Health Care using Internet of Things

Summary Report

Internet of Things (IoT) technology has attracted much attention in recent years for its potential to alleviate the strain on healthcare systems caused by an aging population and a rise in chronic illness. Being able to monitor the health of patients even by staying away from them is a boon for doctors as well as the family members. Body temperature, heart rate and breathing pattern are some of the vital signs that give the basic condition of the patient.

In our Health Care model,

- **MLX90614 IR (Temperature sensor)** is employed to sense the body temperature in comparison to the ambient temperature.
- **MAX30100 Pulse Oximeter** is employed to sense the heart rate and SpO2 of the patient (**SpO2** is determined by measuring how much light is absorbed as it passes through the fingertip).
- **2** Microcontrollers (namely **RaspberryPi** and **NodeMCU**) are used because of the difference in the working environment of the sensors.
- **MLX90614 IR Sensor** is connected to the **NodeMCU** and **MAX30100 Pulse Oximeter** is connected to the **RaspberryPi.**
- **Networking:**
    - Data is first sensed by the sensor and captured by the microcontrollers.
    - AWS is our MQTT Broker, and RPi and NodeMCU are clients.
    - From the AWS IoT Services, the data is then dumped on to DynamoDB, where it is stored and updated.
    - This data on DynamoDB is the used for visualizing and representation purposes.
- **Challenges Faced:**
    - Capturing data simultaneously from 2 devices to make them run in sync.
    - Flask and HTML coding was the most difficult part of the project.
    - Setting up the MQTT broker and Client connection.
    - Representing and visualizing the data on a website.