Embedded Based Healthcare Monitoring System for Seizure Patients by Using Arduino

Dr. G. Sudha
Department of Biomedical Engineering
Muthayammal Engineering College Rasipuram,
Namakkal, Tamil Nadu, India

B.Karthikeyan
Department of Biomedical Engineering
Muthayammal Engineering College Rasipuram,
Namakkal, Tamil Nadu, India

G.Midhun
Department of Biomedical Engineering
Muthayammal Engineering College Rasipuram,
Namakkal, Tamil Nadu, India

S. Vijay
Department of Biomedical Engineering
Muthayammal Engineering College Rasipuram,
Namakkal, Tamil Nadu, India

Abstract -Innovative technology approaches have been increasingly investigated for the last two decades aiming at human-being long-term monitoring. It's difficult to check parameters like heartbeat, temperature, Oxygen level, etc., in day to day life whenever needed. To make easy we are going to design and construct an IOT based patient health monitoring system using Arduino and generic ESP8266. The main aim of this paper is to supervise the patients and the elderly people at their home itself. By doing this, unwanted visit to the hospital can be avoided. The system was developed to supervise the vital signs such as temperature, heart rate and fall detection. The system design consists of an Arduino controller and ESP8266 module. The monitored values can be sent through the IOT. In case of regular check-up there is no need for the patient to go and meet the doctor or physician with the proposed system. The proposed project can collect and send patient's health data to an IOT cloud server such as Thing-Speak where real time health status of the patient can be recorded and monitored in a remote location where a healthcare professional is present. To make easy we are going to design and construct an IOT based seizure patient health monitoring system using Arduino and generic ESP8266. The proposed project can collect and send Fix patient's health data to an IOT cloud server such as Thing-Speak where real time health status of the patient can be recorded and monitored in a remote location where a healthcare professional is present.
Keywords: Seizure, IoT, ESP8266,

I. INTRODUCTION

Remote healthcare has become a vital service with the growing rate of senior citizens. Health monitoring, rehabilitation, and assisted living for the elderly and medically challenged humans is an emerging challenge because they require seamless networking between people, medical instruments, and medical and social service providers. This motivates the need for affordable, low-power, reliable, and wearable devices that will improve the quality of life for many elderlies and physically challenged people. It will notify for the potential life threatening events, also recognize the development of any disease. The hardware will be able to output the analogue values of sensed data which in turn will be synchronized with cloud server via middleware architecture. Wearable hardware will communicate with middleware architecture through wireless communication. The necessary data processing on the cloud storage will identify the critical conditions as well as will create reports. It will show the continuous health status. In recent period, we observed a gradual rise in expectations of life in various part of the world, which leads to frequent increase in number of aged peoples. As per the report of United Nations the aged people will be about 2.0 billion (22% of the total world's population) by 2050. However, in a medical research survey found that it is 80% of the aged people elder than 65 and they suffering from at least one disease. Body sensors network provides a large convenience to detect the abnormality in patient's body and provide a proper treatment at time. The healthcare monitoring system work with secure cloud computing. This

IoT system is a technique which encrypt the patient information and store at cloud database. Only authorized people have permit to access the cloud date with login passkey.

II. EXISTING SYSTEM

Real-time measurement of health parameters of critically ill patients such as heart rate, blood pressure, blood-oxygen saturation, temperature, and many other parameters has become a common feature of the healthcare monitoring system. There are many monitoring systems in medical centers used to collect and monitor patient's health. The health data are then used by doctors to generate the suitable decision. Critically ill patients require accurate monitoring and alarming system during their normal life. The existing paper proposed a venture which makes use of temperature and pulse rate sensor to degree the body temperature and pulse rate that is a critical parameter for seriously ill sufferers. So that health practitioner will monitor and may immediately take action straight away. If the circumstance turns into essential, the physician is alerted so that he can treat patient immediately.

III. LITERATURE SURVEY

Based on IoT is to monitor humans' health in real-time using ubiquitous health monitoring systems which have the ability to acquire bio-signals from sensor nodes and send the data to the gateway via a particular wireless communication protocol. Electrocardiogram (ECG) feature extraction as the case study as it plays an important role in diagnosis of many cardiac diseases

This paper describes WANDA (Weight and Activity with Blood Pressure Monitoring System); a study that leverages sensor technologies and wireless communications to monitor the health related measurements of patients with t Congestive heart failure (CHF)

It presents an IoT-based intelligent home-centric healthcare platform (iHome system), which seamlessly connects smart sensors attached to human body for physiological monitoring and intelligent pharmaceutical packaging for daily medication management.

