

SMART WEARABLE DEVICE FOR TRACKING COVID-19 COLLATERAL ISSUES

Submitted in partial fulfilment of the requirements for the award of Bachelor of
Engineering Degree in Electronics and Communication Engineering

by

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SCHOOL OF ELECTRICAL AND ELECTRONICS ENGINEERING**

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

**Accredited with Grade "A" by NAAC
JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119**

MARCH - 2021



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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this project report is the bonafide work of **GUDDETI VENKATA DILIP KUMAR (Reg. No. 37130148)** and **GULLAPALLI VIVEK (Reg. No. 37130150)** who carried out the project entitled “**SMART WEARABLE DEVICE FOR TRACKING COVID-19 COLLATERAL ISSUES**” under my supervision from August 2020 to March 2021.

Internal Guide & Head of the Department

Dr.T. RAVI, M.E., Ph.D.,

Submitted for Viva voce Examination held on_____

Internal Examiner

External Examiner

DECLARATION

We **GUDDETI VENKATA DILIP KUMAR (Reg. No. 37130148)** and **GULLAPALLI VIVEK (Reg. No. 37130150)** hereby declare that the Project Report entitled “**SMART WEARABLE DEVICE FOR TRACKING COVID-19 COLLATERAL ISSUES**” done by us under the guidance of **Dr. T. RAVI, M.E., Ph.D.**, is submitted in partial fulfillment of the requirements for the award of the Bachelor of Engineering degree in Electronics and Communication Engineering.

1.

2.

DATE:

PLACE: CHENNAI

SIGNATURE OF THE CANDIDATES

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ABSTRACT

Covid-19 pandemic has resulted in a worst humanitarian crisis around the globe and had taken a heavy toll on human life. Because of its contagious nature, it poses a severe threat to humanity and need arduous steps to contain its spread. Effective control of this pandemic requires two different strategies namely prevention of transmission of Covid-19 virus and continuous tracking & monitoring of covid-19 infected persons. The objective of this project is to provide a low cost IOT and Cloud platform backed wearable device, that resembles a smart watch, which could continuously measure health conditions, of the wearing person, such as body temperature, cough frequency, cough severity, breathing difficulties, oxygen saturation levels and logs these information in the device local memory. The wearable device transmits the stored information in the local memory of the device along with geolocation signature of the quarantined person to a cloud server at regular intervals through cellular mobile network or over Wi-Fi network. This watch can also be used for maintaining social distancing as well, particularly more useful for work place environments. If people wearing these devices come in close proximity of 2-meters or less, it alerts the user by vibrating or by a unique audio tone to maintain social distance. The proposed wearable device employs tiny inbuilt sensors interfaced to a 32-bit microcontroller and includes BLE, Wi-Fi and Cellular mobile transceiver for IOT connectivity with the cloud server. The social distancing feature is implemented based on measuring radio signal strength indicator (RSSI) values of BLE signals from each devices

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

IoT was first proposed by Kevin Ashton in 1999. It is a communication network in which physical objects are interconnected with each other or with larger systems. This network collects billions of data from the very different devices we use in everyday life and transforms them into usable information. Today, there are about 20 billion devices in the world that interact with each other, and by 2025 it is estimated to go up to 75 billion devices. This shows that in the coming years cities that we live with IOT will become smart cities that will keep pace with the more paced and planned life.

This transformation will offer us many opportunities to make our life easier. One of these important opportunities is the e-health services that are closely related to all of us. IoT applications in the health sector are increasing day by day. People living in rural areas cannot benefit from preventive health services due to lack of infrastructure.

As a result, deaths occur very early in these regions. In addition, with the rapid aging of the world population, the needs of the elderly for life support are increasing with the change of family structure. In addition to chronic heart disease, there is a high probability that the patient will lose his or her life as a result of excessive fatigue of the heart during sleep at night, especially in Chronic Obstructive Pulmonary Disease (COPD) and Obstructive Sleep Apnea Syndrome (OSAS). Devices that provide continuous monitoring of these patients are very expensive and sensitive and require trained personnel to use them.

The Internet of Things (IoT) refers to the process of connecting everyday physical objects to the internet—from common household objects like lightbulbs; to healthcare assets like medical devices; to wearables, smart devices, and even smart cities. IoT refers to any system of physical devices that receive and transfer data over wireless networks with limited human intervention. This is made possible by integrating compute devices in all kinds of objects.

For instance, a smart thermostat (*smart* usually means *IoT*) can receive location data from your smart car while you are commuting. These connected devices

can adjust your home's temperature before you arrive. This is achieved without your intervention, and produces a more desirable result than if you manually adjusted the thermostat.

A typical IoT system—like the smart home described above—works by continuously sending, receiving, and analyzing data in a feedback loop. Depending on the kind of IoT technology, analysis can be conducted either by humans or artificial intelligence and machine learning (AI/ML) in near real-time or over a longer period.

Think of the smart home example. In order to predict the optimal time to control the thermostat before arriving home, your IoT system might connect to the Google Maps API for data about real-time traffic patterns in your area. It could also use the long-term data your connected car collects to inform commuting habits. Beyond that, IoT data collected from every smart thermostat customer can be analyzed by utility companies as part of large-scale optimization efforts.

- **Enterprise IoT**

IoT often gets attention from consumers, whose experiences with technologies like wearable smartwatches are tempered by the inherent privacy and security concerns that come with constant connectivity. This consumer perspective is prevalent throughout all kinds of enterprise IoT projects—especially when the end user is the general public.

Enterprise IoT solutions allow companies to improve existing business models and build new connections with customers and partners—but not without challenges. The volume of data produced by a system of smart devices can become overwhelming (often described as big data). Integrating big data into existing systems and setting up data analytics to act on it can get complicated.

IoT security is a major consideration when building IoT systems. Still, for many companies, IoT has been worth the effort, and successful enterprise IoT use cases can be found in nearly every industry.

1.2 ORGANIZATION OF THE REPORT

The project report is organized into six chapters.

Chapter 1: This chapter focuses on introduction about smart wearable device for tracking covid 19 collateral issues. The recent trends and origin of our idea are discussed.

Chapter 2: This chapter provides detailed literature survey related to the project, Literature summary, problem definition, Objectives of the project.

Chapter 3: Advantages, Aim and Scope of the project

Chapter 4: This chapter describes about the proposed iot tracking devices, and ESP8266, DHT11 sensor, Ultrasonic Sensor, Oximeter sensor, Buzzer and its pin configuration

Chapter 5: This chapter altogether concludes the project. It also gives the scheme of the future work that is how the project could be enhanced further. Finally the references referred to precede the project are given in brief.

CHAPTER-2

LITERATURE SURVEY

This chapter provides detailed literature survey related to the project, Literature summary, problem definition, Objectives of the project.

2.1 LITERATURE REVIEW

TAMILSELVAN.P (2018) focused, In India everyday many humans are affected because the patient are not timely and properly and also for real time conventional parameters are not efficiently work on different situations, frequently check-up for patient condition also not possible. To overcome these kinds of situations, our system is beneficial. Our system is designed to be used in Home or hospital for measuring and monitoring various parameter like ECG, Body temperature and Blood pressure. By using new technology Internet of Things (IOT) makes all objects interconnected and it has been recognized as the next technical revolution

Mehmet Taştan (2018) explained, an important part of our life, internet has enabled many machines and devices we use in everyday life to be monitored and controlled remotely through Internet of Things (IOT) technology. Thanks to IOT technology, smart health applications have become a rapidly growing sector. For individuals with heart disease, the Heart Rate (HR), Heart Rate Variability (HRV) and Body Temperature (BT) values are considered vital signs that must be measured regularly. In this study, an android-based application is developed that can monitor HR, HRV and CT parameters for cardiovascular patients who should be under constant observation. The measuring system, which consists of wearable sensors, constantly measures patient signs.

Md. Milon Islam (2020), focused healthcare monitoring system in hospitals and many other health centers has experienced significant growth, and portable healthcare monitoring systems with emerging technologies are becoming of great concern to many countries worldwide nowadays. The advent of Internet of Things (IoT) technologies facilitates the progress of healthcare from face-to-face consulting to telemedicine. This paper proposes a smart healthcare system in IoT environment that

can monitor a patient's basic health signs as well as the room condition where the patients are now in real-time. In this system, five sensors are used to capture the data from hospital environment named heart beat sensor, body temperature sensor, room temperature sensor, CO sensor, and CO₂ sensor.

