AN EFFICIENT HEALTH CARE SYSTEM FOR HUMAN ANATOMY USING IoT

[1]BOOPATHI RAJA.K, [2]GOWTHAM.M, [3]HARITHA.T, [4]JAYALAKSHMI.S

[1]*Assistant professor Department of ECE, Department of Electronics and Communication Engineering, SNS College of Technology, Coimbatore, Tamil Nadu, India.*
[2,3,4]*Final year ECE students, Department of Electronics and Communication Engineering, SNS College of Technology, Coimbatore, Tamil Nadu, India.*

---***---

Abstract - *This project is to analyze the real time family health condition that can facilitate doctor through cloud for continuous observation in order to get complete health data base. Detect and inform the emergency case as per patient health condition such as, tablets to home or ambulance level. Healthcare being a global issue more particularly India being a most populated nation where majority of which live in villages deprived of healthcare facilities on real time basis continuously and regularly. With the increasing use of technology, there is an urgent need to have such a smart health monitoring system that can communicate between network devices and application which will help the patients and doctors to monitor, track and record the patient's sensitive data containing medical information. This paper depicts the idea of solving health issues using the latest technology, Internet of Things (IoT). It presents the architectural review of smart healthcare system using Internet of Things (IoT) which is aimed to provide a Better HealthCare to everyone.*

***Key Words*: Patient care, Internet of Things (IoT), biomedical sensors, Temperature, ECG…**

1. INTRODUCTION

Healthy is the most vital role in every human being. Even though people are having all the luxuries in their lives, but if their health is not in good condition they cannot enrich their lives. The prime goal was to develop a reliable patient monitoring system so that the healthcare professionals can monitor the patients, who are either hospitalized or executing their normal daily life activities. Recently, the patient monitoring systems are one of the major advancement because of its improved technology.

Currently, there is need for a modernized approach. In the traditional approach the health care professionals play the major role. They need to visit the patient's ward for necessary diagnosis and advising. There are two basic problems associated with this approach. Wearable sensors are in contact with the human body and monitor his or her physiological parameters. We can buy variety of sensors in the market today such as ECG sensors, temperature sensors, pulse monitors etc.

The cost of the sensors varies according to their size, flexibility and accuracy.

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM

The main vision of the healthcare industry is to provide better health care to all the people anywhere and at any time in the world. This should be done in a more patient friendly and economic manner. Therefore for increasing the patient care efficiency, there is a need to improve the patient monitoring devices. Because technology has made life easier so that impact is shown to reduce the tension of patient.

The body sensor network (BSN) technology is one of the most imperative technologies used in IoT-based modern healthcare system. It is basically a collection of low-power and lightweight wireless sensor nodes that are used to monitor the human body functions and surrounding environment. Since BSN nodes are used to collect sensitive (life-critical) information and may operate in hostile environments, accordingly, they require strict security mechanisms to prevent malicious interaction with the system. Hence, in order to achieve all the network security requirements here we propose a lightweight anonymous authentication protocol.

2.2 DRAWBACKS OF EXISTING METHOD

- Prescription was not to the patient by doctor.

- Wired network-restriction between the body movements.

- Takes time to analyse the manual reading.

- Interference of the multi device that share the channel.

3. PROPOSED SYSTEM

The proposed idea is to focus of the application which will help the family members to take care of the particular

person. The sensor collects the data from the patient body and it will be stored in the cloud. The collected data will be shared between the doctor and patient through cloud. The doctor uploads the prescription for the various range of temperature and pressure level. The data changes in web sheet can be easily made by the health center and it can be easily viewed by the patients.

In this system, Node MCU controller is used to control the operation of the system. Temperature sensor, pulse sensor, alcoholic sensor are used6 to measure the health status. Arduino IDE software is used to analyze and display the readings taken. HTML is used to create a webpage for storing and displaying the database using IOT.

ADVANTAGES OF PROPOSAL SYSTEM

- Complete patient physical dada collection and timely presenting the correct adaptive remedy.

- Doctors and related family members can check the health condition of the patients or diagnose a chronic disease at an early stage.

- The proposed system is not confined to a single patient, with slight modification this system can be utilized to take care more number of patients.

- It is low cost and provide the data in real time.