This work presents an interconnection framework for mobile Health (health) based on the Internet of Things. It makes continuous and remote vital sign monitoring feasible and introduces technological innovations for empowering health monitors and patient devices with Internet capabilities. It also allows patient monitoring and supervision by remote centers, and personal platforms such as tablets. In terms of hardware it offers a gateway and a personal clinical device used for the wireless transmission of continuous vital signs through 6LoWPAN, and patient identification through RFID.

IV. PROPOSED SYSTEM

The proposed system explains the IoT Based Fix Health Monitoring System using ESP8266 & Arduino. Our system can be uses sensors to measure and monitor numerous parameters such as temperature, heart rate, and blood oxygen level in hospitals and at home. The temperature sensor measures the temperature and heartbeat sensor is used to measure the heartbeat of the patient. SPO2 sensors are devices that detect the amount of oxygen in your blood and also oxygen saturation respectively. The results can be recorded using Arduino. The Arduino processes the code and displays it to LCD Display. ESP8266 Wi-Fi module connects to Wi-Fi and sends the data to IoT device server. Finally, the data can be monitored from any part of the world by IOT

BLOCK DIAGRAM
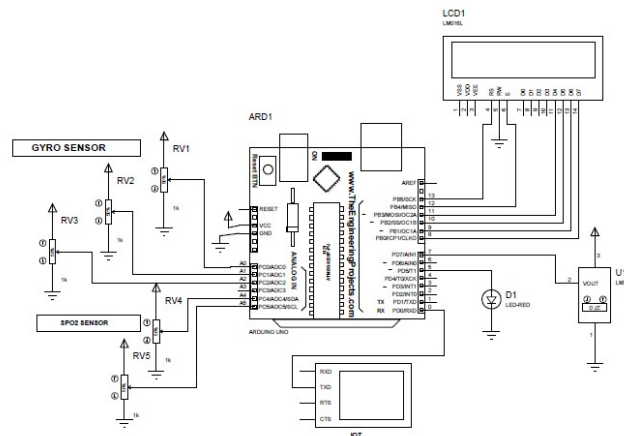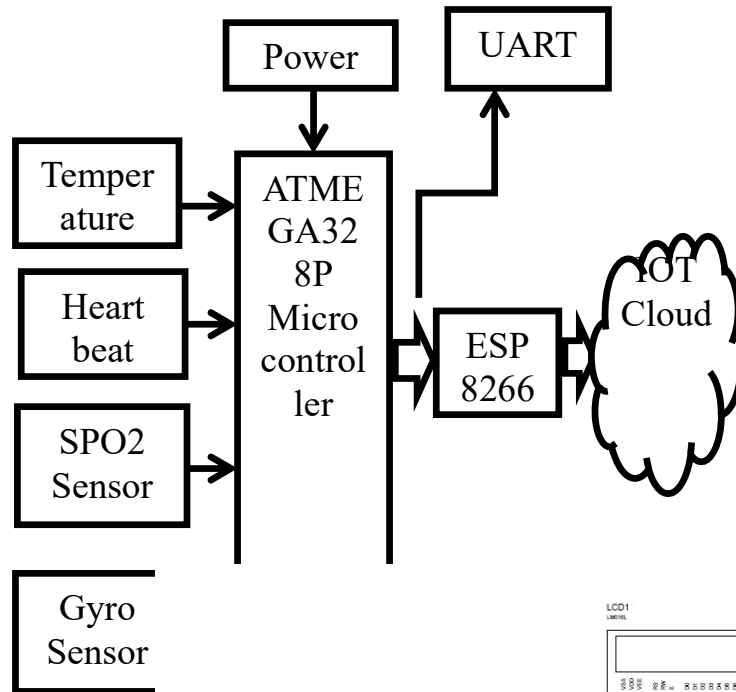
V.METHODS AND METHODOLOGY