R.Nivetha (2020), discussed a promising development in healthcare is to move routine medical checks and other health care services from the hospital to the home atmosphere. With that, patients get health care more quickly, particularly in case of urgent situations. Moreover, hospitals can diminish their load by shifting the possible and easy tasks to the home environment. One significant advantage is the reduction in expenditure. Patients could avoid the fees charged by the hospital each time they went to visit the doctor. Therefore, it is urgent that shortly, a trending technology needs to be executed in the health industry to expand advanced health care techniques and technologies and use them for the easy monitoring of patients from anywhere else.

2.2 PROBLEM DEFINITION

To design and analysis of smart wearability for tracking covid-19 collateral issues

2.3 OBJECTIVE OF PROJECT

- To analyze temperature and heart rate for patients using IOT
- To navigate the Geolocations of the patients
- To alert the care taker by immediate SMS/mail using IOT

CHAPTER-3

AIM AND SCOPE

3.1 AIM OF THE PROPOSED SYSTEM

In the proposed system a mobile physiological monitoring system is presented, which is able to continuously monitor the patients heart beat, blood pressure and other critical parameters in the hospital. A proposed continuous monitoring and control mechanism to monitor the patient condition and store the patient data's in server using Wi-Fi Module based wireless communication, we also proposed remote health care data acquisition and smart storage system. The Future work of the project is very essential in order to make the design system more advanced. In the designed system the enhancement would be connecting more sensors to internet which measures various other health parameters and would be beneficial for patient monitoring i.e. connecting all the objects to internet for quick and easy access. Establishing a Wi-Fi mesh type network to increase in the communication range.

The Objective of this undertaking is to give an ease IOT and Cloud stage supported Wearable gadget, that looks like a savvy, which could consistently measure health conditions, of the wearing individual, for example, internal heat level, relaxing Troubles, oxygen immersion levels and logs these data in the gadget neighborhood Memory.

The wearable gadget communicates the put away data in the nearby memory of the gadget. Alongside geolocation mark of the isolated individual to a cloud worker at customary Spans through cell portable organization or over Wi-Fi organization.

3.2 SCOPE

This model Will help in the techniques to prompt need of medical aid for the general public, particularly for the Elderly individuals. This outcomes in the incredible derivation of the demise rate and in decrease in Populace

3.3 EXISTING WORK

Healthcare technology is very popular in today's pandemic situation due to coronavirus. Actually, with the help of IoT healthcare technology is rapidly being revolutionized. Keeping track of your patient's health status at home is a difficult task due to our busy schedule and our daily work. Especially, elderly patients should be monitored periodically. So we propose an innovative system that makes this task easily automated. Our equipment uses a smart webserver to track patient health using this tracking system. Hence, patient health parameters such as body temperature, heart rate, blood oxygen levels as well as room temperature and humidity can be monitored.

3.4 ADVANTAGES

- **Remote monitoring:** Real-time remote monitoring via connected IoT devices and smart alerts can diagnose illnesses, treat diseases and save lives in case of a medical emergency.
- **Prevention:** Smart sensors analyze health conditions, lifestyle choices and the environment and recommend preventative measures, which will reduce the occurrence of diseases and acute states.
- **Reduction of healthcare costs:** IoT reduces costly visits to doctors and hospital admissions and makes testing more affordable. Medical data accessibility: Accessibility of electronic medical records allow patients to receive quality care and help healthcare providers make the right medical decisions and prevent complications.
- **Improved treatment management:** IoT devices help track the administration of drugs and the response to the treatment and reduce medical error.
- **Improved healthcare management:** Using IoT devices, healthcare authorities can get valuable information about equipment and staff effectiveness and use it to suggest innovations.

CHAPTER 4

MATERIALS AND METHODS USED

This chapter focuses on the proposed system description with its components and its functionality. Which focuses on sensors, NodeMCU, cloud portal and buzzers.

4.1 BLOCK DIAGRAM

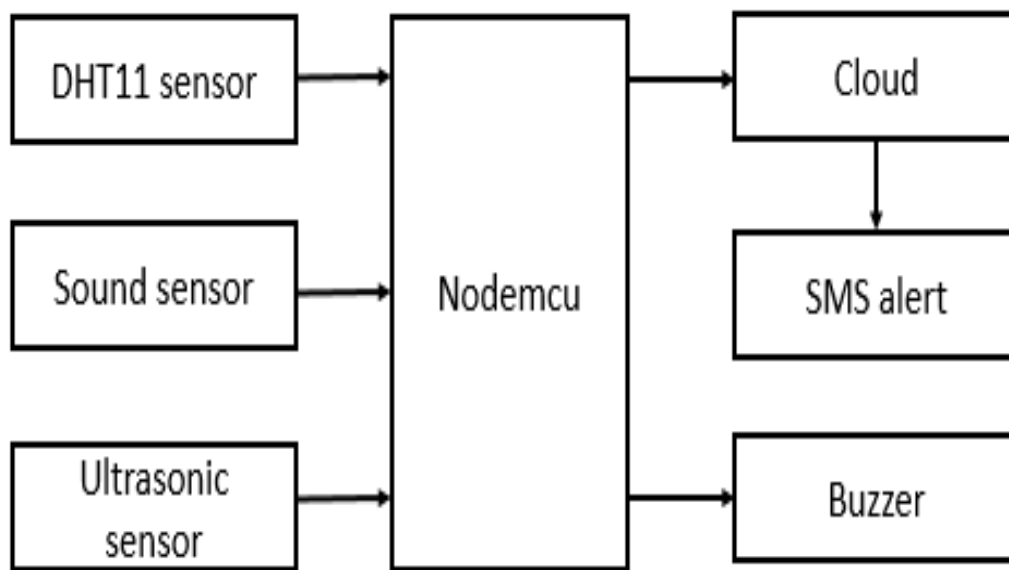


Fig.4.1 Block Diagram

The proposed system consists of power supply which initialises the ESP8266 to connect the iot cloud and detects the patients blood pressure, heartbeat, and temperature which alerts the care taker to monitor the patient

4.2 HARDWARE DESCRIPTION

It mainly focuses on the different components which are used in developing the prototype of proposed smart wearable device

4.2.1 ESP8266 NODEMCU Wi-Fi Devkit



FIG.4.2 ESP8266 NODEMCU

ESP8266EX (just alluded to as ESP8266) is a framework on-chip (SoC) which incorporates a 32-cycle Tensilica microcontroller, standard advanced fringe interfaces, radio wire switches, RF balun, power enhancer, low commotion get intensifier, channels and force the board modules into a little bundle. It gives abilities to 2.4 GHz Wi-Fi (802.11 b/g/n, supporting WPA/WPA2), broadly useful info/yield (16 GPIO), Inter-Integrated Circuit (I²C), simple to-computerized transformation (10-bit ADC), Serial Peripheral Interface (SPI), I²S interfaces with DMA (offering pins to GPIO), UART (on committed pins, in addition to a send just UART can be empowered on GPIO2), and heartbeat width regulation (PWM).

The processor center, called "L106" by Espressif, depends on Tensilica's Diamond Standard 106Micro 32-cycle processor regulator center and runs at 80 MHz (or overclocked to 160 MHz). It has a 64 KiB boot ROM, 32 KiB guidance RAM, and 80 KiB client information RAM. (Additionally, 32 KiB guidance reserve RAM and 16 KiB ETS framework information RAM.) External glimmer memory can be gotten to through SPI. The silicon chip itself is housed inside a 5 mm × 5 mm Quad Flat No-Leads bundle with 33 association cushions — 8 cushions along each side and one enormous warm/ground cushion in the middle.

The ESP8266 can be controlled from your neighborhood Wi-Fi organization or from the web (after port sending). The ESP-01 module has GPIO pins that can be

customized to turn a LED or a hand-off ON/OFF through the web. The module can be customized utilizing an Arduino/USB-to-TTL converter through the sequential pins (RX,TX).