- Prescription was send back to the patients by doctor.
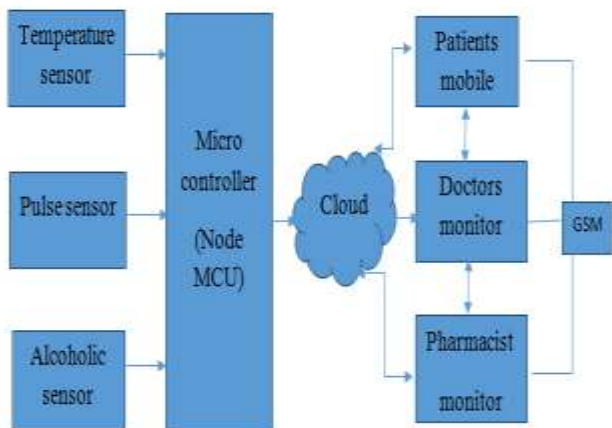
BLOCK DIAGRAM

Fig.1 Proposed block diagram

The figure explains about how the patient health is continuously observed and the database is maintained. The objective is to integrate IOT and cloud technologies and to provide a data monitored continuously to both data center and observation server simultaneously and to provide an alert system and data retrieval capability whenever needed. In this system, Node MCU controller is used to control the operation of the system. Temperature sensor, pulse sensor, alcoholic sensor are used6 to measure the health status. Arduino IDE software is used to analyze and display the readings taken. HTML is used to create a webpage for storing and displaying the database using IOT.

We proposed our model, an authorized healthcare professional can request and the real time data collected by a particular sensor in an IoT subsystem. The contributions are:

- A flexible, energy-efficient, and scalable remote patient health status monitoring framework.
- A health data clustering and classification mechanism to enable good patient care.
- A case where the capabilities of the Arduino framework are exploited for patients with the disease.
- Performance analysis of the Arduino framework to show effectiveness.

Hence it helps to analyze the real time family health condition that can facilitate doctor through cloud for continuous observation in order to get complete health data base we can also Detect and inform the emergency case as per patient health condition such as, tablets to home or ambulance level.

HARDWARE DESCRIPTION

A. NODE MCU

The Node MCU (Node Micro Controller Unit) is an open source software and hardware development environment that is built around a very inexpensive System-on-a-Chip (SOC) called the ESP8266.

B. Temperature Sensor

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is proportional to the Celsius (centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in °kelvin

C. Pulse Sensor

The Pulse Sensor is a plug-and-play heart-rate sensor for Arduino. The flow of blood volume is decided by the rate of heart pulses and since light is absorbed by blood, the signal pulses are equivalent to the heart beat pulses.

D. Alcoholic Sensor

Alcohol Sensor is a complete alcohol sensor module for Arduino. It is built with MQ3 semiconductor alcohol sensor. It has good sensitivity and fast response to alcohol. It is suitable for making Breathalyzer. This sensor outputs a voltage inversely proportional to the alcohol concentration in air.

4. RESULTS AND DISCUSSION

Temperature sensor, pulse sensor and Alcohol sensor is connected to the NODE MCU. The sensors are calibrated and the values from sensor are received. The received values are updated in the server using NODEMCU. Through server the data is shared to the closed group. In case of emergency, such as change in heart rate etc… The alert message is send through GSM to doctor. The doctor can send the medicine prescription through the server to the particular closed group

5. CONCLUSION

In this project we proposed patient will get the prescription by the doctor to his mobile. Everyone's health condition will be monitored by family members and helps at the time of emergency. Hence the patients' health is analyzed and the real time family health condition that can facilitate doctor through cloud for continuous observation in order to get complete health data base can be achieved and also we detect and inform the emergency case as per patient health condition such as, tablets to home or ambulance level.

REFERENCES

[1] MoeenHassanalieragh; Alex Page ; TolgaSoyata; Gaurav Sharma; Mehmet Aktas; Gonzalo Mateos; BurakKantarci; SilvanaAndreescu ," Health Monitoring and Management Using Internet-of-Things (IoT) Sensing with Cloud-Based Processing: Opportunities and Challenges", 2015

[2] M. Shamim, Ghulam Muhammad, "Cloud-assisted Industrial Internet of Things (iot) – Enabled framework for health monitoring", 2016

[3] Himadri Nath Saha, "Comparative Performance Analysis between nrf24l01+ and XBEE ZB Module Based Wireless Ad-hoc Networks", 2017

[4] HN Saha, A Mandal, S Abhirup, "Recent trends in the Internet of Things", 2017

[5] B-G Chun, S. Ihm, P. Maniatis, M. Naik, and A. Patti. CloneCloud: Elastic Execution between Mobile Device and Cloud. EuroSys, 2011.

[6] A. R. Chowdhury, B. Falchuk. MediA lIy: A Provenance-Aware Remote Health Monitoring Middleware. In Per- Com, 2010.

[7] E. Cuervoy, A. Balasubramanian, D-K Cho, A. Wolmanx, S. Saroiux, R.Chandrax, and P. Bahl. MAUI: Making Smartphones Last Longer with Code Offload. In MobiSys, 2010.