ISSN (Online) 2394-2320

International Journal of Engineering Research in Computer Science and Engineering (IJERCSE)
Vol 5, Issue 4, April 2018

Smart Health Monitoring System Using IoT

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Abstract: **- In the recent year's health monitoring system is one of the innovative concepts that has been introduced in many of the developing countries. The framework is to help the people to get the proper treatment and diagnosis with all the advanced medical technologies in time. The IoT (internet of things) have been extensively used to interconnect the handy clinical assets and offer smart, reliable, and fine healthcare services to patients. It has been implemented by using different sort of sensors to monitor the vital signs in patients heartbeat conditions, temperature and humidity. Transmission of the information from the body sensors to the server is done by the WI-FI module where the data is stored in server the microcontroller is used to convert the data into readable signals. The doctor can view the patient's condition through laptop or through the android phones where Bluetooth is the transmitter. The main purpose of this paper is both patient and doctor can have the real time communication it is extremely helpful for chronically ill, elderly and even for bedridden patients in home.**

***Key words*— Microcontroller, WI-FI module, Bluetooth, LCD, heartbeat sensor, temperature sensor and humidity sensor.**

I. INTRODUCTION

1.1 OVERVIEW

A remote monitoring wearable sensor ensures safe and sound life they are extremely use full and reliable. Due to the rapid growth in the developing countries many new technologies have been emerged in order to improve the quality of human life with the advanced health care services and treatments. In this paper we are monitoring only three vital signs in the patient's body such as heartbeat, temperature and humidity the remote monitoring of these conditions will have a great significance in the medical field.

1.2 OBJECTIVE

The main objective of this project is to have the continuous monitoring system if the health condition of any patient is abnormal then it has the capability to detect the abnormal signs with the help of sensors attached to the patient body and send the information to the doctor with the Wi-Fi module. This system has many advantages but the main benefit is the result can be viewed by the doctor in real time at any place. It is extremely helpful for chronically ill, elderly and bedridden patients who are not in a position to attend the doctors regularly As a result; this task is an attempt to resolve a healthcare problem presently society is facing. The principal objective of the venture was once to format a far flung healthcare system. It contains of three main essential parts. The first one detection of patient's vital signs with the use of sensors, second one is for sending collected information to server and the final section used to be presenting the detected information to far viewing. Remote viewing of the information allows a health practitioner or guardian to monitor a patient's fitness progress away from health facility premises.

1.3 MOTIVATION

The Internet of Things (IoT) standards have been extensively used to interconnect the handy clinical assets and offer smart, reliable, and fine healthcare carrier to the patients. Health monitoring for energetic and supported living is one of the standards that can use the IoT advantages to progress the patient's lifestyle. In this project, I have an IoT architecture modified for healthcare applications. The target of the project used to be to originate up with a Remote Health Monitoring System that can be made with locally available sensors with a view to making it cheap if it has been to be mass produced.

1.4 CONTRIBUTION

The entire flow of the project starts from the survey of the related works to gather the knowledge of the component used and new technologies. The next step is problem statement in the present systems we need to introduce the proposed system which overcomes the entire problem faced in the society. In this project we explain successfully all the sensors, modules and their working the project flow diagram gives the reader the brief explanation and followed by the conclusion.

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II LITERATURE SURVEY

[1].Luigi Atzori
In this paper they address the IoT concepts that are the implementation and integration of technologies, wired sensor, and wireless sensor, tracking technologies, identification, communication solutions and the promising paradigm. The main goal of this paper is the activities performed in the various fields like information science, telecommunication, electronics the survey on this paper improves the communication protocols, identification sensors and tracking sensors.

[2]. Andrew D. Jurik and Alfred C. Weaver
In this paper they give you the idea about BAN and how the remote medical monitoring will become the standard procedure for managing certain conditions. The more computational capability about the data hub telehealth the available and public switched telephone network. The main purpose of this paper is it offers you to know about the secure mobile computing system and how energy is the primary concern in wireless nature and how authentication is essential what are the system issues and challenges to be faced and how to avoid the faults.

[3]. Franca Delmastro et.al
This paper addresses the problems faced by using the wireless communication technologies it is the survey on wireless technology and how it can be applied to the smart hospitals monitoring system it contributes the support for continuous monitoring of patient health even from remotely places. It explains the development and workflow distinct monitoring of healthcare services. The inquiry of this paper deals with the advantages, drawbacks, the present new technologies, show definitions, the results and solution for future systems.