In this concept, we are using the various sensors. Such us, temperature sensor, heart beat sensor, gyro blood oxygen sensors. The gyro sensor sensed the patient position is used to the x, y,z axis. We are using the X, Y, Z positions are RV1, RV2, and RV3. The RV1, RV2, RV3 have the three pins. Such us, VIN, ground and Vout. The power supply connected on 5V power supply. The ground pin also connected ground. The position output (Vout) is update the patient position in microcontroller. The SPO2 sensor is monitor the heart beat condition and blood oxygen level. It also have the three pins. Such us, input, output and ground pins. The output pin update patient heart beat level and blood oxygen level. The LCD is displayed the sensor values. The D11, D12, D13, D14 connection are sensor values are displayed in the fixed place. The LED condition to use as the buzzer purpose. The virtual terminal of IOT is update on the all the informations. Such us sensors, patient position.

In the paper the biosignalsare measured and feed into the ATmega328P microcontroller which proper the input bio signal and connect with ESP8266 wifi module for the IoT connection. The Signals can be transmitted to the mobile through and data are stored in the cloud server. There are some following step involve in the monitoring system of the seizure patient.

STEP 1:

The Sensors like DHT11 – temperature sensor, Pulseoximeter for measuring the SpO2 level in the blood and heart rate, Gyro sensor which measure the stretching level. GPS for identifying the location the patient. The respective bio signal are measured by the sensors. These signals are feed into ATMEGA328p. And the device is supplied with power supply.

STEP 2:

Microcontroller process the data from the sensors which is coded with respect to the embedded C with the help aruino Ide software to verify the codes are errorless for the debug to the microcontroller. Microcontroller send the data to ESP8366 wifi module for the storing the data and transmitting the data to the IoT cloud sever.

STEP 3:

Making the connection with the wifi module and the mobile or computer for the displaying the condition of the patient and also alerttng the healthcare professional and doctors. We are using blink application for the displaying the output of the device. Creating a website by giving the mail id and connecting with the IoT sever and mobile or computers.

STEP 4:

The e GPS signal gives the location of the patient are also feed to mobile or computer to check the patient's location where they are going to under seizure attack. The blink application show the bio signals of the patient and location of the patient on mobile or computer.

V. RESULT
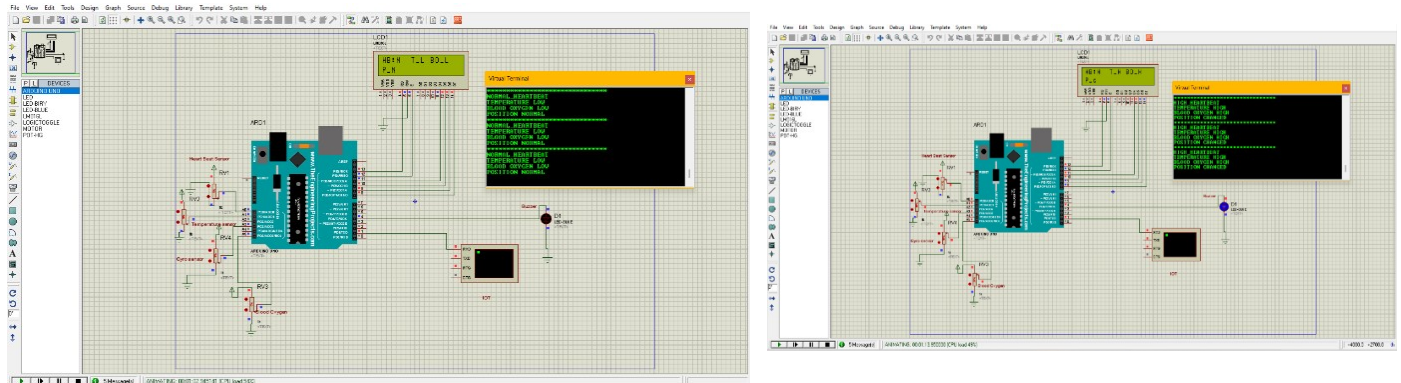
VI. CONCLUSION

Here we proposed a cognitive radio system for health applications. It represents an example for smart hospital management approach to transfer medical data of the patient to the hospital based on priority of the patient health status and to monitor the patient health regularly. By this project the patient health can be monitored continuously to avoid emergency situation. The system can also be designed to efficiently track the location of the patients and elderly to provide timely medical services in an emergency.

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