

FISHERMAN LOCATION TRACKING AND HEALTH CONDITION MONITORING SYSTEM USING GEOFENCING

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering Degree in Electrical and Electronics Engineering

By

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SCHOOL OF ELECTRICAL AND ELECTRONIC ENGINEERING

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited with Grade "A" by NAAC

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **VANMATHI.K** (Reg. No. 37140091) and **NANDHINI.M** (Reg. No. 37140056) who carried out the project entitled "**FISHERMAN LOCATION TRACKING AND HEALT CONDITION MONITORING SYSTEM USING GEOFENCING**" under our supervision from December 2020 to April 2021.

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DECLARATION

We **VANMATHI.K** (Reg. No. 37140091) and **NANDHINI.M** (Reg. No. 37140056) hereby declare that the Project Report entitled “**FISHERMAN LOCATION TRACKING AND HEALTH CONDITION MONITORING SYSTEM USING GEOFENCING** ” done by us under the guidance of **Dr. A.RAMESH BABU** is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in Electrical and Electronics Engineering.

1.

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2.

A rectangular box containing a handwritten signature in blue ink, which appears to be "K. Vanmathi".

DATE: 12.03.2021

PLACE: CHENNAI

SIGNATURE OF THE CANDIDATES

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ABSTRACT

The fisherman's crossing the borders and identification of locations in the sea is pop into a difficult task with existing equipment's provide to the fisherman's as a result they cross the borders. In our ancient of living we hear regarding many Tamil Fishermen being caught and place out Sri Lankan service custody. The ocean border between the countries is not entirely recognizable, which is the main reason for this offence. Moreover, in cases of at hand natural disasters, failure or delay in notifying concerned personnel to evacuate finally ends up in loss of life on associate outsize scale. The sea border between the countries is not easily identifiable, which is the main reason for this offence. Moreover, in cases of imminent natural disasters, failure or delay in notifying concerned personnel to evacuate results in loss of life on a large scale. Throughout this paper we've projected however that protects the fishermen by work their entries and exits among the harbor victimization embedded system, notifying the country's ocean border to them by victimization world Positioning System (GPS), Geo Fencing and Mobile Systems. We've Associate in nursing inclination to use GPS as a result of the most effective technique to trace this location of the fishermen. The GPS' current latitude and line coordinates unit of live sent to the database where the administrator utilizes it for continuous trailing and monitoring of the user, if in distress victimization their credentials and last known location, current A location prediction is equally created. Another profit being the work procedures facilitate Official authoritative agencies to identify fishermen and their activities for his or her own safety and security.

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LIST OF SYMBOLS AND ABBREVIATIONS

ω_0	-	Resonant Angular Frequency
C_r	-	Resonant Capacitor
C_s	-	Series Resonant Capacitor
L_r	-	Resonant Inductor
L_s	-	Series Resonant Inductor
I_r	-	Resistance Current
R	-	Resistor
V_c	-	Capacitor Voltage
V_{ds}	-	Drain to Source Voltage
V_{in}	-	Input Voltage
V_{out}	-	Output Voltage
X_c	-	Capacitive Reactance
X_l	-	Inductance Reactance
Z	-	Impedance
ADC	-	Analog to Digital Convertor
TCP	-	Transmission Control Protocol
IP	-	Internet Protocol
WSN	-	Wireless Sensor Network
CISC	-	Internet of Things
CPU	-	Central Processing Unit
HTTP	-	Hyper Text Transfer Protocol

PWM	-	Pulse-Width Modulation
SPI	-	Serial Peripheral Interface
FTDI	-	Future Technology Devices International Limited
ICSP	-	International Conference on Signal Processing
RTD	-	Resistance Temperature Detector
LDR	-	Light Dependent Resistor
LED	-	Light Emitting Diode
RFID	-	Radio Frequency Identification
GNSS	-	Global Navigation Satellite System
GPS	-	Global Positioning System
DA	-	Device Abstraction
CCM	-	Central control, Context detection & Management
USB	-	Universal Serial Bus
EEPROM	-	Electrically Erasable Programmable Read-Only Memory
TWI	-	Two-Wire Interface

CHAPTER 1

INTRODUCTION

1. GENERAL INTRODUCTION

Security systems and navigators have always been a requirement of a human's life. The developments of advanced electronics have brought revolutionary changes in these fields. Equipment theft is a severe problem in many industries including transportation and construction, especially for more significant businesses. There is no solution in monitoring the movement of the vehicle, and we do not know the current condition and position of the vehicles. The GPS - based vehicle tracking system is one of the most obvious ways to keep track of the vehicles. The Global Positioning System (GPS) is a system based on Global Navigation Satellite System (GNSS) that provides reliable location and time information at all times in any weather condition on earth. We want to solve the location tracking problem by using GPS based monitoring system with a geo-fencing capability to track the vehicle. This system comprised of a few major components which combined satellite communication components to communicate the location of the vehicle to a remote user. Geo-fencing enabled remote monitoring of geographic areas surrounded by a virtual fence (geo-fence), and automatic detections when it tracked mobile objects that entered or exited these areas .Geo-fence apps and tools monitored the devices or other physical objects that entered or exited the established geo-fenced area and provided administrators with alerts when there was a change in the status of the device .Security systems and navigators have constantly been a requirement of a human's life. The developments of advanced field have brought revolutionary changes in these fields. Instrumentality transgression would be a severe disadvantages in many industries any as transportation and construction, significantly for more necessary businesses. There is not any Resolution in

Observance the movement of the vehicle, that we've associate inclination to undertake to to not grasp this condition and position of the vehicles. The GPS – primarily based entirely vehicle trailing system is one altogether the most obvious that} in in among that throughout which during this at intervals that to remain track of the vehicles. The planet Positioning System (GPS) would be a system supported world Navigation Satellite System (GNSS) that has reliable location and time data at intervals the slightest degree times in any development on earth. We've honor inclination to need to resolve matters trailing problem by victimization GPS primarily based entirely observance system with a geo-fencing capability to trace the vehicle. this system comprised of the assorted major components that combined satellite communication parts to communicate matters of the vehicle to a faraway user. Geo-fencing enabled remote observance of geographic areas encircled by a virtual fence (geo-fence), and automatic detections once it half-tracked mobile objects that entered or exited these areas .Geo-fence apps and tools monitored the devices or fully all whole entirely altogether completely different physical objects that entered or exited the established geo-fenced house and provided administrators with alerts once there was a change among the standing of the device.

