

AN IOT BASED PATIENT HEALTH MONITORING SYSTEM USING RASPBERRY PI

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Abstract— In India, everyday many lives are affected because the patients are not timely and properly operated. Sometimes it becomes difficult for hospitals to frequently check patient conditions. The continuous monitoring of patients is not possible. To deal with these types of situations, our system is beneficial. Our system is designed to be used in hospitals or even at homes for measuring and monitoring various parameters like temperature, heart beat etc. The results can be recorded using Raspberry Pi, a web app is developed using MIT server so that the doctor can see the status of the patient from anywhere throughout the world.

Keywords—Raspberry Pi board, Heartbeat sensor, Temperature sensor, Eye open close, Internet of Things, MIT App inventor.

I. INTRODUCTION

The unpredictable growth of the "Internet of Things" is changing the world, and the sharp drop in prices of typical IoT components allows the general public to create new designs and products at home. The IoT can be used to monitor patient health and create smart homes and smart cities. Unexpected patient outbreaks are monitored using the IoT. This document uses special sensors to monitor a patient's heart rate, temperature, body movements, and respiratory rate. One of the main learning platforms for IoT is the Raspberry Pi. Raspberry Pi is a popular platform because it provides a complete Linux server on a small platform at a very low cost. You can also use the Raspberry Pi to connect services and actuators via general purpose I / O pins. The combination of Raspberry Pi and IoT is becoming a new innovation technology for healthcare. The Raspberry Pi acts as a small clinic after these sensors (temperature, respiration, accelerometer, heart rate) are connected. The Raspberry Pi works in many places as a small clinic. The Raspberry Pi collects data from the sensor and sends it wirelessly to the IoT website. The Raspberry Pi board is connected to the internet and the MAC address of the board is registered on the internet. Then add the MAC address of this board on the IoT website. Then the sensor output is connected to the IoT website

II. LITERATURE SURVEY

Dohr et al. [1] Monitor blood pressure using Keep in Touch (KIT) and closed-loop health services. In the KIT process, KIT is connected to a JAVA-based mobile phone using short-range wireless communication. It works with magnetic inductive coupling and shortens the distance. Touch the kit and the data will be sent to your mobile phone. With closed-loop services, data is retrieved from your mobile phone and sent to a secure website. Through this website Junaid mohammedetal. [2] With the IOIO-OTG microcontroller, patient ECG waves can be generated anywhere in the world. The Android application is written for ECG monitoring. The IOIO-OTG microcontroller is connected to your Android phone via a USB cable (or) Bluetooth dongle. After collecting the data, the wave is sent to the Android application. Monitor and save ECG waves with this Android based application. Mohammed S. Jas et al. [3] Focused on temperature monitoring using a Raspberry Pi board in a cloud-based system. In this paper, the Raspberry Pi monitors body temperature and these parameters are transmitted over the wireless sensor network (WSN). This data is then added to your cloud-based website. Use this website to monitor your body temperature. Hasmah Mansoretal. [4] Monitor body temperature using the LM35 temperature sensor. The LM35 temperature sensor is connected to the Arduino Uno board. Next, create the website in SQL database format. The Arduino Uno board is connected to this website. Then the sensor output is sent to the website. This website allows anyone to monitor their body temperature during the login process. Matank Mar et al. [6] discussed ECG, respiratory rate, heart rate, and temperature monitoring. These sensors are connected to the PIC16F887A microcontroller

3. Devices and Implementation

Generally, to measure the health of a patient we need to identify the health issues. Generally, we use temperature sensor, BP sensor, Heart beat sensor etc.

A. ECG SENSOR: Electrocardiogram (ECG) is used for recording Heart beat activity passes over the skin. can Detects changes in the electric cylinder every minute
The upper part of the skin. The ECG amplifier is in charge of this Receive qualified data. ECG is a graph Track the tension generated by the heart muscle during the heartbeat evaluation. ECG is used to measure heart rate on an MCU. Heart rate calculation is the main focus through the electrodes Simplified to two connectors. One for the right hand and the other

B. Heart rate sensor

It is used to measure a patient's heart rate. Here, the heart rate sensor uses + 5VDC. this Gives digital results overlaid on the arteries of the hand bothersome. It works on the principle of optical modulation By the blood flow of the arterial nerve at each pulse. Heart rate should be between about 60 and 100 beats per minute.