- **Connecting the ESP8266 to the Internet**

Currently, the ESP8266 module can only be accessed through the local Wi-Fi network. In order to control your devices from the internet, you have to do port forwarding on your router. To do this, find the IP address of your system either by using the "ifconfig" command on your terminal, or go to whatsmyip.org. Copy down your IP address. Now open your router setting and go to the "Forwarding" settings. Enter the details for the "Service Port" and "IP Address". The service port is the port number from your Arduino code (Service port: 80)

4.2.1.1 Pin Configuration

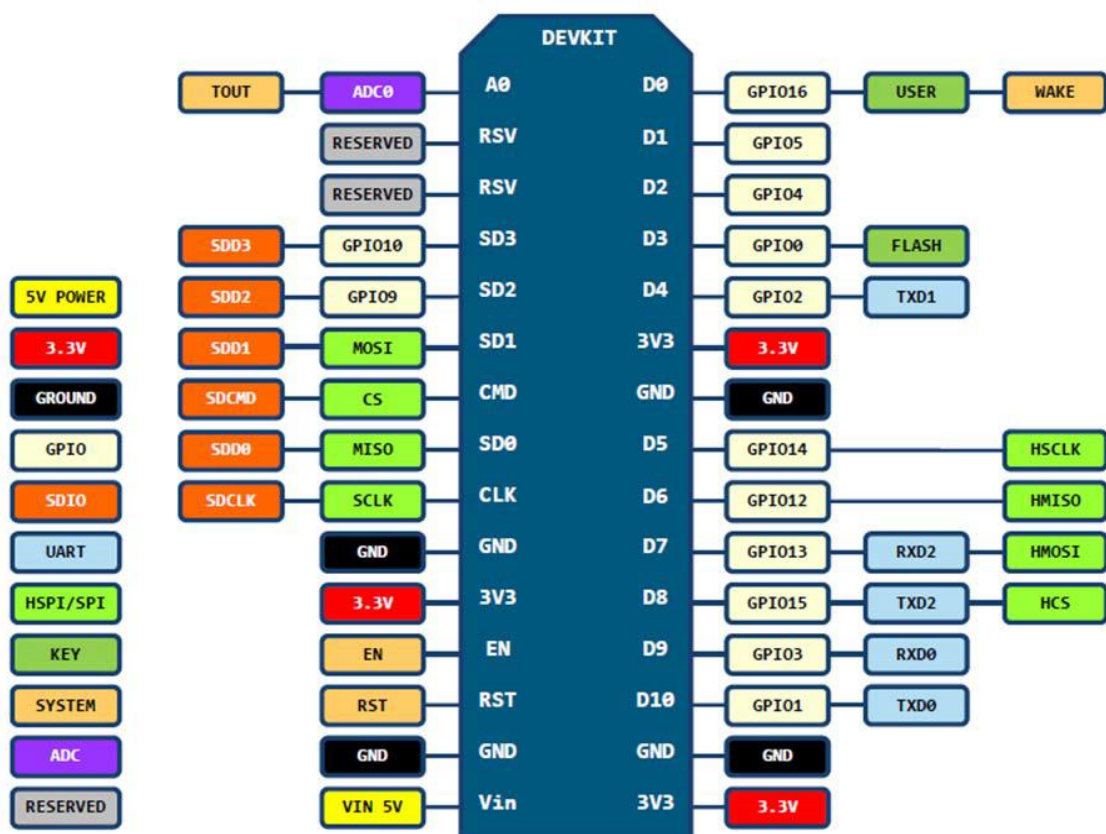


Fig. 4.3 Pin Configuration

The most basic way to use the ESP8266 module is to use serial commands, as the chip is basically a WiFi/Serial transceiver. However, this is not convenient. What we recommend is using the very cool Arduino ESP8266 project, which is a modified version of the Arduino IDE that you need to install on your computer. This makes it very convenient to use the ESP8266 chip as we will be using the well-known Arduino IDE. Following the below step to install ESP8266 library to work in Arduino IDE environment.

4.2.2 Oximeter Sensor

When they are supplied with energy by the blood, the heart contracts or dilates, starting from one area and moving to another. Heart rate is the number of heartbeats per minute (bpm), and the pulse vibration of an organ that can be detected in any vein near the skin. Heart rate can be measured in two ways. The wrist (enlarged heart) and neck are two areas to consider (carotid heart rate). The technique involves calculating the number of heartbeats per 30 seconds using two numbers on the wrist (the cooled finger and the middle finger) (or the neck just below the windpipe).

The heart rate is calculated by multiplying the sum by two. However, the pressure element can be used sparingly, and the finger should be raised and lowered until a pulse is felt. Use of the sensor: If light is emitted or perceived as it travels through the blood when the heart rhythm changes, the heart rate can be measured using the contrast of the optical force. Heart rate sensor indications In the light of volume imaging instructions, the heart rate sensor is used. It calculates the change in the volume of blood in each organ of the body.

It adjusts the intensity of light passing through the organ (vascular site). Pulse conditions are more important if there is an example of applications that should monitor the intensity of the heartbeat. Since the heart rate determines the development of blood volume and the blood consumes light, the heart rate sign is equal to the heart rate.



Number	Pins	Definition of Pins
1	VIN	Power Input 1.8V - 5.5V
2	SCL	IIC-SCL
3	SDA	IIC-SDA
4	INT	MAX30100 INT
5	IRD	MAX30100 IR_DRV
6	RD	MAX30100 R_DRV
7	GND	Ground



Fig.4.2.2 Oximeter and Detection Cable

The primary heart rate sensor is made up of an indicator such as a light-emitting diode and a resistor that determines the light or photodiode. The blood supply to other areas of the body varies as the heart beats. When a tissue is lit by a light source, such as a motor's light, it either absorbs (finger tissue) or transmits the light (ear cartilage). The blood supply in that region determines how much light is absorbed. The electrical symbol for finger return is equal to the heart rhythm. The data from the computerized imeter is sent to a microcontroller, which calculates the speed of warmth strokes using the equation BPM (beats per minute) = $60 * f$. The letter f stands for rhythm repetition. Heart rate tracker that works in real life. Sensory techniques Sensor for measuring heart rate

The LDR clamp and the infrared driver are housed in the same structure. The clamp is applied to the organ with the identifier component on the stuff (ear or finger cartilage). The other variant is the TCRT1000, which has four pins: pin 1 is used to supply power to the LED, pins 2 and 3. pin 4 indicates yield. PIN 1 also activates the sensor by enabling the PIN, the high key on the LED. It can be worn on the forearm on a wearable device and the output can be transferred to a computer for remote manufacturing (via Bluetooth).

Sensors for temperature and humidity estimating and controlling temperature and relative humidity finds uses in a wide variety of settings. Signal modulation, ADC, synchronization and correspondence interfaces are all handled by them. The use of these genius sensors greatly improves the strategy while reducing the overall cost. In the past, we looked at temperature and humidity controls. These sensors are fitted to predict temperature and relative humidity, resulting in fully optimized computerized returns. Although the SHT1x / SHT7x sensors are accurate, they are also expensive for professional use.

4.2.3 Temperature and Humidity sensor

The DHT11 sensor is housed in a single-pole 4-pin box. The DHT11 sensor has a one-of-a-kind single-wire protocol that we'll look at and use with the PIC16F628A microcontroller to get temperature and humidity readings from it. Check it out on the 162-character LCD as well. The DHT11 sensor is a 4-pin single pole sensor that runs on a 3.5 to 5.5V supply voltage.

