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GTBS Based Epilepsy Monitoring

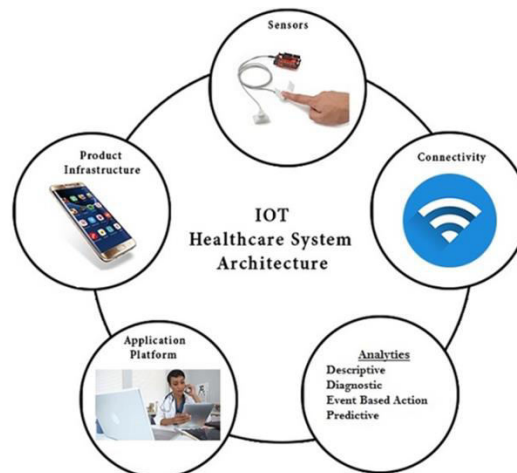
Mayuri Y.Vhanmare, Shashikant S.Hippargi

N.B.Navale College of Engineering, Solapur, Maharashtra, India

ABSTRACT: The major goal of this GTBS based Epilepsy of 'Patient Monitoring System' is to create a WSN system capable of monitoring important bodily indications such as body temperature, sweat sensor, and changing buzzer. The system is also equipped for fall detection. To do so, the device uses a number of sensors to monitor basic indicators that may be linked to the doctor's smartphone or the internet. The device will send sensor readings to the cloud through the internet, and the data obtained will be available for study over time. It can read and transmit emergency signs to the cloud, which may subsequently be sent to the doctor's online portal, doctor's smartphone, or any other user. These measurements can be used to determine the patient's health status as a warning system in the event of a medical emergency.

KEYWORDS: Node MCU ESP8266, Temperature Sensor, Sweat sensor, web Application

I. INTRODUCTION



The essential idea of this project is to create a low fee low-cost fitness tracking gadget for people in faraway places wherein availability of specialist docs isn't possible. This gadget is transportable and low fee and may be effortlessly operated with the aid of using all people with restrained knowledge. Also this idea is developed the use of IOT, in order that the records may be dispatched to a faraway server from which it is able to be accessed with the aid of using docs. Their contribution in medical location can be very critical to us and cannot be neglected. Additionally Early detection of chronic illnesses can be clean with this generation.

In the last years Wi-Fi era has been growing for the want of upholding diverse sectors. In these latest years IoT have grabbed the maximum of business areas particularly automation and control. Biomedical is one in every of latest fashion to offer higher fitness care. Not best in hospitals but additionally the non-public fitness worrying centers are opened through the IoT era. So, having a clever machine diverse parameters are discovered that consumes power, value and increase efficiency In addition, Doctors play a completely critical function but the manner of check-up is pretty prolonged like first an individual want to sign up then he/she can be able to get the appointment and then in a while the check-up reviews are generated. Due to this prolonged manner, humans have a tendency to disregard the checkups or

put off it. This cutting-edge method reduces time intake with inside the manner. Medical scientists are attempting with inside the subject of innovation and studies given that many take a long time to get higher fitness offerings and happiness in human lives. This contribution closer to the society can be very worthy. Because humans can locate the atypical exercise of the frame earlier than entering into any extreme disease. The individual who's concerned greater than approximately every other cherished individual can take care and hold the music of his fitness through sitting in any corner of the arena with the assistance of IOT.

II.LITERATURE SURVEY

Prof.Ms. Kadave et.al they are utilizing the net of factors to screen numerous traits of the affected person on this project. The real-time parameters of a affected person's fitness are transferred to the cloud through Internet connectivity with inside the affected person tracking machine primarily based totally at the Internet of factors project. These parameters are transmitted to a far off Internet web website online in which human beings can get entry to them from any factor on the planet. We show a multi-parameter wearable sensor machine that works in tandem with the Internet of Things to offer real-time, unobtrusive tracking of center frame temperature and coronary heart fee. Clinical take a look at demonstrating the significance of maintaining unique measurements of center heartbeat and frame temperature withinsideethe ambulatory surroundings and all through pastime to have a look at human thermoregulation. On the opposite hand, for preliminary prognosis and survival evaluation of cardiac disorders, the ECG stays the gold standard.[1].