1.2 LITERATURE SURVEY

Abbas A.H, et.al..(2017)This paper presents a study on GPS based mostly all Location observance System with Geo-fencing Capabilities. This technique provided a high- security system that stops vehicles from being stolen. It to boot issued associate alert to the user supported the boundary of matters by victimization the Internet of Things (IoT). Throughout this study, the system might simply monitor and track matters of the vehicle and was ready to issue associate alert once the vehicle exited the geofence house. This system was separated into a attempt of elements that were the hardware and code. The hardware parts were the ESP8266 NodeMCU and GPS module whereas Google Maps and IoT platform were the code elements. The admin could monitor the vehicle via the non-public laptop that the notification alert was sent to the registered email of the

Admin once the vehicle exited or entered the geofence house. The model system was tested by moving the vehicle round the geofence area. The results showed the proper location of the vehicle and email notification alert once it Exited or entered the boundaries. Matters accuracy of regarding ninety fifth compared to the real-Map on the mobile.

Subverter Widya dress, et.al..(2018)Every parent has several activities or activities that can't be avoided. This activity reduces superintendence and observance of each activity of their kids. Parents' issues in terms of observance the presence and observance of children's activities become one in all the issues that ar typically featured. Coaching kids to arrange themselves to face this typically dangerous world, initial develop a way of security in themselves. It's natural to sometimes inform a baby of the likelihood of being kidnapped or cheated by somebody UN agency has not been or is already famous to him while not having to mean overprotecting him. Improved superintendence of kids is required while not reducing the liberty of kids to find out and explore their setting. One different that enables following the presence, location and accuracy is sort of smart is to use a Geo Positioning System (GPS). This GPS is prepacked during a versatile type in order that it will facilitate create it easier oldsters for folks [for fogeys} to supervise their kids within the vary of arras that are still accessible to them and realize the child's position once separated from their parents. The integrated Google API integrated application is extremely useful in following as a result of folk's ar able to estimate the tracker's rough position. The system will send the situation data of kids UN agency ar lost or lost on sensible phone applications employed by folks. This GPS belt application has been able to offer convenience to folks in following or to search out the child's whereabouts.

Vinoth Kumar R, et.al..(2018) the issues of fishermen stray in every territorial water have come back as a potential thorn within the bilateral relations between the neighboring states and countries. International Marine Time Boundary line (IMTL) between countries can continuously have security drawback. Thanks to carelessness the fishermen might accidently cross the country border. In such scenario they'll face attack from the alternative navy. To avoid such scenario a

tool exploitation embedded system has been designed to safeguard the fishermen. GPS receiver is employed to search out the present location of the fishermen. The guts beat device unceasingly monitors Heartbeat of the fishermen. GSM is used to transfer the info to the cloud storage exploitation IOT. If fishermen navigate on the far side the country border a warning message is send from the room. This device helps the fishermen to handle any venturesome scenario and to boost the protection.

Abhishek Singh¹, et.al... (2019)The main objective of this project is to design and develop an embedded system for vehicle to detect the road accident for immediate medical help as well as for security purpose in theGeo-fencing (geofencing) could be a nice feature in an exceedingly software system program that uses international Positioning System (GPS) or frequency identification (RFID) to outline the geographical boundaries feature. Really geofence could be a virtual barrier. Geofencing is AN innovative technology, an online marketplace for proactive discourse services that permits users to simply realize attention-grabbing services, will simply take it and to permit suppliers provide their services for a spread of applications like electronic toll assortment, discourse advertising or traveler info systems, even while not further infrastructure. The most objective of this analysis was to understand however the utilization of special knowledge will improve advertising performance for patrons. Tracking systems and watching, supported international navigation services by satellite, and embody geofencing operate, may conjointly contribute to the precise location of an establishment or company and increase sales and business perspective with efficiency. Rather than giant billboards they will currently advertise on smart a phone that is economically and accurately tested.

Danish karim, et.al..(2019)The main objective of this project is to style and develop an embedded system for vehicle to Detect the road accident for immediate medical facilitates in addition as for security purpose in thievery prevention exploitation single shock device. Just in case of accidental mode the system ought to inform automatically via text message to medical rescue team

Indicating the position of car location. Once there's no automotive driver, vehicle ought to mechanically go in security mode. When a person tries to steal the vehicle, this method ought to send AN alert message to the owner. The system Geo fencing and accidental watching system supported AT89S52 as a central core. This includes varied technologies: a shock device, liquid show (LCD), twin relay and wireless communication. This method conjointly includes Geo fencing technology. Geo fencing allows the remote watching of predefined set of boundaries and automatic sight once vehicle exit from these areas.

CHAPTER 2

EXISTING SYSTEM AND PROPOSED SYSTEM

2.1 EXISTING SYSTEM

Geo fencing and accidental watching system supported AT89S52 as A central core to sight the road accident for immediate medical facilitate As well as for security purpose in thievery bar. In case of accidental mode the system ought to inform mechanism Via text message to medical rescue team indicating the position of vehicle When there's no driver the vehicle enters into security mode that Provides security by exploitation shock device .The present system doesn't have any security system to avoid thefts which is being supplemental within the projected system.

2.2 PROPOSED SYSTEM

The system aims at observance the fisher current location, when the fisher enters the Geo fence. And he going the fencing the Automatically send AN alert SMS / Mail to the oldsters yet as .Geo fences square measure essentially virtual regions that square measure thought-about around geo purpose with a particular radius. And conjointly we will monitor the health condition of the fisher like Temp sensing element is employed to live the temporary work Literature |blood heat |vital sign temperature}, heartbeat Sensor Is employed to live the heart beat rate of the fisher and Conjointly. Pressure sensing element is employed to live the force per unit area of the ocean. So we can see the fisher condition and Take immediate actions

2.2.1 lot

The structure of this chapter is that the following: Section one.1 defines the motivation for this work. Section 1.2 shows the analysis objectives and questions. Section 1.3 presents the steps needed to attain our objectives. Section 1.4 shows the structure of the report.