C. Blood pressure sensor

The hypertension sensor measures blood pressure and Includes systolic, diastolic pressure, pulse rate body. This approach provides accurate and reliable results. As a sphygmomanometer. Existing procedure will be used Flying gallbladder protector and custom-made stethoscope blood pressure. Blood pressure sensor general. Blood pressure is collected from the walls of blood vessels or arteries.

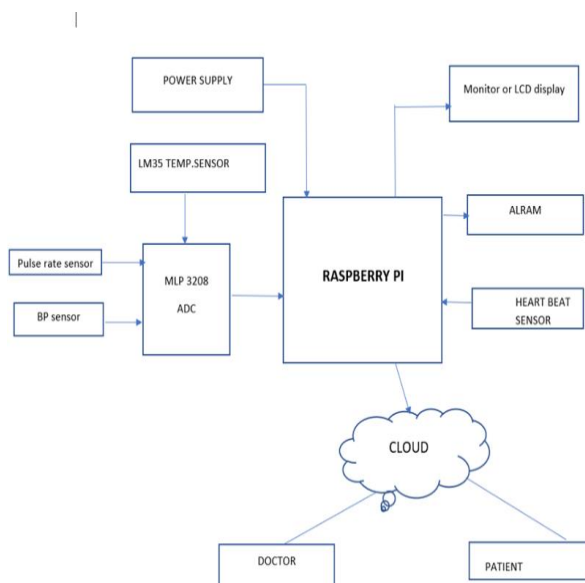
D. Temperature sensor

This sensor measures body temperature Voltage. About for LM35 sensor Kelvin to Celsius conversion, and Suitable for wireless applications, thermostat.

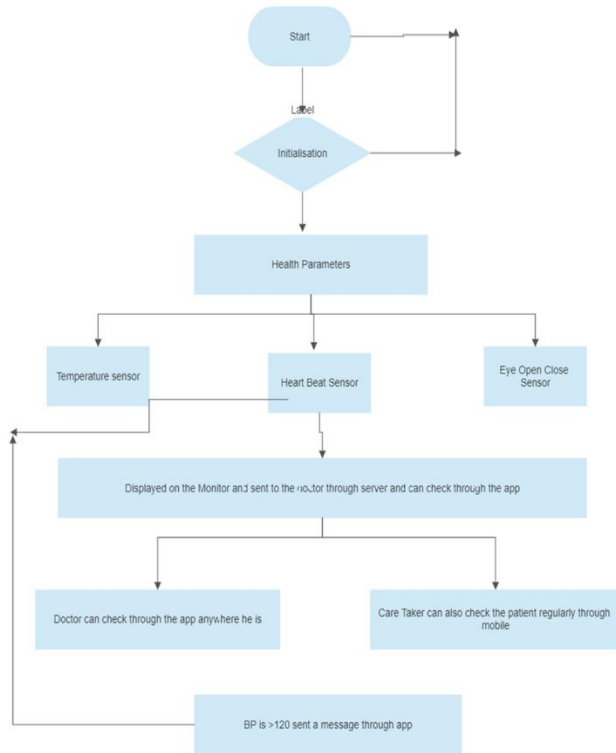
Raspberry pi:

This device works well as a multiprocessor. this There are graphics cards, volatile memory, RAM, devices Interfaces and other external wireless device interfaces. This raspberry pie uses much less power, but it's Still cheap and powerful. You need to have a keyboard Equipped with command, display unit and power supply as standard PC Here, the Raspberry Pi used the SD card as a hard drive. LAN / Ethernet or Via USB modem or WLAN. Raspberry pie should be able to do that Support for a variety of home and business applications. Raspberry Pi runs on a Linux-based operating system and Equipped with Raspbian OS. Python is programming the language used to implement the Raspberry Pi. It is possible Wireless communication technology, communicate with other external devices via cellular network, NFC, ZigBee, Bluetooth, etc. This paper was implemented in a high-speed network as follows: 4G with mobile network. Raspberries Because it has many uses future.

