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IoT Based Smart Surveillance System for Healthcare Monitoring using Raspberry PI

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Abstract: ***IOT could be a trending in technology that can transform any device into a wise one a lot of industries setting out to utilize these technologies to extend their capacity and improve potency. These system has been created to detect people who are suffering with heart diseases, this framework is powered by Raspberry pi electronic board, which is worked on power control supply, Remote web availability by utilizing USB modem, it incorporates with sensors. pulse sensor which detects each beats per minute price. Temperature sensor detects the temperature variation, blood pressure sensor reads blood pressure and heart rate, ECG sensor which measures the electrical signal of the heart. it is an analog from converted in digital by using of SPI protocol. If any emergency occurs, it will raise a caution send it to the website and mobile though NOOBS Software. If any sensor parameter value more than the instructed value it will raise a beep sound.***

Keywords: Raspberry pi 3, blood pressure sensor, temperature sensor, ECG sensor (Electrocardiogram), Heart beat sensor, SPI protocol (serial peripheral interface), GSM (Global system for mobile), NOOBS Window (New out of box programming), IOT (internet of things), BUZZER.

I. INTRODUCTION

Nowadays there are lot of people who are suffering with chronical diseases. They are lot of systems which are detected heart diseases but it will not up to a range. To detecting those suffering peoples. for these reasons we tend to design a smart surveillance system by using Raspberry pi. which is used to update parameters values of the sensor on the webpage and also it will update the values time to time the object of the scheme is submitted is to expand a real patient monitoring so the doctor can monitor patient at anywhere [4]. The health care professional plays an important role in the traditional strategy for a necessary diagnosis and advice, they required to visit the patients. There are two fundamental issues with this strategy primarily, they must be present constantly and secondary at the patients site for the period of time the patient says admitted to the hospital and supplied with the biomedical bedside tools. The solution to these issues is to informs patients about the real time supervision and assessment scheme for patients.

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II. THE SYSTEM ARCHITECTURE

A. Existing system

In previous system Arduino Uno is the main tool. the sensors are directly connected to the Arduino board externally we connect a Wi-Fi module and sensors. By using of cloud computing the data from the sensors is uploaded through Thing speak periodically [5]. Here ESP8266 Wi-Fi module is used for connecting Arduino to the internet. The GSM/GPRS modules are used send and message alert to the patient or doctor [3].

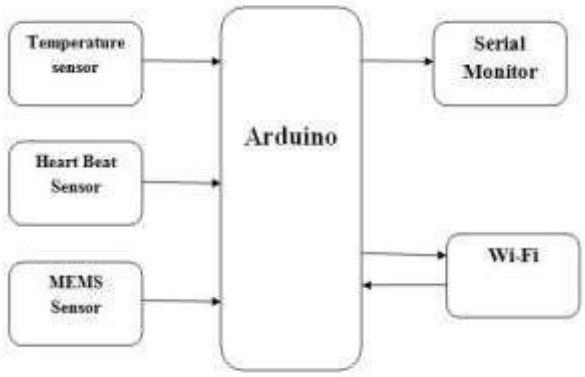

Figure1: existing system

In the above fig shows the Arduino Uno is the main tool the sensors are directly connected to the Arduino board externally we connect a Wi-Fi module to send a message and alert through think speak app.it will show the sensor values in serial monitor [1].

B. Proposed system

In these below fig shows the proposed system, we introduce a system that can monitor a person time to time and if anything happened to that person, we can take care that person within less time. We directly connected to the pulse sensor, heart beat sensor, temperature sensor, ECG sensor, Buzzer, GSM Module to the raspberry pi 3 [2].

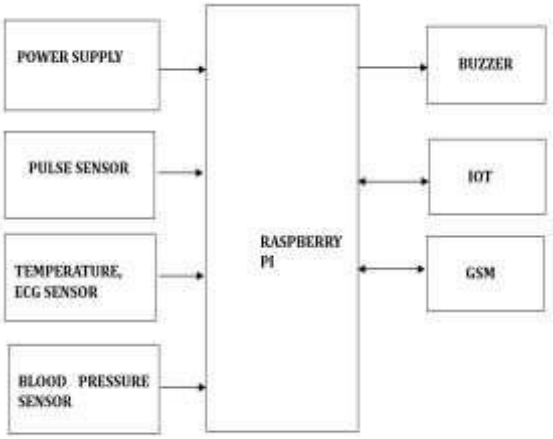

Figure2: Proposed system

III. HARDWARE DESCRIPTION

RASPBERRY PI 3:

Raspberry pi 3 processer is electronic board. It is advanced version pc board it has 4 USB ports and 40 GPIO pins. It has in built WIFI, Bluetooth module. And externally we connected micro SD card.it is faster than any other processor [6].