[4]. Eleonara Borgia et.al
The basic building blocks of IoT, is the smart objects which is used for the exchange of information and data. It is the main driving technology for IoT. It is the combination of many new technologies and aspects. This paper provides you the background knowledge of internet protocol, sensing technologies, communication technologies and embedded technology.[5-7] it includes all the details about computing technologies, shows the development of wireless body area network, the importance of RFID to estimate and use in health care services

III EXISTING SYSTEM

In the existing system the people in the rural areas or the people in the under developed countries face the lack of treatment and health care services in time. Essentially the elderly patients face the barriers of regularly attending the clinic or to have the long stay in the hospitals some of the chronically ill or bedridden patients undergoes the tough life of wearing the wired sensor every time and not able to move and easily walk with the wires on their body all time. In addition to that travelling is one of the burden hence our project is cost effective and reduces all the barriers which the patients are facing it saves the time and flexibility. Iin the recent years they have been many monitoring systems with using different technologies like RFID, GSM module sending the text messages but in our project the WI-FI module combined with the IoT server is used to improve the quality of human life.

IV PROPOSED SYSTEM

The block diagram of the proposed system consists of three sensors heartbeat, temperature and humidity sensor. It contains an efficient component microcontroller to convert the signals into readable signals and the other components are wifi module /Bluetooth they play the role of the transmission agents, LCD display to show the results and buzzer is activated when there is the emergency condition

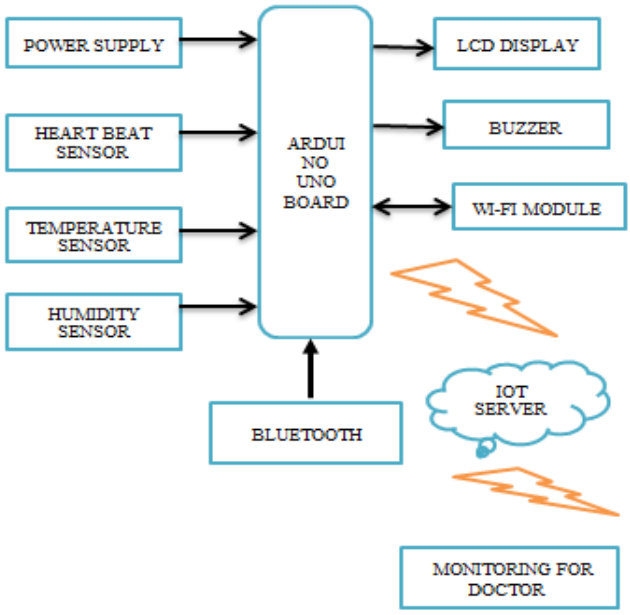

Figure1: BLOCK DIAGRAM OF HEALTH MONITORING SYSTEM USING IOT

ISSN (Online) 2394-2320

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The proposed system in the block diagram deals with the three sensors such as heartbeat, temperature and humidity sensor this are the wireless sensors which are attached to the body of the patients to collect the record information from the patients and then connected to the microcontroller which converts the analog signals into the readable digital signals and next step is the Wi-Fi module which is a data transferring agent from the arduino uno board to the server where all the collected information is stored. The doctor can login with the help of laptop can view the results of the abnormal conditions in real time and get the treatment done or he can login with android mobile phone for remote monitoring but here Bluetooth is the transmitter for the data collected from microcontroller to phone another important component in this project is the LCD display which shows the results in the displayed format the recorded signs of heartbeat, temperature and humidity conditions and if the results are abnormal the buzzer is activated

V SENSORS AND MODULES

The hardware requirements :

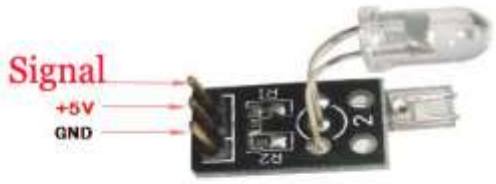
1. Arduino Micro Controller.
2. Heart beat sensor.
3. Temperature sensor.
4. Humidity Sensor.
5. WI-FI module.
6. Power supply.
7. LCD display.
8. Buzzer

1 Arduino Micro Controller:

The The AT89S52 cope to pay for the following typical features:1.8K bytes of Flash, 32 I/O lines, 256 bytes of RAM Ombudsman timer, on-chip oscillator, two data pointers, three 16-bit timer/counters, full duplex serial port and alarm clock circuitry. In accumulation, the AT89S52 is deliberated with static judiciousness for setup down to zero speed of reappearance and ropes two software selectable authority commutable manners.

2. Heart beat sensor:

Heartbeat sensor delivers a humble way to revision the meaning of the sentiment which can be leisurely grounded on the opinion of psycho-physiological gesture used as a stimulus for the virtual- reality system. The volume of the blood in the finger nonconformities with reverence to time.



3. Temperature sensor:

Temperature sensor is a expedient which is envisioned certainly to quantity the heat or emotionlessness of an determination. LM35 is a correctness IC infection sensor with its production relative to the temperature (in °C). With LM35, the temperature can be controlled more carefully than with a thermistor.