2.2.2 Background

The Future web goal is to supply associate degree the structure of this chapter is that the following: Section one.1 defines the Motivation for this work. Section 1.2 shows the analysis objectives and Questions. Section 1.3 presents the steps needed to attain our Objectives. Section 1.4 shows the structure of the report. Infrastructure to possess associate degree immediate access to data regarding the physical world and its objects .Physical objects may be applicable to totally different application domains, such as e-health, warehouse management, etc. Each application domain could have different types of physical devices. Every physical device will have its own specifications that are needed to use so as to act with it. To achieve the longer term web goal, a superimposed vision is needed that may facilitate knowledge access. Web of Things (IoT) may be a vision that aims to integrate the virtual world of information to the \$64000 world of devices through a superimposed design. The term “Internet of Things” consists of 2 words, particularly web and Things. Web refers to the world network infrastructure with ascendable, configurable capabilities supported practical and normal communication protocols. Things area unit physical objects or devices, or virtual objects, devices or data that have identities, physical attributes and virtual personalities, and use intelligent interfaces [1]. As an example, a virtual object will represent associate degree abstract unit of sensing element nodes that contains Meta data to spot and find out its corresponding sensing element nodes. Therefore, IoT refers to the items that may offer data from the Physical surroundings through the net. Middleware is as associate degree interface between the hardware layer and therefore the Application layer that is chargeable for interacting with devices and information management [2]. The role of a middleware is to gift a unified programming model to act with devices. A middleware is in Charge of masking the heterogeneousness and distribution issues that we tend to face once interacting with devices [3].

2.2.3 MOTIVATION

IoT-based system is to blame of providing data from associate degree surroundings to associate degree non-expert user. IoT-based system may be utilized in totally different environments; therefore it has to be ready to address

several heterogeneous devices. Thus, a serious concern among developing associate degree IoT-based system is how to handle the interaction with the heterogeneous devices for non-expert users. This concern may be addressed by a middleware layer between devices and non-expert users. This layer is accountable to cover the diversity of devices from the user perspective, and provides access transparency to the devices for the tip users. The idea of making abstractions of devices been addressed within the literature. The middleware we tend to found within the literature will offer satisfaction by facilitating the interaction with devices, however they are doing not support low-level device configuration [11]

2.2.4 *lot definition*

Has more and more gained attention in trade to Interact with differing kinds of devices. IoT will have influence on trade and society by group action physical devices into data networks [8]. IoT impacts may be on totally different views, Particularly for personal and business users. From the angle of a personal user, IoT has result on both operating and private fields, like sensible homes and offices, e-health and assisted living. From the side of a business user the impacts would be in fields like automation and industrial producing, logistics, business method management, intelligent transportation of individuals and goods [9] IoT integrates physical things into data networks. IoT covers the overall infrastructure, together with computer code, hardware and services, which is used to support these data networks. The integrated physical things can exchange knowledge regarding the physical properties and knowledge that they sense in their surroundings. to spot devices, we are able to use identification technologies like as an example RFID, which permit every device be unambiguously identified [10]. International Telecommunication Union (ITU) one defines IoT as “A world infrastructure for the data Society, facultative advanced services by interconnecting (physical and virtual) things supported, existing and evolving, practical data and communication technologies”[11].

2.2.5 *lot_based middleware*

Band yoadhyay S, et.al.. Have studied the middleware systems that have been

Applied in IoT -based systems [1]. They classify the desired Functionality of middleware to manage interaction with a range of devices in four useful parts, specifically (1) interface protocols, (2) device Abstraction, (3) central management, context detection & management, and (4) application abstraction (shown in Fig. 2.2). Within the following, we explain these parts in details .Figure 2.2 useful parts of a middleware for IoT-based systems.

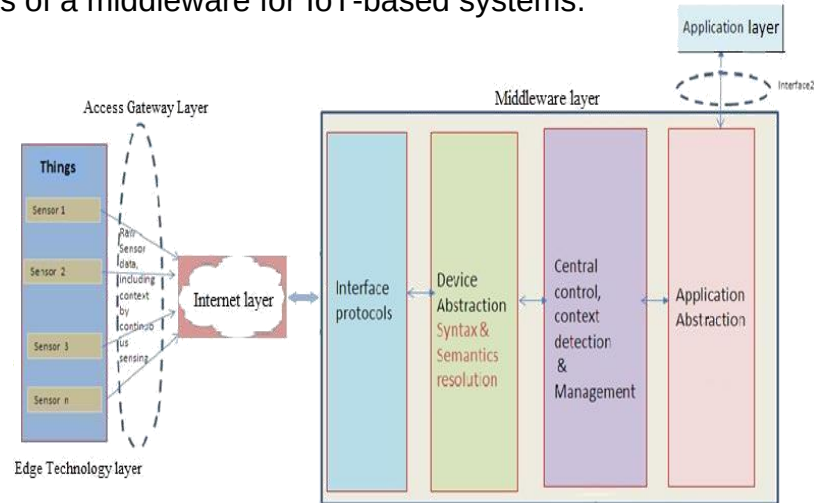


FIGURE .2.1 using parts of a middleware for IoT-based systems

2.2.6 INTERFACE PROTOCOLS

This part is answerable of providing technical ability. Interoperability within the context of Interface protocols means: the power of two systems to interoperate by using an equivalent communication protocols. According to ETSI (European Telecommunications Standards Institute) [14] technical ability is outlined because the association of hardware or software parts, systems and platforms that modify machine-to- Machine communication to require place. This sort of ability is commonly centered on (communication) protocols and therefore the infrastructure required for those protocols to operate [14].The Interface Protocol part defines protocols for exchanging Information among totally {different | completely different} networks that will work supported different communication protocols, so as to allow technical ability. This component is to blame for

handling basic property within the physical and data link, network, transport, and generally the appliance layer of the TCP/IP stack. To deal with the heterogeneousness of devices, we are able to use a Wrapper for every device to translate the protocol supported by the device to a standard protocol. This wrapper is placed either on the device side or the middleware aspect. If we wish to possess direct interaction with devices, we should always place the wrapper within the middleware aspect. Devices usually have restricted capability of machine method, therefore this may be a reason to implement wrapper on the middleware aspect. In distinction, in case of indirect interaction with devices we are able to develop Associate in Nursing negotiate wrapper between the middleware and therefore the devices. The interface protocol component is accountable to permit the middleware to support each direct and indirect interaction.

