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HEALTH MONITORING SYSTEM with GPS

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Abstract - *Nowadays Health-care Environment has developed science and knowledge based on Wireless-Sensing node Technology oriented. Patients are facing a problematic situation of unforeseen demise due to the specific reason of heart problems and attack which is because of nonexistence of good medical maintenance to patients at the needed time. This is for specially monitoring the old age patients and informing doctors and loved ones. So we are proposing an innovative project to dodge such sudden death rates by using Patient Health Monitoring that uses sensor technology and uses internet to communicate to the loved ones in case of problems. This system uses Heartbeat and Temperature sensor for tracking patients' health. Both the sensors are connected to NodeMCU. To track the patient health micro-controller is in turn interfaced to sensors and wi-fi connection to send the data to the web server (Blynk). In case of any abrupt changes in patient heart-rate or body temperature alert is sent about the patient using IoT. This system also shows patients temperature and heartbeat tracked live data with timestamps over the Internetwork. Thus, Patient health monitoring system based on IoT uses internet to effectively monitor patient health and helps the user monitoring their loved ones from work and saves lives*

1. INTRODUCTION

In India, every day several lives are affected as a result of the patients are not timely and properly operated. For real-time parameter values aren't with efficiency measured in clinic yet as in hospitals. Generally, it becomes troublesome for hospitals to frequently check patients conditions. Conjointly continuous monitoring of unit patients isn't doable. To handle these types of things, our system is helpful. Our system is designed to be employed in hospitals for activity and watching various parameters like temperature, heart beat etc. The results will be recorded by Arduino UNO and displayed on an LCD show. The results will be sent to the server. Doctors will log in to the server and examine those results. This system has an additional feature that it can immediately send a message directly to the doctor when the sensors reading is above the basic threshold. Keywords—Arduino UNO, Heart beat sensor, WI FI module. Health observation is an important part of medical practices to urge an insight into the essential health parameters of patients health. Health monitors as represented in are being employed within the world from quite a protracted amount. The paper provides thorough details of standalone systems similarly as wearable health monitors usually pulse monitors, diagnostic technique monitors. The standalone systems as represented were large and dear that is why solely employed in hospitals or nursing homes on the side. The wearable sensors have seen Broad advancements within recent times. The devices became compact feat tiny sizes and shapes. These devices will be worn readily available or finger-like rings or necklaces as fashion accessories. Due to their tiny sizes, these devices are currently a component of day to day human lives. However, these devices are preconfigured with medical sensors departure no house for measurability and liberty of opting sensors as per consumer/patients demand. This successively impacts the pockets of a traditional user. This generally causes the buyer to buy multiple devices wherever he spends extra money on exploitation totally different sensors as per he would like Doctors and practitioners need a time period health knowledge of the patients to diagnose and analyze their health conditions. Some health devices are integrated to figure with cloud primarily based platforms. Doctors and practitioners need a time period health knowledge of the patients to diagnose and analyze their health conditions. Some health devices are integrated to figure with cloud primarily based platforms. Thereby, health observation services are necessary for a secured and healthy society, implementing these services might reduce the burden on humans resulting in the ease the measuring method. The compatibility of this method helps the victimized to trust it. once the peak point price is occured, the warning alerts are sent to the doctors through GSM and he will act additionally quickly. The desire to develop these monitoring systems is to scale back health observance prices by reducing medicinal workplace visits, and hospital organizations, and diagnostic centres.

1.1 OBJECTIVE

Internet of Things (IoT) is that the rising technology, that comprises an immense quantity of smart systems and good devices linked to the web for human action with every other.

During this project action to research and reckon the patient parameters, we tend to victimization, which is that the backbone of this project.

These smart devices are designed to collect temperature, vital sign, motion, heartbeat etc., that is want to evaluate the health condition of the patient. The ultimate results are therefore updated on the thing speak server, i.e on the internet server and additionally, the results are sent to the user through SMS. This project might play a very important role in saving the patient life at an emergency time.