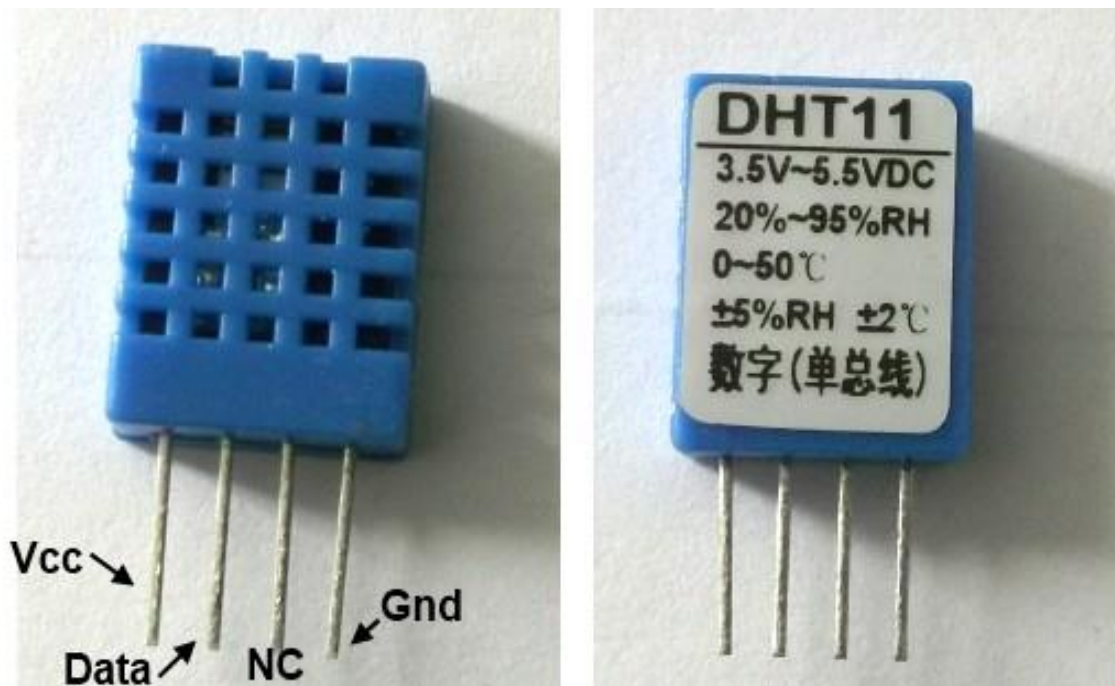


Fig. 4.2.3 DHT11 Sensor

It can calculate temperatures from 0 to 50 degrees Celsius with a 2 degree precision and relative humidity from 20 to 95 percent with a 5 percent accuracy. The sensor offers fully calibrated sophisticated revenue with its own single-wire protocol for all scores, and communication between the sensor and the microcontroller is not possible through a direct interface with its periphery as a result. This agreement must be applied in the MCU's firmware, with the exact sensor configuration specifications in mind.

4.2.4 ULTRASONIC SENSOR

Ultrasound sensors use ultrasound waves to determine time. The sensor head sends out an ultrasound pulse, which is reflected by the target. Ultrasound sensors estimate the time between extrusion and clustering to determine the distance to the target.

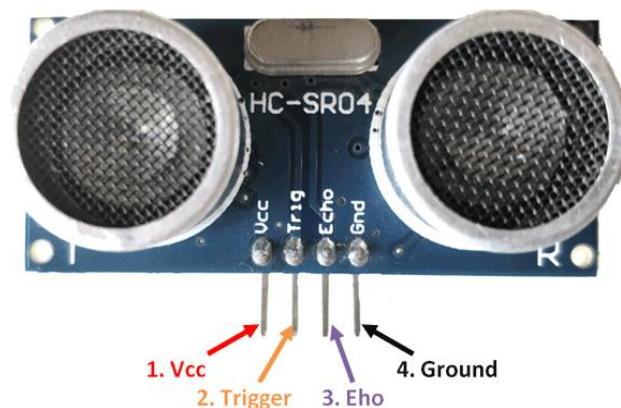


Fig.4.2.4 Ultrasonic Sensor

The transmitter and collectors are used in the optical sensor, while the ultrasound component is used in both the low trough and assembly in the ultrasound sensor. A lone oscillator, on the other hand, emits and receives ultrasound on a smart model ultrasound sensor. This allows the sensor head to compress.

Working Ultrasound Sensor HC-SR04 As we have seen, the ultrasound sensor HC-SR04 (US) is a four pin unit with different pins names for VCC, Trigger, Echo and Ground. It is a well-known sensor used in a variety of applications that have far-reaching or artistic recognition. The front of the unit has two projector-like eyes that frame the ultrasound transceiver. The sensor operates using the standard high school formula $\text{distance} = \text{speed} \times \text{time}$. The ultrasound transmitter sends out an ultrasound wave that passes through the air before returning to the sensor and colliding with any material. The ultrasound receiver device detects this mirrored pulse, as seen in the diagram below. To measure distance using the above formulas, we must first determine the speed and time. Since we use it, we know the average amplitude of the American wave under room conditions, which is 330 m/s. The unit's machinery will

measure how long it takes for the American wave to return while still operating the high Echo Pin 23, allowing time to be measured. At this stage, all you have to do is use the microcontroller or chip to calculate the space.

The HC-SR04 remote sensor is often used with Arduino, ARM, PIC, Raspberry Pi, and other microcontrollers and microchip relays. Regardless of the computer system used, relevant evidence is accessible and should be remembered. Force + 5V power of the sensor through the sensor's Vcc and ground pins. Since the sensor uses less than 15 mA of current, it can be driven directly from the frame's 5V pins (if it can be accessed). Since the trigger and echo pins are both I/O pins, they can be wired to the I/O pins on the microcontroller. The trigger pin must be raised for 10 for and then destroyed to begin the measurement. The transmitter sends out an ultrasonic wave with a frequency of 40 Hz, and the receiver wave is thought to return. The echo pin rises for a while until it returns to the wave sensor after reflection from certain posts, which is equivalent to the period it took to return to the wave sensor. The MCU / MPU Echo Pin calculates the time it would take for the wave sensor to return and provides that detail. As mentioned in the title, the distance is determined using this information.

- **HC-SR04 sensor features**

- + 5V operating voltage.
- Default measuring distance from 2cm to 450cm
- cm to 80 cm. Practical measuring distance
- mm accuracy
- Cover measurement position: 15

Applications used to stop and identify obstacles with robots include biped robots, obstacle avoidance robots, robot search method, etc. By moving the sensor 2 cm and 400 cm. Around it. Since waves can penetrate water, the depth of certain points such as wells, ditches, etc. can be measured.

4.2.5 BUZZER

Instead, a whistle is an acoustic signalling device that can be electronic, electromechanical, or piezoelectric (abbreviated piezo). Most resonators and whistles are used with caution. Confirmation of tools, timers and customer details, such as mouse clicking or key pressing. How to Benefit from Buzzer Bell is a small but useful component that adds sound to our project / framework.



Fig.4.2.5 Buzzer

The compact and simple two-pin structure allows it to be used on test boards, performance boards and even PCBs, making it a widely used component in most electronic applications. There are two commonly available communication devices.

The signal is turned on, produces a continuous beeping sound. The other type of sound is the ready-made bell, which is louder and produces a sound. There is a signal. There is a signal. Due to the internal frequency circuit, it produces sound. However, the shape shown here is mostly used because it can be modified with the help of different circuits to fit our application exactly. This signal can be used after running with a 4 to 9 V DC power source. A +9V battery can also be used, although a +5V or +6V DC control source is recommended. Usually the bell is connected to the exchange circuit, which kills or shuts off the signal at a predetermined time and requires amplification.

Arrangements 6V DC Rated Voltage 4-8V DC Operating Voltage. 30mA new rating continuous beep resonance frequency: 2300Hz Sound type: Continuous buzzer beam A small, precise constant beam. Alarm circuit application, where the customer should be afraid of anything that provides connection to automotive devices due to its small scale, portable devices are ideal.

4.3 ESP8266 Blink Test

We'll begin with the simple blink test. Enter this into the sketch window (and save since you'll have to). Connect a LED as shown in Figure 4.3.1. Need to put the board into bootload mode. You'll have to do this before each upload. There is no timeout for bootload mode.