2.2.7 DEVICE ABSTRACTION

This part is to blame for providing Associate in nursing abstract format to facilitate the interaction of the appliance parts with devices. This Abstraction provides syntactical and linguistics ability, which are Defined by ETSI [14] as follows: Syntactic ability is related to information formats. The Messages transferred by communication protocols should have a well-Defined syntax and cryptography format, which might be delineated by exploitation High-level transfer syntaxes like, hypertext mark-up language and XML. Semantic ability is sometimes related to the which means of the Content of message that is perceivable for human. Thus, Interoperability on this level means there's a standard Understanding among individuals on the which means of the content (Information) being changed among them. However, since public prosecutor will not communicate directly with human, linguistics ability within the context of public prosecutor is answerable of providing this common understanding for applications. Semantic ability depends on Way to give linguistics interoperability in commission destined (SOA) [15] primarily based middleware is by exploitation Devices Profile for internet Services (DPWS) [16]. During this context, every

device type refers to a distinguished service sort public prosecutor part give 2 general functionalities: (1) to raise devices to perform some practicality and (2) to outline and assemble devices DPWS uses the XML format that's shown in Code a pair of.1.Code 2.1 XML code to outline a tool.

```
<dpws:ThisModel>
  <dpws:Manufacturer>ACME Manufacturing</dpws:Manufacturer>
  <dpws:ModelName xml:lang="en-GB" >
    ColourBeam 9
  </dpws:ModelName>
  <dpws:ModelName xml:lang="en-US" >
    ColorBeam 9
  </dpws:ModelName>
</dpws:ThisModel>
</wsx:MetadataSection>
<wsx:MetadataSection
  dialect="http://docs.oasis-open.org/ws-dd/ns/dpws/2009/01/ThisDevice"
  >
  <dpws:ThisDevice>
    <dpws:FriendlyName xml:lang="en-GB" >
      ACME ColourBeam Printer
    </dpws:FriendlyName>
    <dpws:FriendlyName xml:lang="en-US" >
      ACME ColorBeam Printer
    </dpws:FriendlyName>
  </dpws:ThisDevice>
```

FIGURE. 2.2 XML code to define a device

2.2.8 Central control, Context detection & Management (CCM)

Context characterizes matters of Associate in nursing entity, which might be an area, a person or Associate in nursing object that's relevant to the user, applications and their interactions [1]. The CCM useful part is accountable to support context-aware computation that's a machine vogue that fancy account the context of the entities that move with the system. A middleware for IoT-based systems should be context-aware to figure in sensible environments [1]. Sensible environments consult with a physical world that's Richly and invisibly interlacing with sensors, actuators, displays, and Computational parts, embedded seamlessly within the everyday objects of our lives, and connected through an eternal network [17]. Context-awareness includes 2 functionalities:1) Context

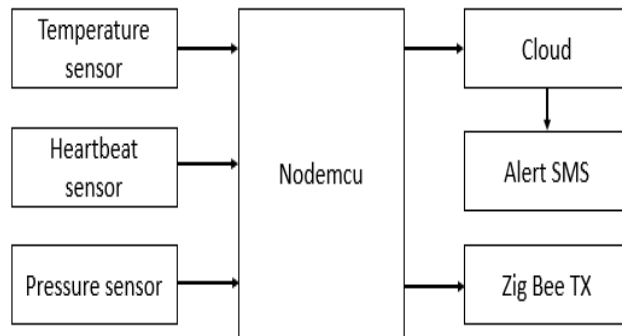
Detection, that consists of grouping information from Resources and choosing the knowledge that may have an effect On the computation.2) Context process, to use the gathered info to perform a Task or build a call.

2.2.9 Application abstraction

This useful part provides Associate in nursing interface for each high-level Applications and end-users to move with devices. As an example, this Interface is a quiet interface or is enforced with some Query-based language. A. Malatras. ET. Al. proposes a SOA-based middleware to perform information Management and information observation services [18]. This middleware uses a Restful interface to facilitate the interaction of high-level applications with Sensors, which might communicate with Wireless device Network (WSN) Through the hypertext transfer protocol operations: (1) GET to issue a question on Associate in Nursing existing resource, (2) DELETE to get rid of Associate in Nursing existing resource, (3) POST to make a New resource, Associate in nursing (4) place to update an existing resource. As an example, a client application gets the results of a site task by causation a GET request through the URL: hypertext transfer protocol: `///REST/ /Domain task Result/id'`.In this URI that regard to regard to results in a singular result. In the Tiny middleware [19], Associate in nursing end-user will use a question language to Interact with devices. As an example, a user will send the subsequent question to get the id of a device (nodeid) close and temperatures that square measure detected by This device throughout the past ten before capital punishment the query: `SELECT nodeid, temp FROM sensors SAMPLE amount 1s FOR 10s`

