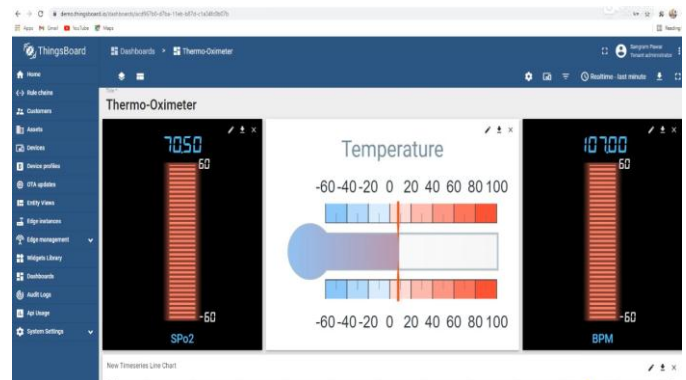


Fig -3: Result on things board

## 6. CONCLUSION:

This will provide integrated extensive network for the healthcare to fight with pandemic similar to the Covid-19. This project is able to achieve the portable, wearable, low power consumption and real-time remote monitoring system which is based on IOT technology. The main aim of this project is to design and construct a Raspberry Pi based Digital ThermoXimeter. This will be illustrating the use of embedded systems in instrumentation designing and it generally happens in electronic devices. Embedded system design needs to be encouraged to simplify and to provide flexibility for the electronic circuits.

## 7. REFERENCES:

- [1] **Y. T. Zhan** presented the implementation of telehealth of systems for elder population and discussion on various chronic diseases and their importance. They discussed in detail about wearable technology for remote health care systems.
- [2] **Jasmeet Chhabra** proposes the plan and the implementation for emergency of medical services based on IoT health monitoring system.
- [3] **Sampada Sathe and Alok Kulkarni**, paper attempts to evaluate and understand the application of IoT in personalized care for the realization of excellence in the health care costs within the reasonable limits.

- [4] **Ravi Kishore Kodali** proposed healthcare monitoring which is implemented to check the temperature of the patient. By using the ZigBee mesh protocol, the patient's 24-hour care records are being monitored. In-hospitals, records are maintained in the cloud. IOT devices at the same time enrich the quality of care with regular monitoring and the collection of data actively also moderate the cost of care and do analyze the same.