Uttara Gogate¹ and JagdishBakal In this paper they're supplying³ - tier structure of our prototype healthcare tracking machine the usage of Wi-Fi sensor network (WSN) that is evolved to constantly screen positive frame parameters of affected persons. Different biosensors to be had to degree coronary heart fee, frame oxygen degree and temperature are connected to Arduino Nano board and recorded indicators are dispatched to server the usage of Node MCU ESP8266 Wi-Fi communication. Data is made to be had on faraway servers for docs and caregivers the usage of Thing Speak, a web of factors (IOT) application [2]

Hicham Ouldzira¹, et.al This prototype is based totally mostly on four Node cu modules (a static get proper of access to aspect that offers the WIFI network, server, a purchaser and a mobileularget proper of access to aspect related to the a ways off surveillance object) programmed underneath Arduino IDE and speak me amongst them via the HTTP protocol. The a ways off monitoring of the object for a linear disposition of the nodes used is based totally definitely on the life of the mobileularget proper of access to aspect with inside the HTTP purchaser fields.[3].

LamirShkurti et.al In this paper they have evolved a machine for internet primarily based totally surroundings tracking the usage of the WSN Technology. WSN sensor nodes transmit records to the cloud-primarily based totally database through Web API request. Measured records may be monitored through the person everywhere from net through the usage of the Web Application which one is likewise well matched for cell phones [4].

SachiMarathe et.al This paper famous for the layout and improvement of a cell affected person-tracking machine through the usage of 4 sensors in a single machine. In in advance times, in regions of huge disasters, healthcare carrier vendors carried out crucial symptoms and symptoms measurements manually, recorded them on papers and communicated over the radio, however whilst the variety of sufferers significantly expanded it caused chaos most of the healthcare vendors.[5] Manduvasirichandana #1, dr.m.r.arunThis machine makes use of Temperature, heartbeat sensor, saline degree indicator and accelerometer to tune affected person's fitness. Both the sensors are related to the Arduino-UNO. So as to comply with the affected person well -being circumstance a miniature regulator is interfaced to a LCD display and Wi-Fi regulator to ship the data to the internet-worker (faraway detecting hub). In case of any unexpected adjustments in affected person coronary heart-fee or frame temperature alert is dispatched approximately the affected person the usage of IOT.[6]. Andrej Škrabaet.al Paper describes the development of a prototype that lets in monitoring of coronary heart rate and inter beat c program language period for several subjects. The prototype was determined out using ESP8266 hardware modules, Web Socket library, nodes and JavaScript.[7].

KhinTheWaiet .al In this machine, a heartbeat sensor, temperature sensor and blood stress sensor are used. The machine can examine the sign to discover ordinary or strange situations. In the machine, the net of factors (IoT) is turning into a main platform for plenty offerings and applications. The IoT is usually taken into consideration as connecting gadgets to the Internet and the usage of that connection for manipulation of these gadgets or faraway tracking.[8].

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is becoming a number one platform for mass offerings and applications. The IoT is commonly considered as connecting objects to the Internet and using that connection for manage of those objects or faraway tracking.[9].

D Junesco1 et,al Proposed strategies using WSN (Wireless Sensor Network) on devices, then do sorting out on connectivity to attain network exceptional and fact sensor. Data sensor may be uploaded on the cloud can be accessed from several places that associated with the Internet network because of this forming an IoT (Internet of Things) based totally definitely gadget with using Message Queue Telemetry Transport (MQTT) protocol. Experiments performed in procedures of connectivity, factor-to-factor and large call topology to determine the network exceptional of each device, this is Node MCU and Mi- Fimodems[10].

Asha G Hagargund et.al In the proposed machine, sufferers bring a batch of frame-sensors to acquire their physiological parameters. The Arduino is connected at the frame of sufferers, enables the sensor node and sends sensor records to the server the usage of WiFi. Wi-Fi getting used in lots of clinic applications, offer very much less interference to the capability of different devices. The server detects strange situations of sufferers the usage of the brink cost and sends the SMS and email to the health practitioner at the side of video feed [11].

PROJECT OBJECTIVES:

1. To Monitor Patients health condition and alerting the concern person with the help of Buzzer.
2. Monitoring the Parameters of Patient’s health such as temperature value, Sweat condition, fall detection etc.
3. WSN is a service which is used to monitor the health parameters of patients at any location.