2.10 Block Diagram

Transmitter section



Receiver section

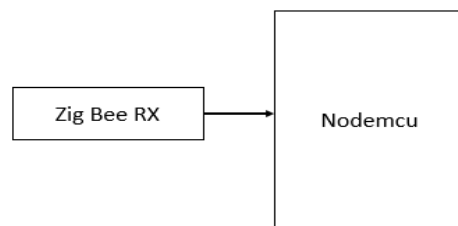


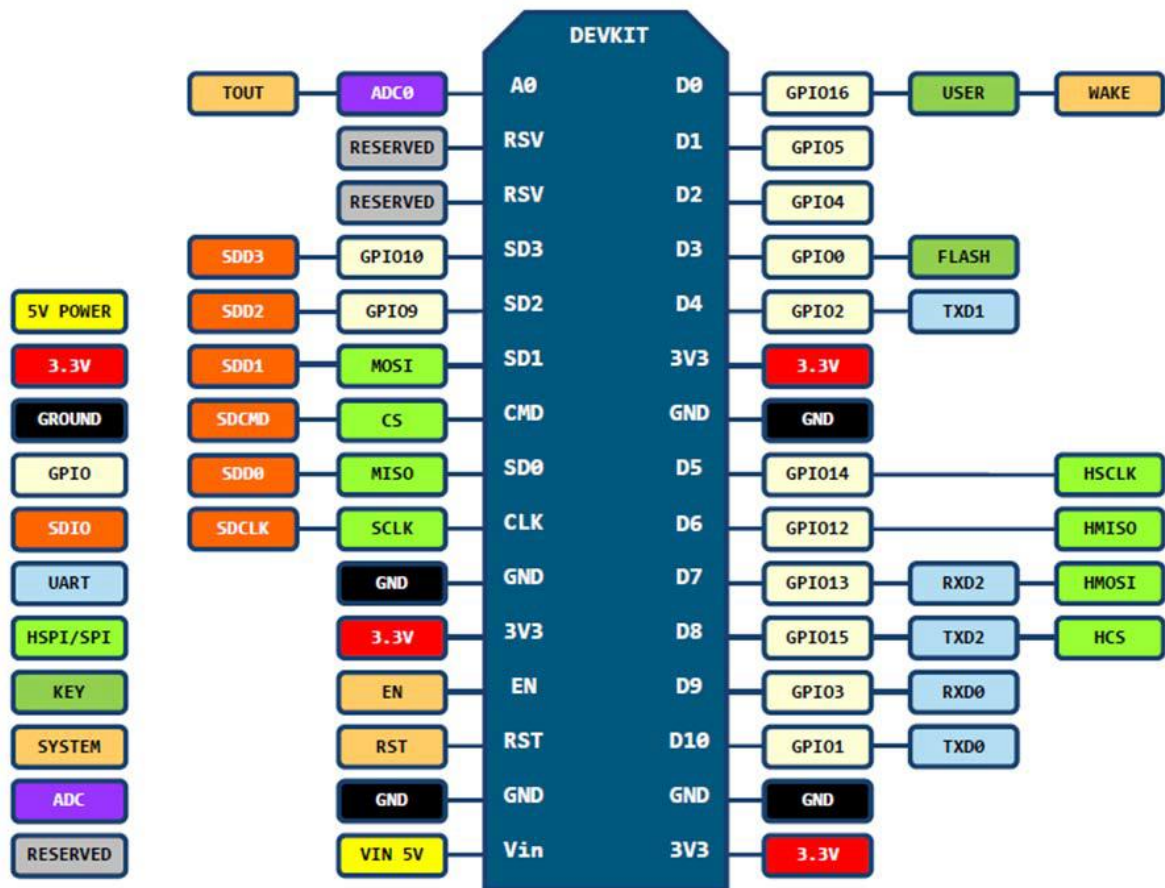
FIGURE.2.3 Block Diagram

CHAPTER 3

SOFTWARE REQUIREMENTS

3.1 MAXIMUM CONCURRENT TCP CONNECTIONS: 5.

3.2 PIN DEFINITION



D0(GPI016) can only be used as gpio read/write, no interrupt supported, no pwm/i2c/ow supported.

FIGURE.3.1 Pin Diagram of ESP866

3.3 SOFTWARE REQUIRED COMPONENTS

Arduino IDE

Embedded C

3.3 USING ARDUINO IDE

The most basic thanks to use the ESP8266 module is to use serial

Commands, because the chip is essentially a Wi-Fi/Serial transceiver. However, this is not convenient. What we tend to advocate is mistreatment the terribly cool ArduinoESP8266 project, that could be a changed version of the Arduino IDE that you just Need to install on your pc. This makes it terribly convenient to use the ESP8266 chip as we are going to be mistreatment the well-known Arduino IDE. Following the below step to put in ESP8266 library to figure in Arduino IDE atmosphere.

3.4 INSTALL THE ESP8266 BOARD PACKAGE

Enter `http://arduino.esp8266.com/stable/package_esp8266com_index.json` into Additional Board Manager URLs field in the Arduino v1.6.4+ preferences.

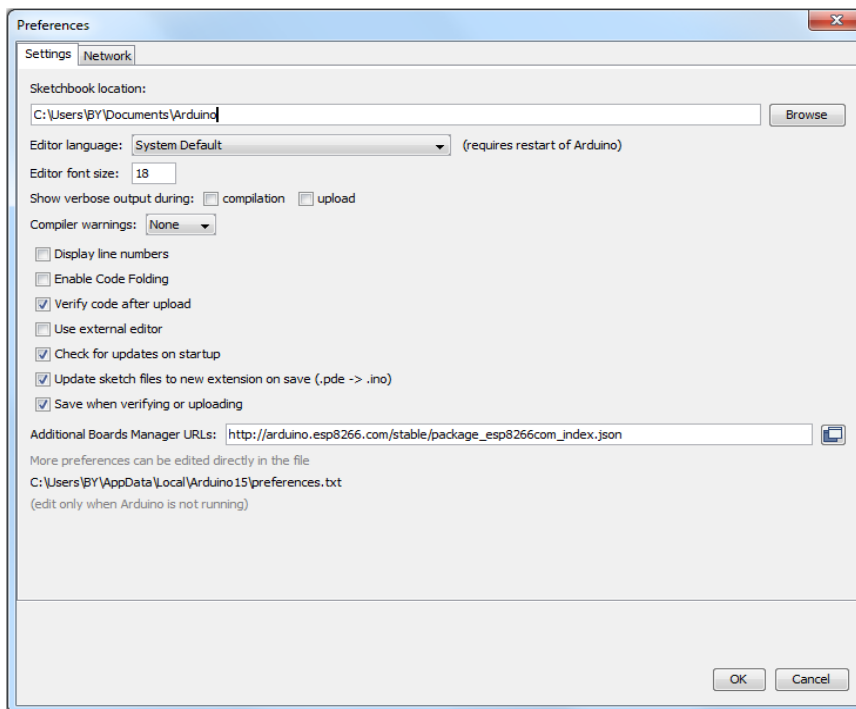


FIGURE.3.2 Preferences

Click 'File' -> 'Preferences' to access this panel. Next, use the Board manager to install the ESP8266 package.