BLOCK DAIGRAM



FLOW CHART



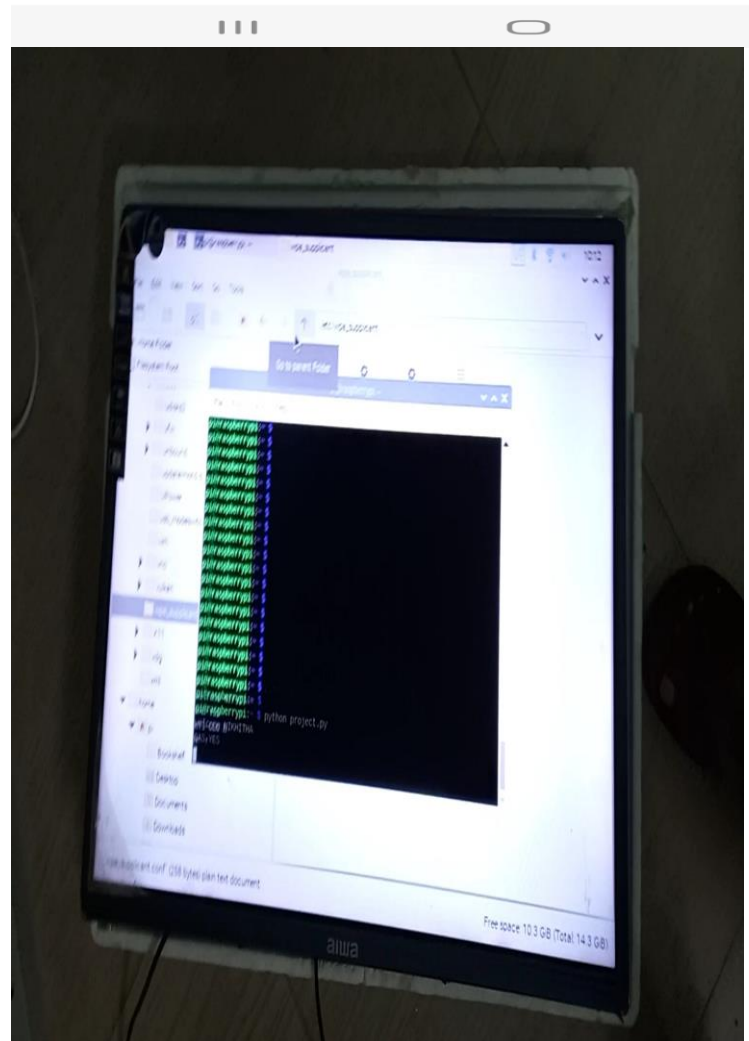
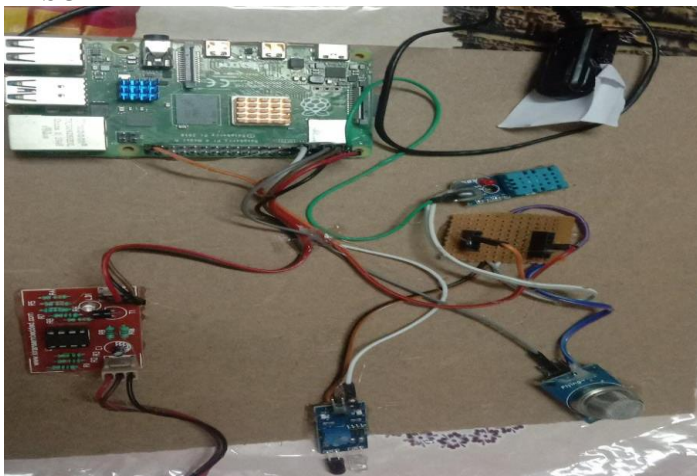
SOFTWARE REQUIREMENT:

PYTHON is used for this as it is very easy and flexible and the number of lines is less comparatively With C and C++

Web Application:

A web APP has been developed using MIT app inventor so that a doctor can see the patient health condition anywhere in the world

RESULT



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