“PATIENT HEALTH MONITORING SYSTEM”

Indira
Computer Science and Engineering
Proudhadevaraya Institute of Engineering and Technology,
Hosapete, India
indira@pdit.ac.in
Malatesh Kamatar
Computer Science and Engineering
Proudhadevaraya Institute of Engineering and Technology,
Hosapete, India
maltkpl@pdit.ac.in

Roopanand Mallpur
Computer Science and Engineering
Proudhadevaraya Institute of Engineering and Technology,
Hosapete, India,

Tejashwini C S
Information Science and Engineering
Vidya Vikas Institute of Engineering and Technology
Mysore, Karnataka, India

ABSTRACT

Nowadays most of the humans have habits like smoking, drinking etc. This may lead them in to severe health problems. So, there is a need for everyone to check up his or her body condition periodically. But hospitals are not much equipped with this facility that leads them to go for other laboratories. People won’t be able to afford the expenditure, as well as there is lots of time consumption. We have developed a system that goes a step further than the previous approaches, being designed to measure temperature and heartbeat carried by the patient. Wireless technology is ruling worldwide and has invaded the medical area with wide range of scope and capabilities. To monitor continuous Medicare conditions of patient using existing wireless technologies were quite convoluted. To overcome this, we are proposing a change in wireless sensor technology by designing a biomedical monitoring device comprised of different sensors to acquire the information regarding human body temperature, heart rate, and further transmit this information through GSM.

Keywords— IoT, GSM

I. INTRODUCTION

From the development of technologies (Internet of Things) is changing the human life into a new level. IoT is change the normal human life to smart life with new technology level. There are several processes such as smart home, smart city, health monitoring systems are monitor using Internet of Things. Internet of Things is used for monitor all patients in any level. In this project, patient’s heart rate, body temperature, ECG and body movements are monitoring using Raspberry Pi.

Raspberry Pi is a processor for used in many IoT applications. Raspberry Pi is works on linux platform. The cost is also very low. The GPIO pins are used for connecting between sensors and Raspberry Pi. Raspberry Pi and internet connection is a new innovative technology in healthcare systems. After connecting Internet to the Raspberry Pi, it act as a server. Then the server is automatically sending data to the webpage. Then these parameters (Heart rate, Body temperature, ECG and Body movements) are monitored. If these parameters are goes to abnormal it will automatically send alert message to the doctors and relatives.

Now a day’s aged people are suffering from at least one deceases and health conscious and increasing. And in hospital difficulty occurs in taking care of that patients. Body Sensor network provides very large portability to patients

to detect abnormalities in patient and used to avoid critical situations and gives proper treatment on time. Hence, IoT concept used and sensor are connected to human body with well managed wireless network. For measurement heart bit rate, Temperature etc. can be monitored by sensors. BSN care node server also maintained to store data collects data from sensor and its processing in LPU that is local processing unit and send it to database server. And Internet connection and power supply continuous required to work proper functioning and periodically monitoring physiological parameter of body to avoid the risk. Because sensor is sensing or collecting information after every 10 secs and sends it to database server.

II.EASE OF USE

- To model a device for general checkup for patients to avoid travel and associated difficulties**.**
- To interface health management sensors.
- To Detect Emergency Situations.
- Intimation through GSM.

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III.METHODOLOGY

An controller, those noteworthy and only the IOT empower water following framework. It is significantly discovered that the majority of the IOT build address utilization. An controller with outside Wi-Fi and the vitality productive what's more additionally realize convoluted meandering. In the ESP8266, will be a single chip microcontroller inside constructed Wi-Fi module, which might a chance to be identified with those closest Wi-Fi warm spot to net connectivity. Sensor are without delay interface of the controller of the uncover domesticated water acceptable. Those sensor parameters would be used to discover those water levels and will measure by method for setting the sensor under dissimilar result about water. Those measure for parameters have a chance to be seen. Eventually, pursuing the utilization of LCD(Liquid Crystal Display).Those majority of the data from the sensor are send of the cloud for the utilization about controller are the edge will be prepared inside the cloud dependent upon the prerequisites supplied with those side for WHO(World Health Organization) .

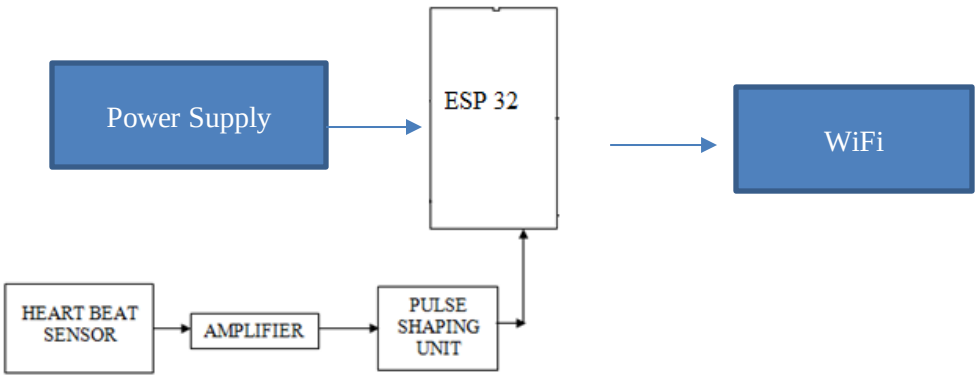

Fig: Block diagram:

Figure (b): Hospital mobile

Figure (c): Authorized mobile

IV.MODELING AND ANALYSIS

ESP 32 Microcontroller

ESP 32 Module:

ESP32 Development board is based on the ESP WROOM32 WIFI + BLE Module. It's a low-footprint, minimal system development board powered by the latest ESP-WROOM-32 module and can be easily inserted into a solder less breadboard.It contains the entire basic support circuitry for the ESP-WROOM-32, including the USB-UART bridge, reset- and boot-mode buttons, LDO regulator and a micro-USB connector. Every important GPIO is available to the developer.