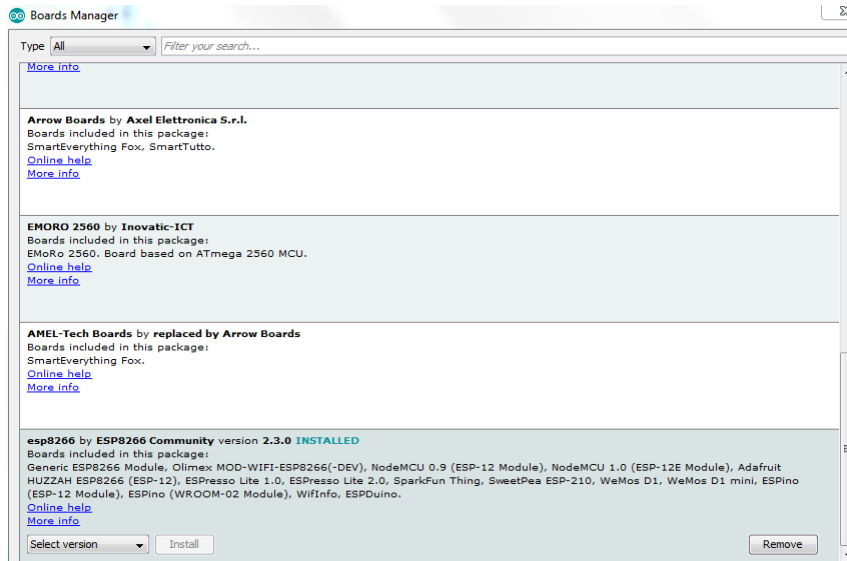


FIGURE 3.3 Board Manager

Click 'Tools' -> 'Board:' -> 'Board Manager...' to access this panel. Scroll Down to 'esp8266 by ESP8266 Community' and click on "Install" button to Install the ESP8266 library package. Once installation completed, close and Re-open Arduino IDE for ESP8266 library to require result.\

3.5 Setup ESP8266 SUP

When you've restarted Arduino IDE, select 'Generic ESP8266 Module' from the 'Tools' -> 'Board:' dropdown menu

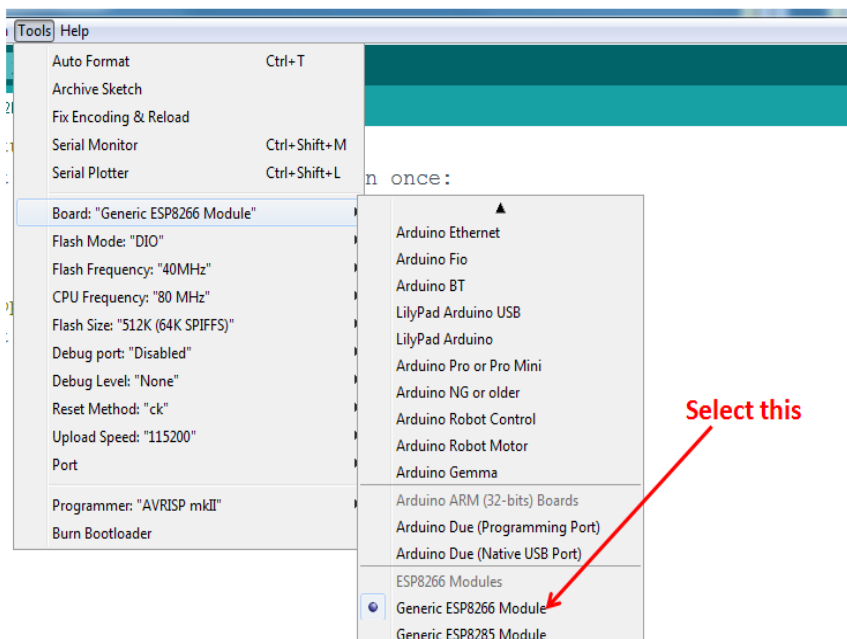


FIGURE.3.4Tools

Select 80 MHz as the CPU frequency (you can try 160 MHz over clock later)

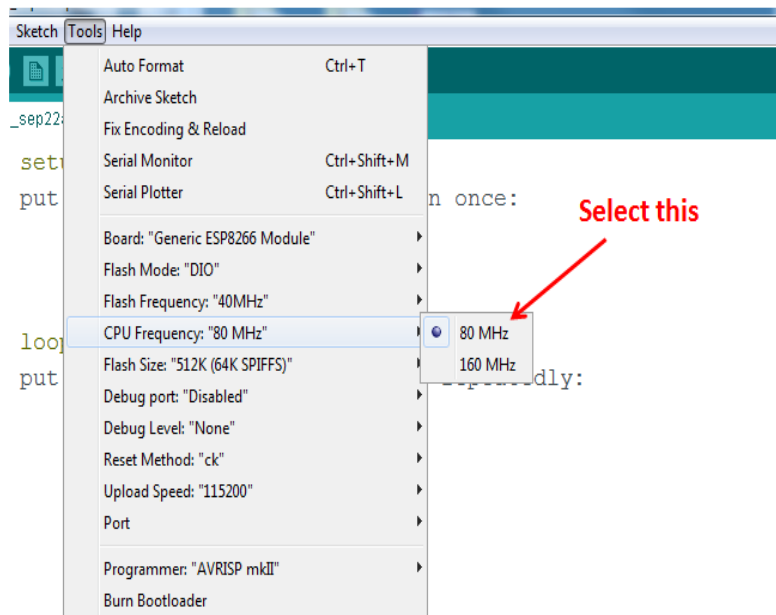


FIGURE.3.5 CPU Frequency

Select '115200' baud upload speed is a good place to start - later on you can try higher speeds but 115200 is a good safe place to start.

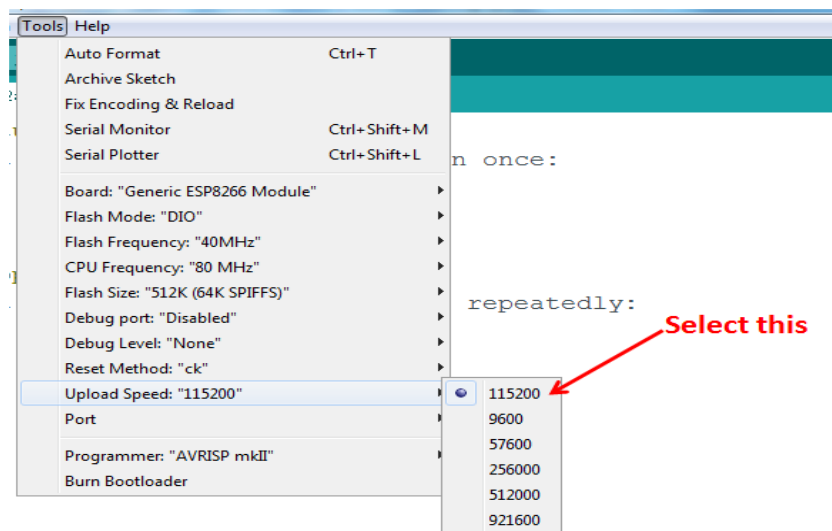


FIGURE.3.6 Baud Rate

Go to your Windows 'Device Manager' to search out that Com Port 'USB- Serial CH340' is allotted to. Choose the matching COM/serial port for your CH340 USB Serial Interface.