4. Humidity Sensor:

A humidity device (or hygrometer) insights, measures and aptitudes the comparative moistness in the midcourse. It accordingly measures in cooperation wetness and air temperature. Comparative humidity is the percentage of fixed moisture in the air to the highest quantity of dampness that can be interned at that air high temperature.

5.WI-Module:

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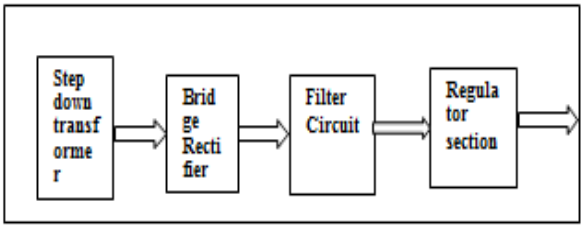
The Wi-Fi Component ESP8266 is a identity-controlled SOC through collective TCP/IP protocol heap that can resistance any microcontroller interaction to your Wi-Fi network. The ESP8266 is endowed of either holding on the request or discharging all Wi-Fi interacting purposes from another submission mainframe.

6. Power supply:



Power supply is a condition to groundwork of electrical power. Here in our presentation we essential a 5v DC power supply for all electronics intricate in the development. This involves step dejected transformer, rectifier, voltage regulator, and filter course for generation of 5v DC power.

7. LCD:

We are using 16X2 LCD for the purpose of mode displaying, whether returning or Issuing of the library books. Having following features

- 5 x 8 dots with cursor
- Built-in controller (KS 0066 or Equivalent)
- + 5V power supply (Also available for + 3V)
- 1/16 duty cycle.
- N.V. optional for + 3V power supply

The software requirements are:

1 KEIL is a c compiler: It is one of the most popular 8051 compilers for microcontroller in the world. It supports the project with many features than any other compilers which are available in the market today. This compilers allows you to write 8051 microcontroller application in C it have the good efficiency and speed of assembly language if once compiled. The features are Bit-addressable data objects, Interrupt functions may be written in C, Flexible variable allocation with bit, data, bdata, idata, xdata, and pdata memory types

2. Embedded 'C' is extension of C programming: It is a usual of semantic allowances for the C software design language by the c standards commission to address cohesion concerns that happen concerning C extensions to the C language in mandate to provision interesting types such as static opinion mathematics, numerous diverse reminiscence series and necessities I/O processes.

3. RIDE to write code: It is an integrated development tool which pronounces the competency of entirety you essential to edit, inscribe, compile, debug and linkage your microcontroller applications.

VI. FLOW DIAGRAM

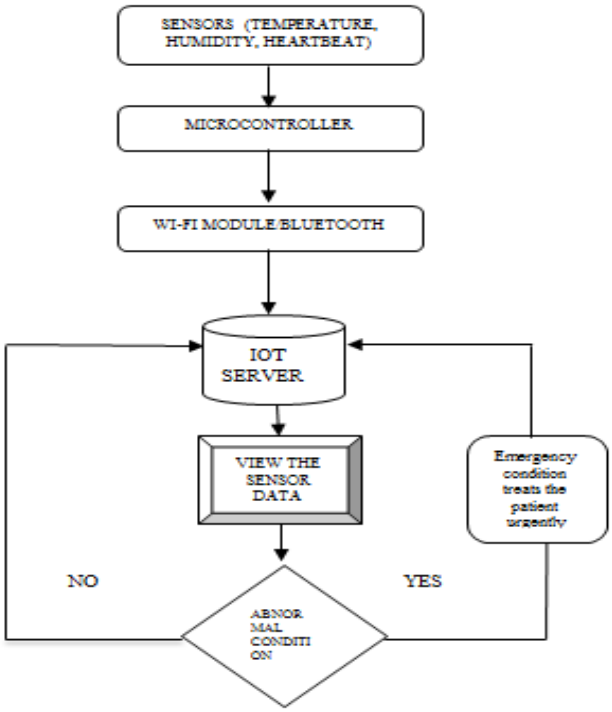


Figure 2: FLOW DIAGRAM OF HEALTH MONITORING SYSTEM USING IOT

VII.CONCLUSION

Hence the project provides the opportunity for the doctors to monitor the health of the patients even outside the hospital or apart from the duty hours using IoT the health of the patients is monitored remotely. This project is cost effective and provides timely response to improve the patients' health it avoids the patients to have long stays in hospital it helps them to move freely and walk happily with the help of wireless sensors. This are the measurable benefits which avoids the patients from daily

regular visits to hospitals which is extremely painful for chronically ill, elderly and bedridden patients in home. Hence in total by using the project we can solve many of the healthcare problems which the society is facing and improve the quality of better human life.

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