III. PROPOSED SYSTEM

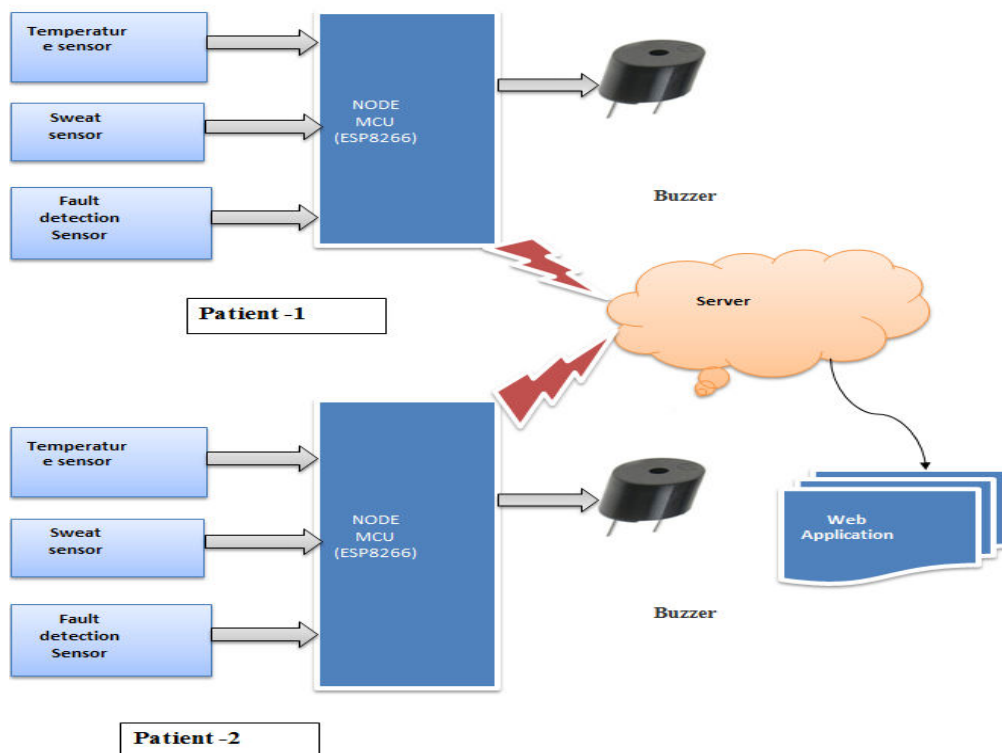


Fig 3.1 System Architecture

3.1 PROPOSED SYSTEM

We employ the following components in this suggested patient monitoring system: Node MCU, two Arduinos, and the sensors that go with them these sensors are utilized to remotely monitor the various characteristics of a patient, as well as providing control over drug dose.

This device allows clinicians to monitor critical data such as body temperature, body sweat analysis rate, acceleration, and saline level of patients in remote locations of the hospital, as well as outside the hospital. If the parameters become abnormal, the system notifies the physicians via a Popup message or by sounding a buzzer. Only the internet allows for all of this information and contact between the doctor and the patient.

Node MCU serves as a server that collects data from sensors collected by Arduinos and displays it on a webpage. This method provides the doctor with up-to-the-minute information. As a result, we will be able to lower the number of deaths and save more lives.

3.2 HARDWARE COMPONENTS USED FOR PROJECT

Sr.No	Name of the components	Role of components	Quantity
1	Node MCU (ESP8266)	Connects to internet using Wi-Fi and sends data from Arduinio to cloud	2
2	Temperature sensor (DHT 11)	Measure body temperature of patient. gives analog output to Node MCU	2
3	Sweat sensor	To Measure body sweat of patient.	2
4	Buzzer	To gives Altering sound	2
5	MIT App	Records all the data send from Node MCU through Wi-Fi module.	1

3.3 DETAILED DESCRIPTION OF COMPONENT

1. NODE MCU (ESP8266):

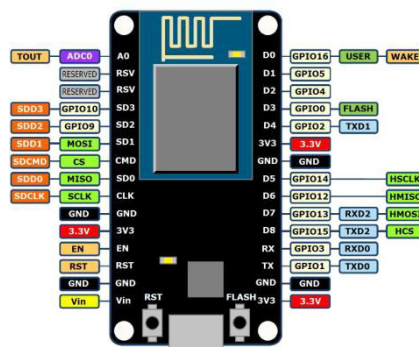


Fig 3.2 Node MCU pin diagram.