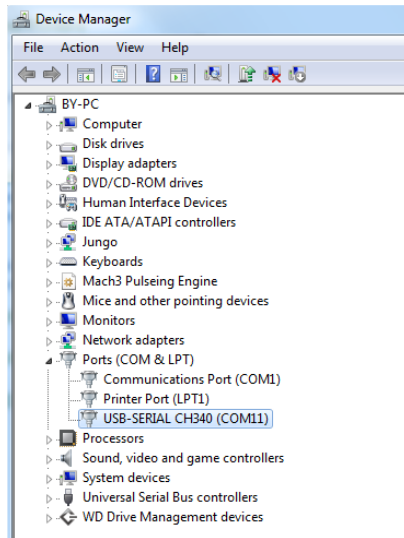


FIGURE.3.7 Device Manager

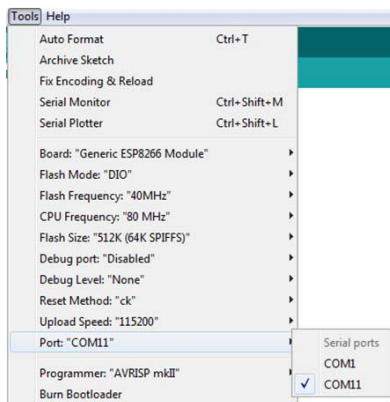


FIGURE.3.8 Port

3.6 BLINK TEST

We'll begin with the easy blink take a look at. Enter this into the sketch window (And save since you'll need to). Connect a semiconductor diode as shown in Figure3-1. Now you'll have to place the board into boot load mode. You'll need to try to this before every transfer. There's no timeout for boot load mode, thus you do not have to rush!

- Hold down the 'Flash' button.
- While holding down 'Flash', press the 'RST' button.
- Release 'RST', then release 'Flash'

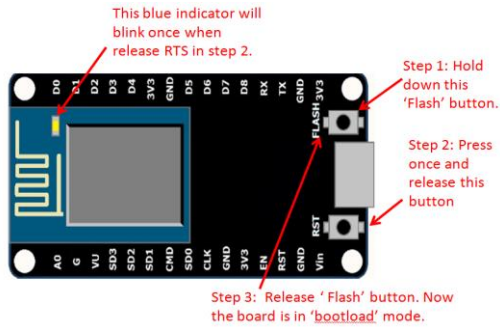


FIGURE 3.9 Bootload Method

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

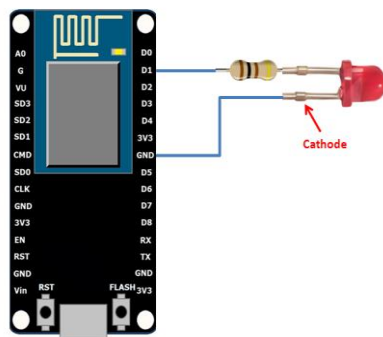


FIGURE 3.10 ESP8266 with LED

Connecting Diagram for the Blink test

```

binoly [Arduino 1.6.7]
File Edit Sketch Tools Help

binoly
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 .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

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 22332 bytes from C:\Users\BT\AppData\Local\Temp\build7f3357d9ec338fa2e4042884da
..... [ 36% ]
.....

```

FIGURE.3.11 Blink test code

3.7 FLASHING NODEMCU FIRMWARE ON THE ESP8266 USING WINDOWS

NodeMCU could be a code that permits you to program the ESP8266 modules With LUA script. And you'll notice it terribly just like the approach you program

your Arduino. With simply some lines of code you'll be able to establish a wireless local area network affiliation, Control the ESP8266 GPIOs, turning your ESP8266 into an online server and a lot more. During this tutorial we have a tendency to square measure about to use another ESP8266 module with Pin header adapter board that is board friendly.

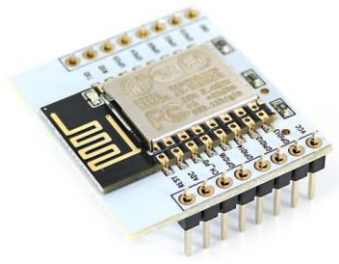


FIGURE 3.12 ESP8266 Module Breadboard Friendly with Header Connection
3.8 PIN ASSIGNMENT

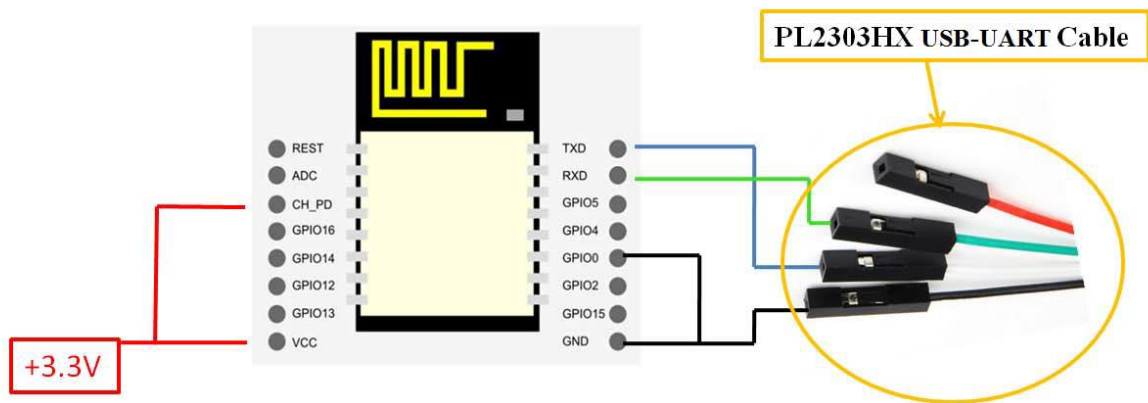


FIGURE.3.13 ESP8266 Pins

CHAPTER 4

HARDWARE RESULTS

4.1 HARDWARE REQUIREMENTS

4.2 HARDWARE REQUIRED COMPONENTS

Nodemcu

Temperature sensing element

Heartbeat sensing element

Pressure sensing element

Zig Bee combines (TX & RX)

4.1.1 HARDWARE SETUP DETAILS:

ESP8266 Nodemcu Wi-Fi Devkit



FIGURE.4.1 NodeMCU

Specification:

- Voltage: 3.3V.
- Wi-Fi Direct (P2P), soft-AP.
- Current consumption: 10uA~170mA.
- Flash memory attachable: 16MB max (512K normal).