Power Supply:

The circuit needs two different voltages, +5V & +12V, to work. These dual voltages are supplied by this specially designed power supply. [6]

The power supply, unsung hero of every electronic circuit, plays very important role in smooth running of the connected circuit. The main object of this ‘power supply’ is, as the name itself implies, to deliver the required amount of stabilized and pure power to the circuit.

This regulator IC comes in two flavors: 78xx for positive voltage output and 79xx for negative voltage output. For example 7812 gives +12V output and 7912 gives -12V stabilized output. These regulator ICs have in-built short-circuit protection and auto-thermal cutout provisions. If the load current is very high the IC needs ‘heat sink’ to dissipate the internally generated power.

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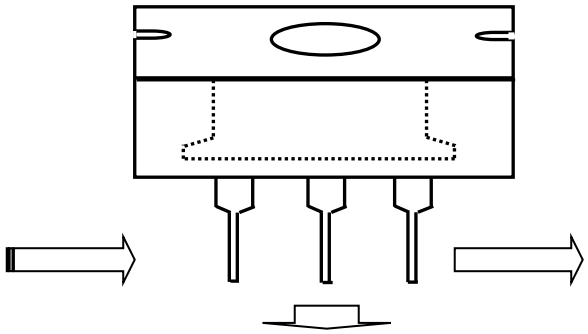
KIA 78xx
Series

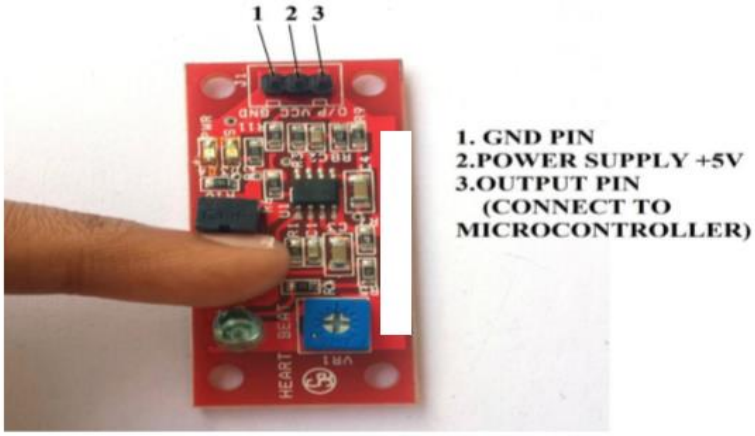


HEART BEAT SENSOR

DESCRIPTION

Heart beat sensor is designed to give digital output of heat beat when a finger is placed on it. When the heart beat detector is working, the beat LED flashes in unison with each heartbeat. This digital output can be connected to microcontroller directly to measure the Beats Per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at each pulse.

CONNECTION DIAGRAM



NOTE

Place the finger in between the IR and MOC to detect pulse rate and the output can be taken from the output pin interface with microcontroller.

APPLICATIONS

Digital Heart Rate monitor

Patient Monitoring System

Bio-Feedback control of robotics and applications

ARDUINO IDE SOFTWARE

Reading a Potentiometer (analog input)

A potentiometer is a simple knob that provides a variable resistance, which we can read into the ESP 32 board as an analog value. In this example, that value controls the rate at which an LED blinks.

We connect three wires to the ESP 32 board. The first goes to ground from one of the outer pins of the potentiometer. The second goes from 5 volts to the other outer pin of the potentiometer. The third goes from analog input 2 to the middle pin of the potentiometer.

By turning the shaft of the potentiometer, we change the amount of resistance on either side of the wiper which is connected to the center pin of the potentiometer. This changes the relative "closeness" of that pin to 5 volts and ground, giving us a different analog input. When the shaft is turned all the way in one direction, there are 0 volts going to the pin, and we read 0. When the shaft is turned all the way in the other direction, there are 5 volts going to the pin and we read 1023. In between, analog Read returns a number between 0 and 1023 that is proportional to the amount of voltage being applied to the pin.

IV. RESULTS AND DISCUSSION

The graphical representation of the information of the patient -1 is demonstrated i.e. body temperature, Heartbeat, body position, ECG, which is observed by signing into the Thingspeak server through a personal computer which has Time in x-axis and the parameter in y-axis. Though, demonstrates the information of the patient that is seen through the android. versatile application, which gives more point by point data, a it demonstrates the most extreme and minimum values including the time stamps. Process is developed to monitor the current status of the patient irrespective to the presence of the doctor. This paper concentrates on calculating the parameters like ECG, Heartbeats, and Blood Pressure Monitoring altogether on a single kit, with the help of server doctors as well as patient collect the information of the patient. With the right information at the right time, the sensor based medical system can help medical patient to easily track and monitor their health record.

V. CONCLUSION

Healthcare monitoring and management system using IOT implemented. This system offers the doctors to take advantage of the massive amount of healthcare data and provide right intervention to the right patient at the right time. Hence personalized care could be given to the patient. ESP 32 has acted as IOT agent in this paper and is used to deploy the health information of patients into the Thin speak Cloud. This remote monitoring system allows the doctor to monitor the health status of the patient remotely. This is efficient system which alerts about the patient health condition to his or her family members in the form of SMS and E-mail. Since the response time of the proposed system is less, it is suitable or real time alerting.

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