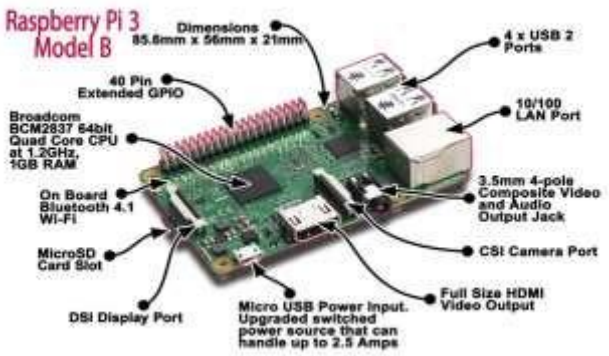

Figure3:Raspberry pi 3

A. Blood pressure sensor

This sensor is attached to the wrist of the patient. Shows Systolic, Diastolic and Pulse Readings If the value is exceeded above 120 and below 70 it will indicate a buzzer beep[7].

Figure4: Blood pressure sensor

B. Temperature sensor

LM35sensor is used to detect the temperature of the patient. This sensor can take care of that person if the temperature above the value.

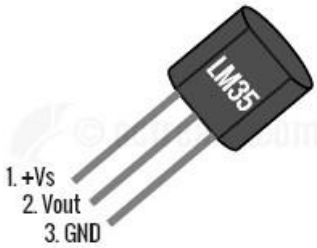

Figure5:LM35 sensor

C. ECG sensor

ECG sensor is attached to the patient wrist to detect the ECG peak detection. If the output value more within the intimation value it will raise a caution [8].

Figure6: ECG Electrode

D. Pulse sensor

Pulse sensor is often known as coronary heart Beat Sensor. It is connected to the patient finger it will detect the heartbeat of a patient and it glow led for each heartbeat. Mainly it measures the beats per minute price [9].

Figure7: Pulse sensor

IV. FLOW CHART

The below figure illustrates the working process of a proposed system.

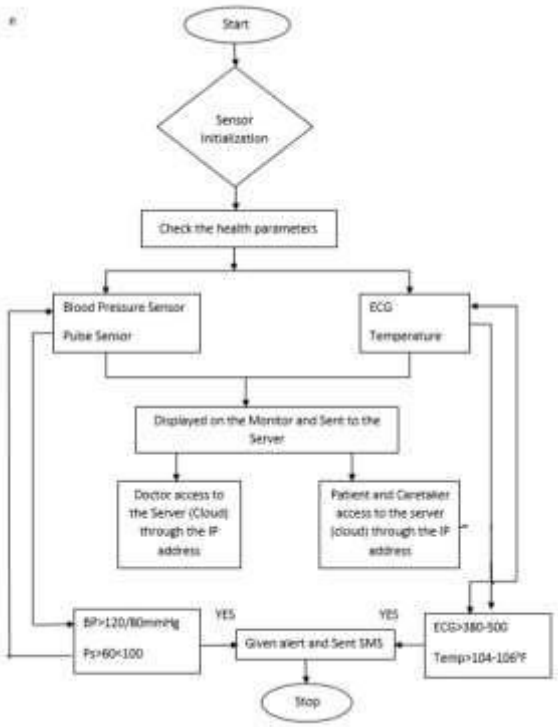

Figure8:flow chart design.

V. EXPERIMENTAL RESULTS

A. Figures and output

The below fig shows the whole setup of the proposed system it displays the patient's biological parameter along with patient ID. These can accessed /monitor by doctors for diagnosis. It provides a facility for patients, they can take instructions from doctors by using the values. Which are displayed on the website. The hardware kit consists of Raspberry pi 3 connected to the sensor. These sensors are attached to the patient. The reading are updated every minute in mobile application

Figure9: Hard-ware kit

B. Front end viewer

The below figure shows the front end of the website which are displayed a values any variation in the parameters send an alert message to the predefined number and we can add or delete patients details which are updated on the webpage. Any variation in the parameters send an alert message to the predefined number.

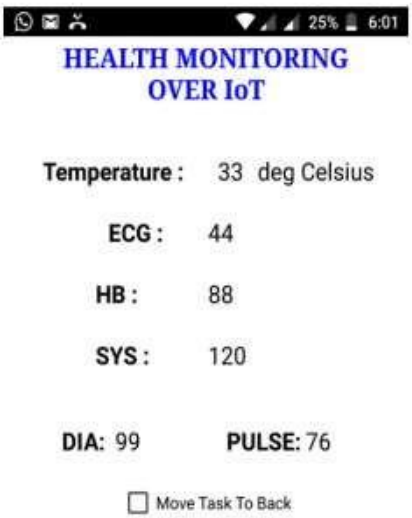

Figure10: front end of website

VI. CONCLUSION

These project has been successfully designed and tested. IOT technology could be a trending technology which is used in several industries. Nowadays health care monitor plays a major role. In the proposed system, the biological parameters from the sensor place a major role if any differences occur in the values it indicates that cause occurs to the patient the doctors can access those parameters from anywhere. In this method, the person can communicate these wirelessly. If these are any differences in the parameters in medical specialist can analyze and make suggestions. These decreases patients time and price.

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