1.2 METHODOLOGY

Here in the project, we have used temperature, fall and heartbeat readings that are continuously updated using Arduino. These sensors values are tend to sent to Arduino via electronic circuit as a result of the level of the signal are low (gain), thus electronic equipment model is employed to realize up against the signal and transmit the sensor signals to the GSM module.Arduino is based mostly on operates as a little computer processor chip. Here the patient's body parameters, fall detection, cardiogram and rate is received victimization several sensors and it will be observed within the screen of display systems serial monitor and the server likewise as observation through anywhere within the world net supply. The projected technique of patient observation system monitors the patient's health parameters using the GSM module when connecting net to the GSM module it acts as a server. Then the server mechanically sends information go to the server. Victimized patient information science helps anybody will monitor the patient's system standing anyplace within the world through laptops and other wireless devices. If any one of these parameters go abnormal it will mechanically send alert SMS to the doctor. The above flow chart represents the in-depth data flow from starting the project to the evaluation of the results on to the Blynk server. The flowchart states that initially, switching the power supply it establishes the connection between the controllers and the network and later on the controller reads on the sensor data and parallelly updates those values is CD display. And later those values are sent into the cloud (thingspeak) and at the same time these values are continuously monitored by the GSM and checks for the threshold value and if it is above it immediately sends the emergency of the desired mobile number otherwise it will carry on the same every 10 seconds.

2. MATERIALS USED

2.1 HARDWARE

2.1.1 Pulse Rate Sensor

Pulse Sensor is a well-designed plug-and-play heart-rate sensor for Arduino. The sensor clips onto a fingertip or earlobe and plugs right into Arduino. It also includes an open-source monitoring app that graphs your pulse in real time. The front of the sensor is the covered with the Heart shape logo. This is the side that makes contact with the skin. On the front you see a small round hole, which is where the LED shines through from the back, and there is also a little square justmunder the LED. The square is an ambient light sensor, exactly like the one used in cellphones, tablets, and laptops, to adjust the screen brightness in different light conditions. The LED shines light into the fingertip or earlobe, or other capillary tissue, and sensor reads the amount of light that bounces back. That's how it calculates the heart rate. The other side of the sensor is where the rest of the parts are mounted. 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 heart beat. 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. There are three wires coming out of the sensor, Signal(S), Vcc(3 - 5 V) and GND.Signal wire is connected to Arduino Analog pin. When the heart beat detector is working, the beat LED flashes in unison with each heart beat. This digital output can be connected to microcontroller directly to measure the Beats Per Minute (BPM) rate.

2.1.2 LM35 Temperature Sensor

LM35 is a analog linear temperature sensor. Its output is proportional to the temperature (in degree Celsius). The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every oC rise or fall in temperature. It can be operated from a 5V as well as 3.3 V supply and the stand by current is less than 60uA.The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Fahrenheit temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in degrees Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Fahrenheit scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of ±1/2°F at the wafer level, room temperature and ±11/2°F over a full −50 to +300°F temperature range.

2.1.3 ESP8266-01

Most people call ESP8266 as a WIFI module, but it is actually a microcontroller. ESP8266 is the name of the microcontroller developed by Espressif Systems which is a company based out of shanghai. This microcontroller has the ability to perform WIFI related activities hence it is widely used as a WIFI module.

There are two of ways to work with your ESP8266 module. This tutorial will help you to get started with ESP8266. One way is by using the AT commands. The other way is by using the Arduino IDE. Here we will use AT commands to send data from Arduino to ESP.

ESP8266 require a sequence of input to enter into programming mode when programming is done using Arduino IDE. With few external components. Reset circuit is required on only ESP12 module. It's not must but it is better to have it. Putting only 10K resistor as pull-up on reset pin is ok. When RST pin is made low device will reset. Once the device is programmed the internal default flash will be erased, default program can control ESP8266 using AT commands. In most cases we use direct flashing of ESP8266

this will make design simpler by eliminating need of external controller. Direct programming (flashing) of ESP8266 gives you many advantages over use of AT commands. ESP 12 and ESP 01 has blue color on board LED. Which is connected in reverse i.e. Anode(+ve) of the LED is connected to VCC and cathode (-ve) is connected to ESP-12 GPIO2. It means that LED becomes on when we output LOW and off when we output HIGH. This pin is also Tx, you cannot use serial when using this pin as LED

2.1.4 GPS Module

Global Positioning System (GPS) is a satellite-based system that uses satellites and ground stations to measure and compute its position on Earth. GPS is also known as Navigation System with Time and Ranging (NAVSTAR) GPS. GPS receiver module gives output in standard (National Marine Electronics Association) NMEA string format. It provides output serially on Tx pin with default 9600 Baud rate. This NMEA string output from GPS receiver contains different parameters separated by commas like longitude, latitude, altitude, time etc. Each string starts with '$' and ends with carriage return/line feed sequence.