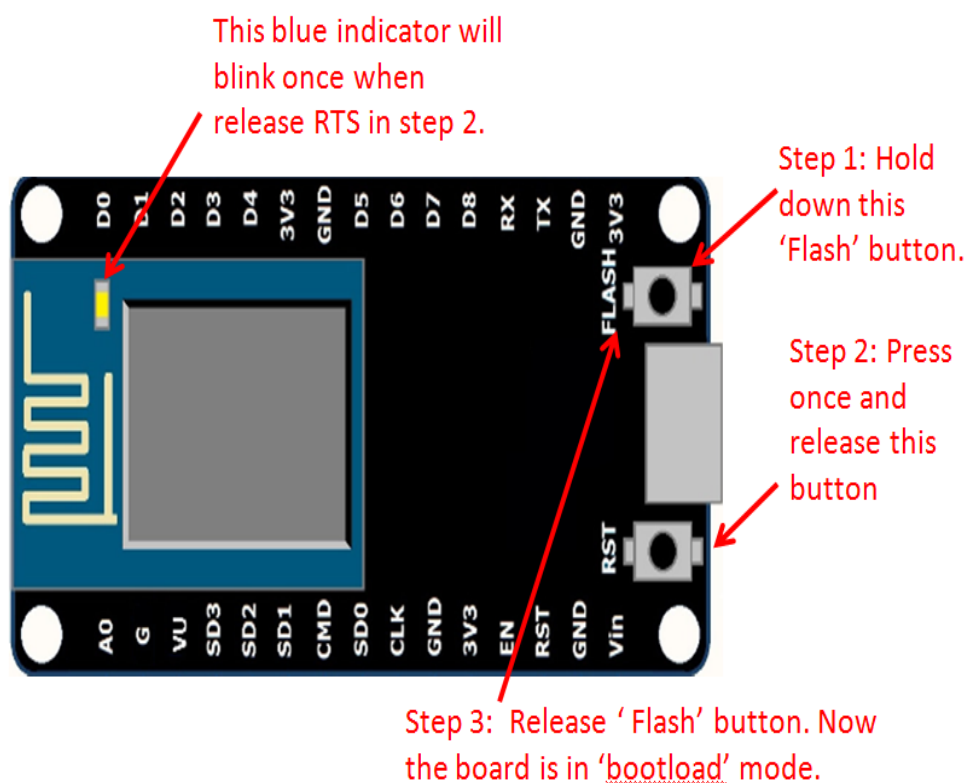


Fig-4.3.1 Blink test indication

Once the ESP board is in bootload mode, upload the sketch via the IDE,

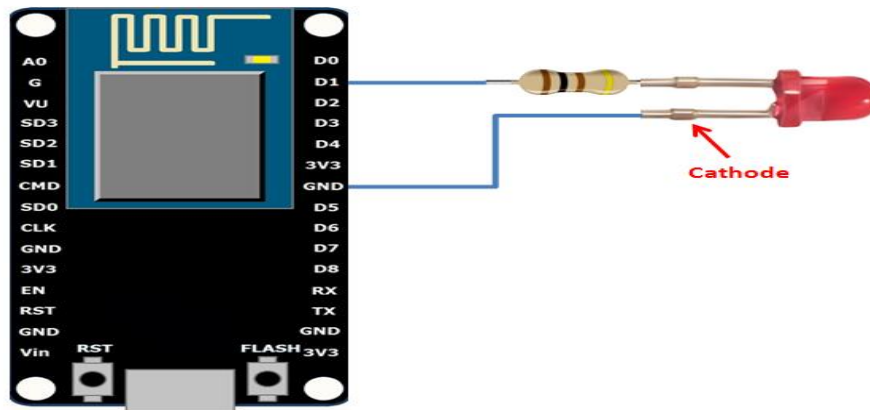


Fig-4.3.2 Connection diagram for the blinking test

4.4 NodeMCU Firmware

```

blinky | Arduino 1.6.7
File Edit Sketch Tools Help

blinky
void setup() {
  pinMode(5, OUTPUT); // GPIO05, Digital Pin D1
}

void loop() {
  digitalWrite(5, HIGH);
  delay(900);
  digitalWrite(5, LOW);
  delay(500);
}

Uploading...
WARNING: Spurious .github folder in 'Adafruit IO Arduino' library
WARNING: Spurious .tests folder in 'Adafruit IO Arduino' library
WARNING: Spurious .github folder in 'Adafruit MQTT Library' library
WARNING: Spurious .tests folder in 'Adafruit IO Arduino' library
WARNING: Spurious .github folder in 'Adafruit MQTT Library' library

Sketch uses 222,197 bytes (51%) of program storage space. Maximum is 434,160 bytes.
Global variables use 31,572 bytes (38%) of dynamic memory, leaving 50,348 bytes for local v
Uploading 226352 bytes from C:\Users\BY\AppData\Local\Temp\buildb7f3357d9ec338fa2a4043584dd
..... [ 36% ]
.....

Generic ESP8266 Module, 80 MHz, 40MHz, DIO, 115200, 512K, 0-4K SPIFFS

```

Fig.4.3.3 Flashing NodeMCU Firmware on the ESP8266 using Windows

NodeMCU is a firmware that allows you to program the ESP8266 modules with LUA script. And you'll find it very similar to the way you program your Arduino. With just a few lines of code you can establish a WiFi connection, control the ESP8266

GPIOs, turning your ESP8266 into a web server and a lot more. In this tutorial we are going to use another ESP8266 module with pin header adapter board which is breadboard friendly.

4.5 UBIDOTS CLOUD:

Here you would reference how to send or retrieve data from your hardware devices using our supported communication protocols: HTTP, MQTT and TCP/UDP. The purpose of this section is to help you understand what happens in the backstage when communicating with Ubidots, so you can replicate this in your firmware. For this reason, we avoid the use of examples using libraries. However, if you'd like to use one of our libraries (Python, C, and more), check out our compatible devices and API clients sections.

Every time a device updates a sensor value in a variable, a data-point or "dot" is created. Ubidots stores dots that come from your devices inside variables, and these stored dots have corresponding timestamps:

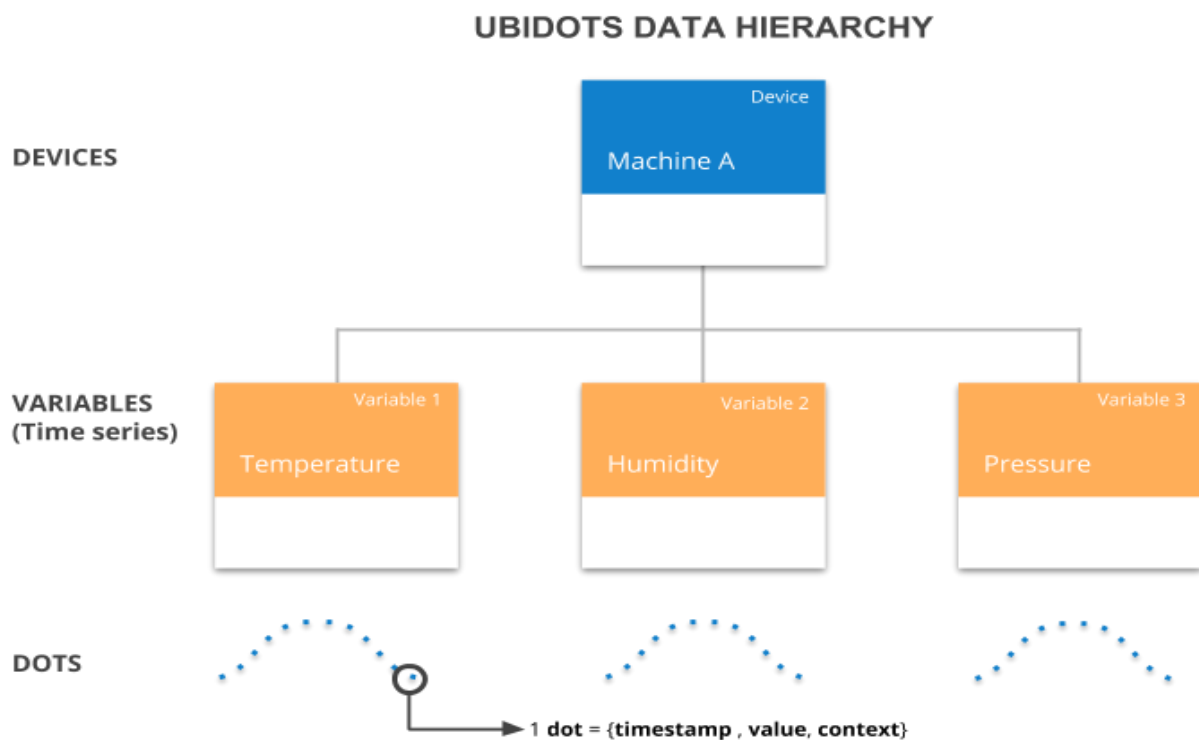


Fig.4.5.1 Ubidots hierarchy

4.6 FLOW CHART:

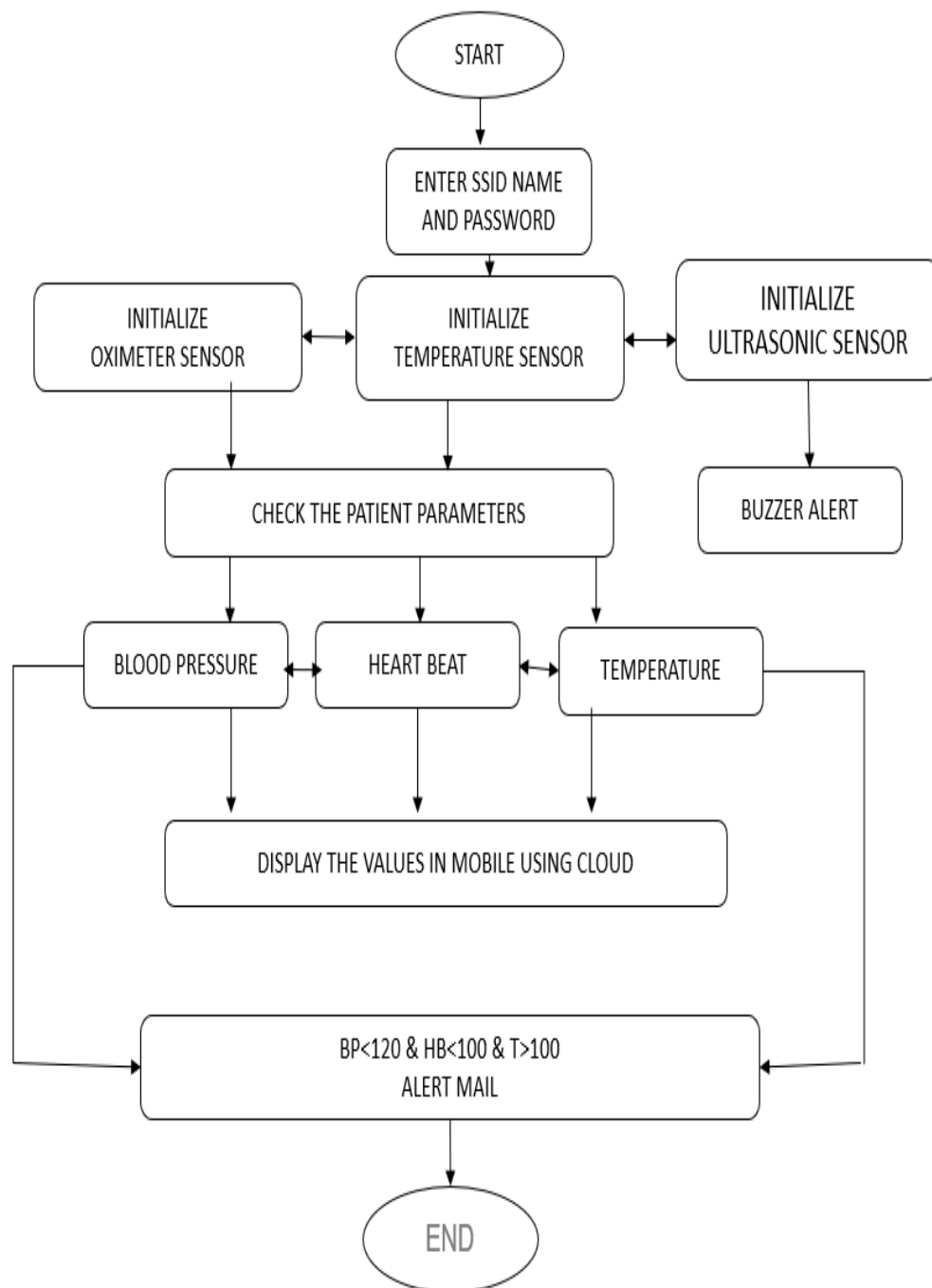


Fig.4.6.1 flow chart

4.7 SYSTEM PROTOTYPE

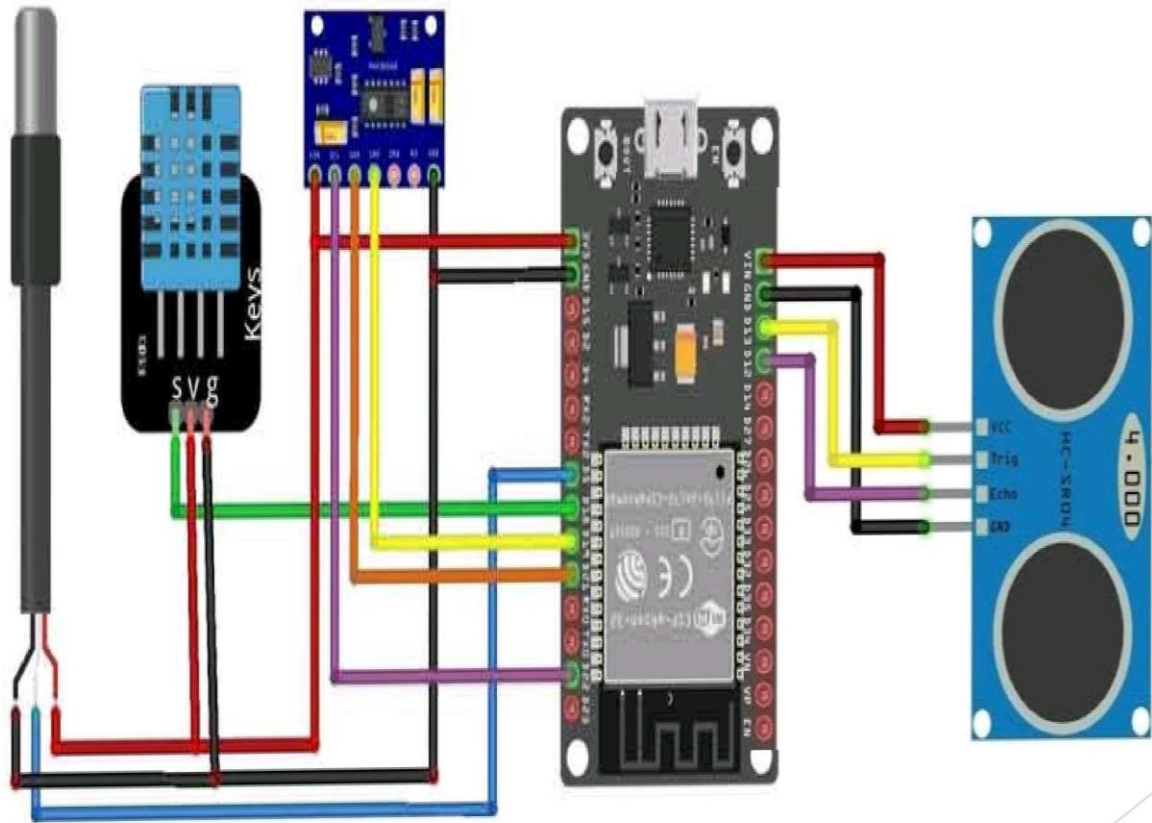


Fig.4.7.1 circuit diagram

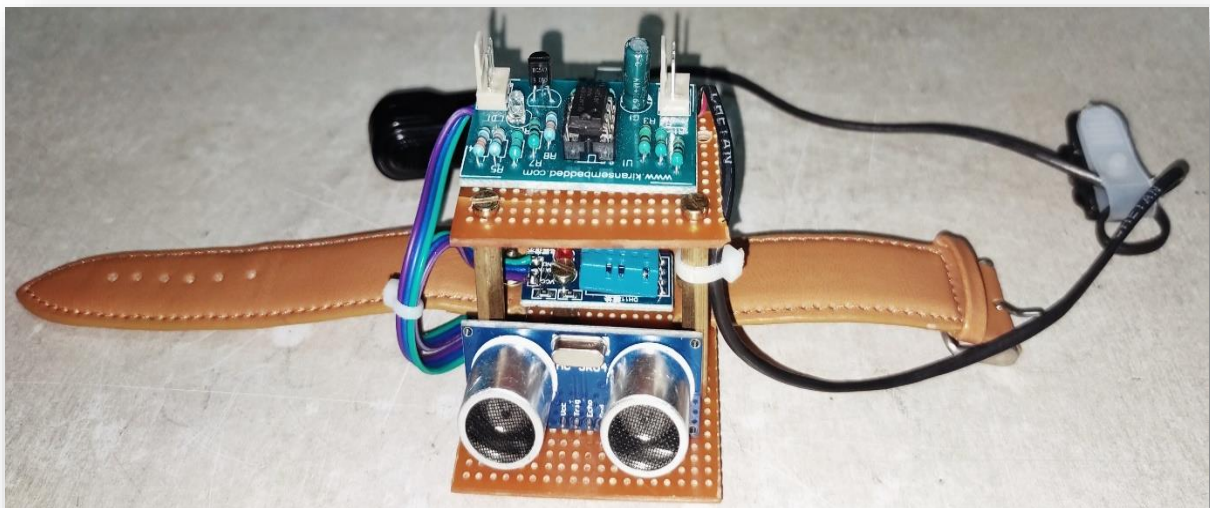
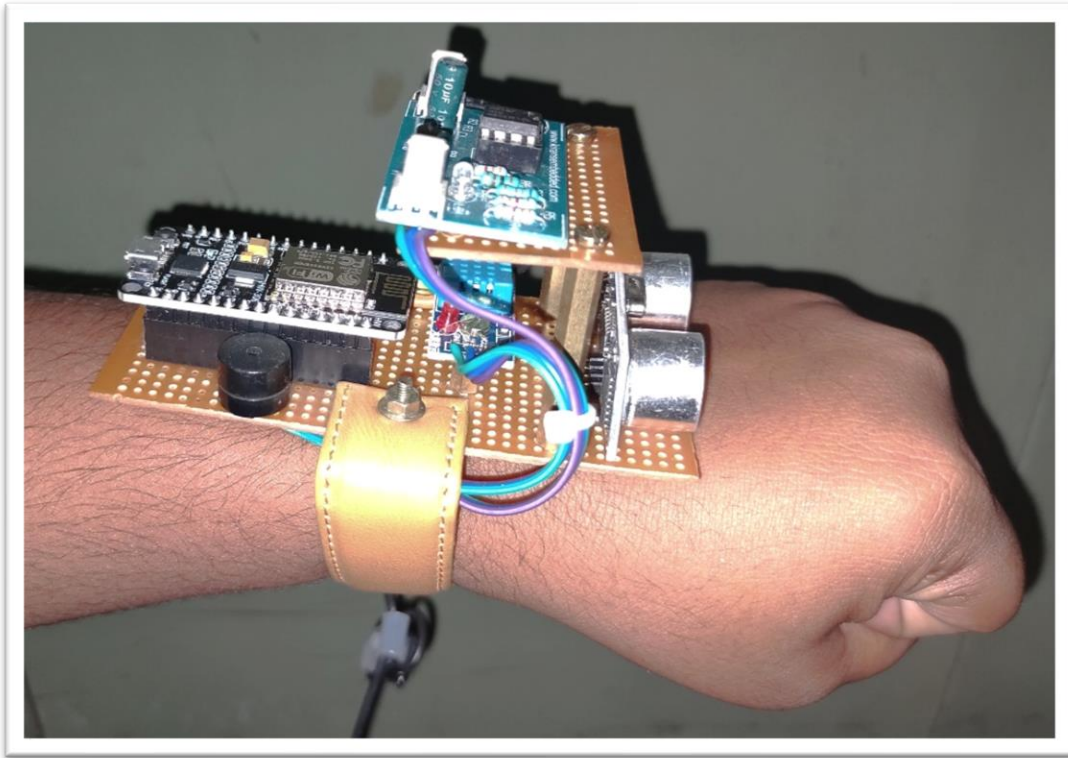


Fig.4.7.2 prototype of smart wearable1



When we enter into the ubidots platform we need to enter the username and password which helps to monitor, oxygen levels in the blood using oximeter sensor, and Dht11 sensor used to find the temp and we can monitor the heartbeat of the patient. The values are displayed using the cloud platform and if the values are exceeded and alert mail is sent to the care taker we are using ultrasonic sensor which alerts the patient for social distancing.

CHAPTER 5

RESULT AND OUTPUTS

5.1 RESULT

This outcome in the Estimation of temperature, heartbeat and oxygen level and furthermore gives a signal caution At the point when an individual is in close contact