Node MCU is an open-source based firmware and development board specially targeted for IOT based Applications. It includes firmware that runs on the ESP8266 Wi-Fi SOC from Espress if Systems and hardware which is based on the ESP-12 module.

ESP8266:

The ESP8266 is a very user-friendly and low-cost device to provide internet connectivity to your projects. The module can work both as an Access point (can create hotspot) and as a station (can connect to Wi-Fi), hence it can easily fetch data and upload it to the internet making the Internet of Things as easy as possible. It can also fetch data from the internet using API's hence your project could access any information that is available on the internet, thus making it smarter. Another exciting feature of this module is that it can be programmed using the Arduino IDE which makes it a lot more user-friendly.

2. TEMPERATURE SENSOR

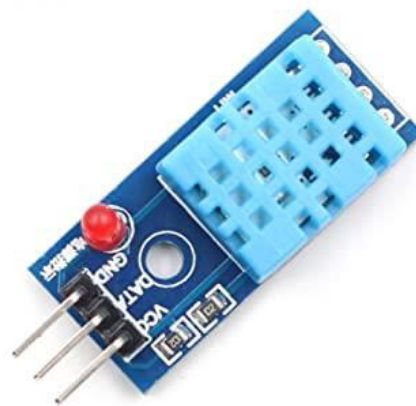


Fig 3.3 DHT11 Sensor

A temperature sensor (or hygrometer) senses, measures and reports the relative temperature in the body. It therefore measures both moisture and air temperature. Relative humidity is the ratio of actual moisture in the air to the highest amount of moisture that can be held at that air temperature. The warmer the air temperature is, the more moisture it can hold. Humidity / dew sensors use capacitive measurement, which relies on electrical capacitance. Electrical capacity is the ability of two nearby electrical conductors to create an electrical field between them. The sensor is composed of two metal plates and contains a non-conductive polymer film between them. This film collects moisture from the air, which causes the voltage between the two plates to change. These voltage changes are converted into digital readings showing the level of moisture in the air.

3. SWEAT SENSOR



Fig 3.4 Sweat sensor

The sensors are embedded onto the plastic in a manner similar to the way a printing press imprints text on a newspaper. Inside the sensors are spiraling microfluidic tubes that can derive information on the rate at which the wearer is sweating. The tubes also have tiny chemical sensors that can measure the concentrations of potassium, sodium and metabolites, a class of molecules that interact with enzymes. The process allows for production of scale, which means large volumes at low cost. The advancements needed to make viable sweat sensors that are sensitive enough while working with tiny power supplies, flexible electronics, and advancements in microfluidics, which involve precisely handling small amounts of liquids using the tiniest of pipes. All of these are coming together in research institutions around the world, and viable sweat sensors are being realized. The sweat sensors can capture the sweat using absorbent pads.

4. BUZZER



Fig 3.5 Buzzer

A buzzer is an electronic device which is capable. Buzzers are used in day-to-day applications such as alarm clocks and such. Apply 3V to 5V to this piezo buzzer module and you'll be rewarded with a loud 2 KHz BEEEEEEEEEEEEEEEEEEEP. Unlike a plain piezo, this buzzer does not need an AC signal. Inside is a piezo element plus the driver circuitry that makes it oscillate at 2 KHz. The piezo buzzer is 5V TTL logic compatible and Breadboard friendly pin spacing. The system is designed with a buzzer that provides system-related patient abnormalities that are greater than the normal value.

IV.RESULTS AND DISCUSSION

Hardware Setup:

In figure 4.1 hardware component is display

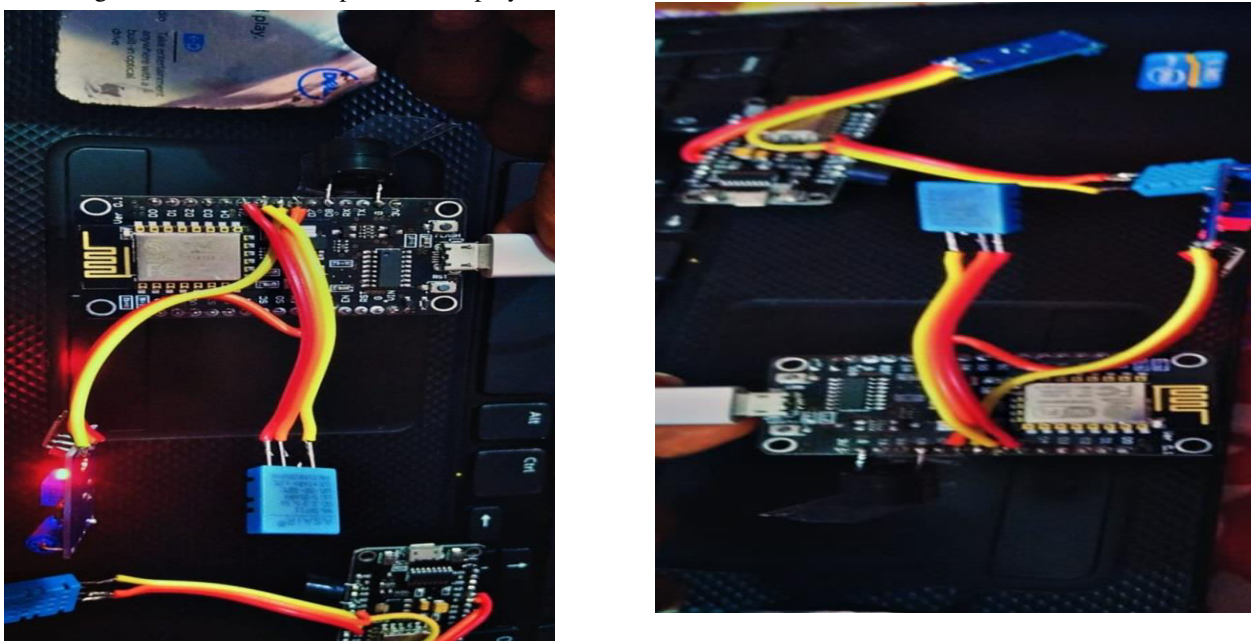


Figure 4.1 : Hardware Setup



Device 1 output:

In figure below it will display Temperature as 28.1, Fall detection as 0, Sweating as 90, Latitude as 17.6392 and Longitude as 75.90121.

Device 1

TEMPERATURE : 28.1
FALL DETECTION : 0
SWEATING : 90
LATITUDE : 17.6392
LONGITUDE : 75.90121

Figure 4.2 : Device 1 output

Device 2 output:

In figure below it will display Temperature as 28.1, Fall detection as 0, Sweating as 90, Latitude as 17.6392 and Longitude as 75.90121.

Device 2

TEMPERATURE : 32.4
FALL DETECTION : 1
SWEATING : 71
LATITUDE : 17.6392
LONGITUDE : 75.90121

Figure 4.3 : Device 2 output

WSN (Wireless Sensor Networks):

PARAMETER	Body Temperature	Sweating	Fall from bed
Person 1	27.5	Heavy Sweating	Fall detected
Person 2	32.4	Heavy Sweating	Fall detected

Figure 4.4 : WSN (Wireless Sensor Networks)

V.CONCLUSION

The experiment's principal goal was accomplished effectively. All of the component modules, such as temperature and sweat analysis, circuit building for two patient detection modules, fall detection module, and remote watching module, produced the desired results. The developed system modules can be refined and manufactured as a single circuit. The fact that all of the circuit components utilized in the remote health detection system are readily available was also discovered during project design.

Micro Electro Mechanical Systems (MEMs) and microcontrollers have become more affordable, smaller, and energy efficient as the integrated circuit industry has progressed. As a result, healthcare professionals are developing and using more embedded technology. These embedded systems are now also found in Smartphone technology. The Internet of Things (IoT) will be adopted at a faster rate in most emerging countries, thanks to increased internet access via mobile phones. These concepts are incorporated into the Remote Health Care system to build a system that improves people's quality of life. The project has seen subjects learnt over the computer science and embedded study periods put into effect in terms of engineering.

Electric circuit analysis skills were used during the design and fabrication of the various modules. In wireless communication between microcontrollers, electromagnetic field analysis is used, and software programming is used during microcontroller programming to produce a final circuit system.

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BIOGRAPHY



Mayuri Y.Vhanmare, M.E in Electronics & Telecommunication Engineering From N.B.Navale Sinhgad College of Engineering, Solapur.



Shashikant S.Hippargi, Assistant Professor, Dept. of Electronics and Telecommunication, Walchand Institute of Technology



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