2.1.5 GSM Module

GSM (Global System for Mobile Communications, originally Groupe Spécial Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI).A GSM module or a GPRS module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM system.The modem (modulator-demodulator) is a critical part here. These modules consist of a GSM module or GPRS modem powered by a power supply circuit and communication interfaces (like RS-232, USB 2.0, and others) for computer. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. A GSM module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM system. The modem (modulator-demodulator) is a critical part here. These modules consist of a GSM module or GPRS modem powered by a power supply circuit and communication interfaces (like RS-232, USB 2.0, and others) for computer. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. A GSM module is a class of wireless module designed for communication over the GSM and GPRS network. It requires a SIM (Subscriber Identity Module) card just like mobile phones to activate communication with the network. Also, they have IMEI (International Mobile Equipment Identity) number similar to mobile phones for their identifications. The GSM/GPRS module demonstrates the use of AT commands. They can feature all the functionalities of a mobile phone through computer like making and receiving calls, SMS, MMS etc. These are mainly employed for computer-based SMS and MMS services.

2.2 SOFTWARE:

Arduino IDE

2.3 SERVER

2.3.1 BLYNK

Blynk was designed for the Internet of Things. It can control hardware remotely, it can display sensor data, it can store data, vizualize it and do many other cool things.

There are three major components in the platform:

● Blynk App - allows to you create amazing interfaces for your projects using various widgets we provide.

Blynk Server - responsible for all the communications between the smartphone and hardware. You can use our Blynk Cloud or run your private Blynk server locally. Its open-source, could easily handle thousands of devices and can even be launched on a Raspberry Pi.

● Blynk Libraries - for all the popular hardware platforms – enable communication with the server and process all the incoming and outcoming commands. Now imagine: every time you press a Button in the Blynk app, the message travels to space the Blynk Cloud, where it magically finds its way to your hardware. It works the same in the opposite direction and everything happens in a blynk of an eye.

Why Do I Need A BLYNK:

1. Hardware.

An Arduino, Raspberry Pi, or a similar development kit.

Blynk works over the Internet. This means that the hardware you choose should be able to connect to the internet. Some of the boards, like Arduino Uno will need an Ethernet or Wi-Fi Shield to communicate, others are already Internet-enabled: like the ESP8266, Raspberri Pi with WiFi dongle, Particle Photon or SparkFun Blynk Board. But even if you don't have a shield, you can connect it over USB to your laptop or desktop (it's a bit more complicated for newbies, but we got you covered). What's cool, is that the list of hardware that works with Blynk is huge and will keep on growing.

2. A Smartphone.

The Blynk App is a well designed interface builder. It works on both iOS and Android, so no holywars here, ok?

3. CONCLUSIONS

In this paper, we developed an IoT based system which is very effective in monitoring a person's health continuously because it is fully automated. It can be tested very easily with any person. This system is a very good example of remote health monitoring. The proposed system can be highly used in emergency situations as it can be daily monitored,

recorded and stored as a database. In future the IOT device can be combined with the cloud computing so that the database can be shared in all the hospitals for the intensive care and treatment.

Moreover, the alarming system notifies cardiovascular problems at initial stage to the hypertensive patients. The health monitoring system continuously monitors BP, heart rate and body temperature with reliable accuracy and alarms the hypertensive patients about the risks of heart stroke.

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REFERENCES

[1]. Dhvani "Parekh Designing Heart Rate, Blood Pressure and Body Temperature Sensors for Mobile On-Call System" McMaster University, Hamilton, Ontario, Canada, Copyright© April 2010.

[2]. Edward Teaw, Guofeng Hou, Michael Gouzman, K. Wendy Tang, Amy Kesluk "A Wireless Health Monitoring System" 0-7803-9303-1/05/$20.00 ©2008 IEEE

[3]. S. C. Mukhopadhyay and G. Sen Gupta "Towards the development of an Integrated Sensing System for Health.

[4]. M.M.A. Hashem1, Rushdi Shams2, Md. Abdul Kader3, and Md. Abu Sayed4 "Design and Development of a Heart Rate Measuring Device using Fingertip" International Conference on Computer and Communication Engineering.

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