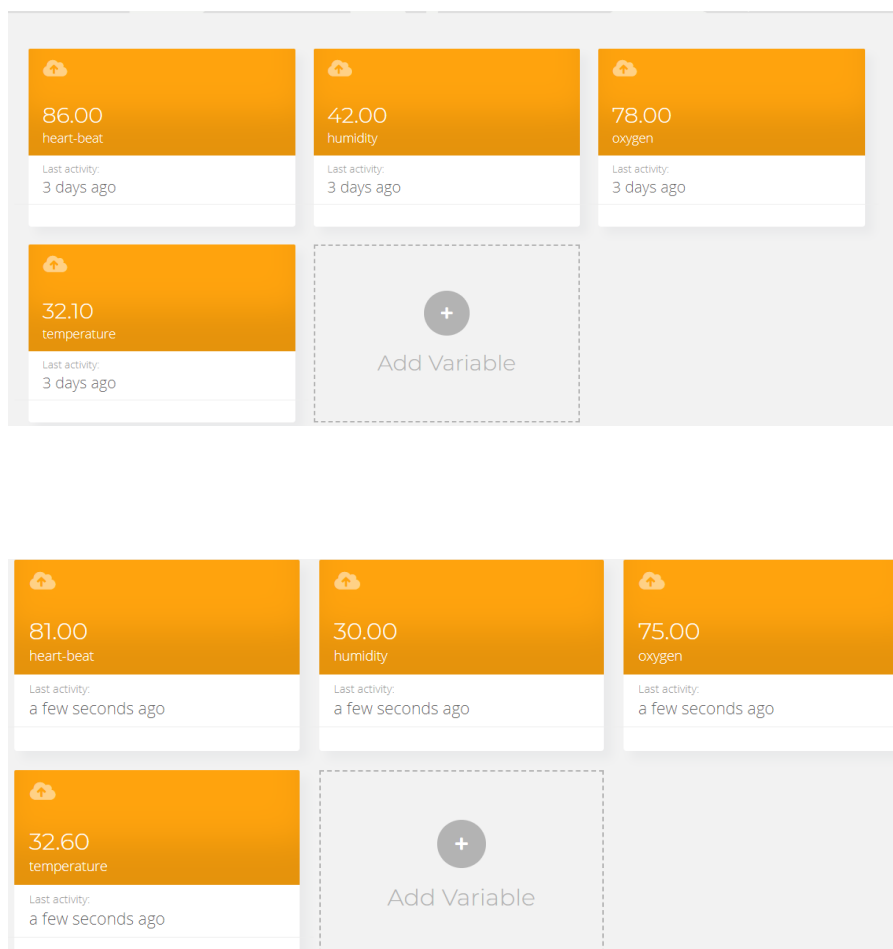


Fig.5.1.1 Sensor Outputs

- MAIL ALERT

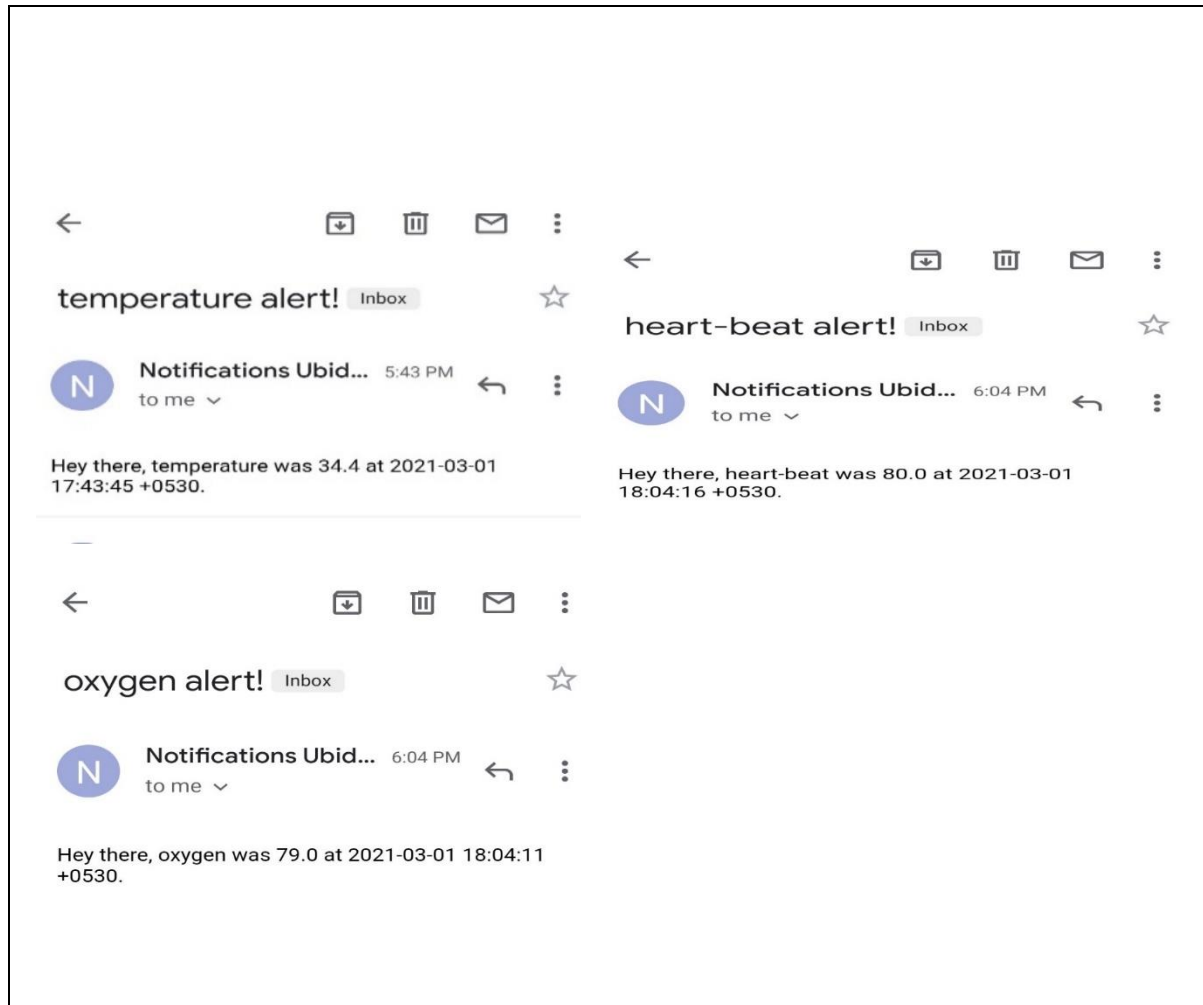


Fig.5.1.2 Mail alerts

- **GPS LOCATION**

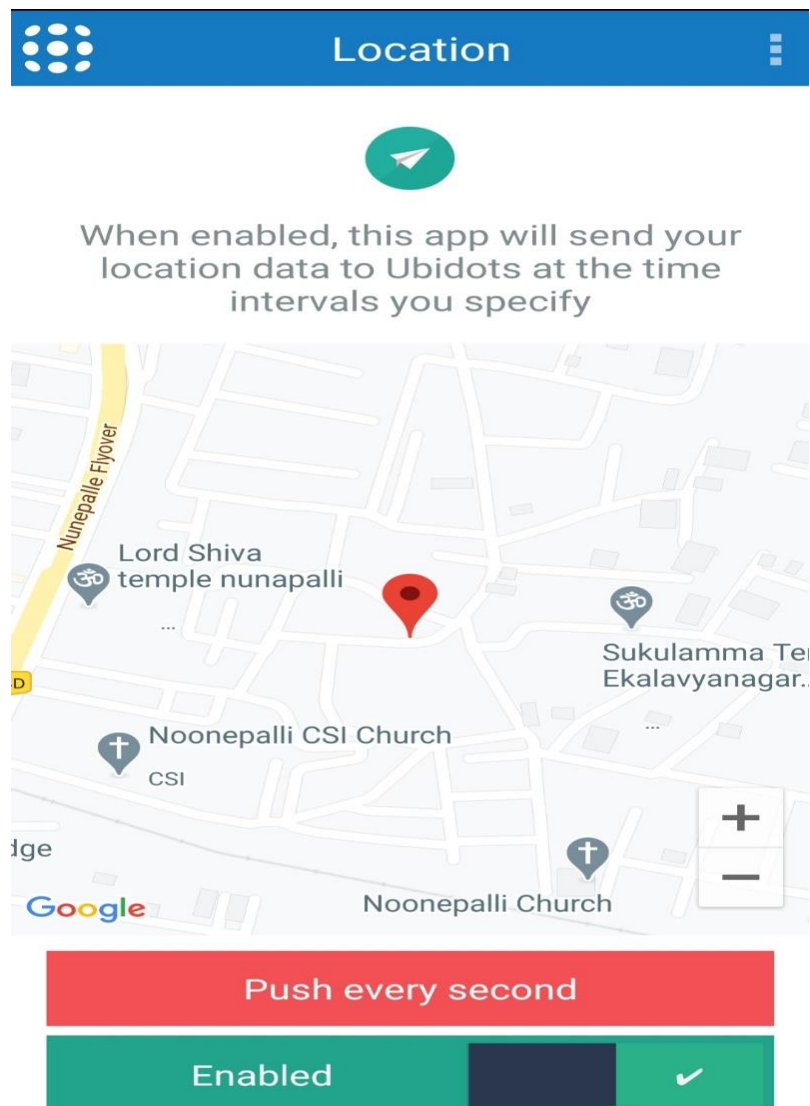


Fig.5.1.3 GPS Location

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 CONCLUSION

IOT is becoming more suitable network for the next generation health services at the hospital. In this document, the application of wearable watch is demonstrated in node mcu using a prototype model. The IOT network can be successfully used as a high speed, secure and secure human body data communication to deliver in real time monitoring of heartbeat, blood pressure, temperature and pressure and other various parameters.

The use of this technology in the field of medicine makes faster diagnosis and allows you to access the internet with the radio wave-based apparatus. The proposed system is completely Automated and this could a milestone in a medical field if it is implemented successfully. End Compatible to wear Measures the temperature , Heart thump , Oxygen level Boundaries and send Via SMS or mail ready Gives the bell ready when an individual is in Close contact Medical care innovation is mainstream in the present pandemic circumstance due to Covid. As a matter of fact, with the assistance of IoT medical care innovation is quickly being altered. Monitoring your patient's wellbeing status at home is a troublesome errand because of our bustling timetable and our every day work. Particularly, old patients ought to be observed occasionally. So we propose an inventive framework that makes this assignment effectively robotized. Our gear utilizes a shrewd webserver to follow patient wellbeing utilizing this global positioning framework. Consequently, patient wellbeing boundaries, for example, internal heat level, pulse, blood oxygen levels just as room temperature and moistness can be checked.

6.2 Future Scope

As per the accessibility of sensors or advancement in biomedical pattern more boundary can be detected and checked which will radically improve the productivity of the remote checking framework in biomedical field. A graphical LCD can be utilized to show a chart of pace of progress of wellbeing boundaries over the long run. The entire wellbeing checking framework which we have outlined can be coordinated into a little smaller unit as little as a cell or a wrist watch.

This will assist the patients to effectively convey this gadget with them any place they go. Likewise with clinical application we can utilize our framework in modern and rural application by utilizing sensors like moistness sensors, ripeness check sensors, and so forth as the new strain is spreading in a various manner so that the hospitals can't provide the ventilation and resources to the patients as the lack of resources in the country and suffocation of disease the wearable watch helps to monitor the patients by isolating them in their own places and which is risk free.

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