- Processor: Ten silica L106 32-bit.
- Processor speed: 80~160MHz.
- RAM: 32K + 80K.
- GPIOs: 17 (multiplexed with other functions).
- Analog to Digital: 1 input with 1024 step resolution. •+19.5dBm output power in 802.11b mode
- 802.11 support: b/g/n.

4.3 HEARTBEAT DEVICE

A person's heartbeat is that the sound of the valves in his/ her's heart getting or increasing as they force blood from one region to a different. the amount of times the center beats per minute (BPM), is that the heart beat rate and therefore the beat of the center that may be felt in any artery that lies getting ready to the skin is that the pulse.

4.3.1 Manual Way

Heart beat will be checked manually by checking one's pulses at 2 Locations- corpus (the radial pulse) and therefore the neck (carotid pulse). The procedure is to put the two fingers (index and middle finger) on the corpus (or neck below the windpipe) and count variety [the amount [the quantity} of pulses for thirty seconds and so multiplying that number by a pair of to urge The heart beat rate. But pressure ough element temperature sensing element is associate microcircuit, and may thus embody in depth signal process electronic equipment among identical package because the sensing element. There ought no to add compensation circuits for temperature sensing element lcs



FIGURE. 4.2 Heartbeat Sensor

4.4 TEMPERATURE SENSOR

Temperature is that the most often-measured environmental amount. This may well be expected since most physical, electronic, chemical, mechanical, and biological systems are plagued by temperature. Sure chemical reactions, biological processes, and even electronic circuits perform best at intervals restricted temperature ranges. Temperature is one in all the foremost unremarkably measured variables and it's thus not shocking that there are some ways of sensing it. Temperature sensing may be done either through direct contact with the Heating supply, or remotely, while not direct contact with the supply victimization radiated energy instead. There are a good style of temperature sensors on the market nowadays, as well as Thermocouples, Resistance Temperature Detectors (RTDs), Thermistors, Infrared, and Semiconductor Sensors.

4.5 THERMOCOUPLE

It is a type of templet is a kind of temperature device that is created by connection 2 dissimilar metals at one end. The joined finish is spoken because the HOT JUNCTION. The opposite finish of those dissimilar metals is spoken because the COLD finish or COLD JUNCTION. The cold junction is really fashioned at the last purpose of thermometer material. If there's a difference in temperature between the recent junction and cold junction, a tiny low voltage is created. This voltage is spoken as associate electromotive force (electro-motive force) and may be measured and successively wont to indicate temperature.

4.6 THERMISTORS

Similar to the RTD, the semiconductor device may be a temperature sensing device whose resistance changes with temperature. Thermistors, however, are made up of semiconductor Materials. Resistance is set within the same manner because the RTD, however thermistors exhibit a extremely nonlinear resistance vs. temperature curve. Thus, within the thermistors operating vary we will see an outsized resistance amendment for a awfully little natural process. This makes for a sensitive device, ideal for set-point applications.

4.7 SEMICONDUCTOR SENSORS

They are classified into differing kinds like Voltage output, Current output, Digital Output, Resistance output semiconductor and Diode temperature sensors. Fashionable semiconductor temperature sensors supply high accuracy associated high one-dimensionality over an operative varies of about 55°C to $+150^{\circ}\text{C}$. Internal amplifiers will scale the output to convenient values, such as $10\text{mV}/^{\circ}\text{C}$. They're conjointly helpful in cold-junction compensation circuits for wide Temperature vary thermocouples. Short details concerning this kind of temperature device are given below.

4.8 SENSOR ICS

There ar a good type of temperature device ICs that ar on the market to alter the broadest doable vary of temperature observation challenges. These semiconductor temperature sensors dissent considerably from the higher than mentioned varieties in an exceedingly few important ways. The primary is working temperature vary. A temperature device IC will operate over The nominal IC temperatures vary of -55°C to $+150^{\circ}\text{C}$. The second major distinction is Functionality.

A semiconductor temperature sensing element is Associate in nursing computer circuit, and may thus embrace intensive Signal process electronic equipment inside constant package because the sensing element. There's no have to be compelled to add compensation circuits for temperature sensing element Ics. a number of these ar analogue circuits With either voltage or current output. Others mix analogue-sensing circuits with voltage comparators to supply alert functions. Another sensing element ICs mix analogue- Sensing electronic equipment with digital input/output and management registers, creating them a perfect Solution for microprocessor-based systems. Digital output sensing element typically contains a temperature sensing element, data converter (ADC), a two-wire digital interface and registers for dominant the IC's operation. Temperature is unendingly measured and may be browse at any time. If desired, the host processor will instruct the sensing element to observe temperature Associate in

nursing take an output pin high (or low) if temperature exceeds a programmed limit. Lower threshold temperature may also be programmed and therefore the host may be notified once temperature has born below this Threshold. Thus, digital output sensing element may be used for reliable temperature watching in Microprocessor-based systems.

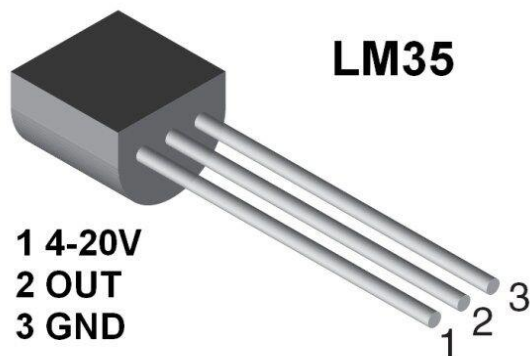


FIGURE.4.3 LM358 Sensor

4.9 PRESSURE SENSOR

A pressure sensing element measures pressure, usually of gases or liquids. Pressure is an expression of the force needed to prevent a fluid from increasing, and is usually declared in terms of force per unit space. A pressure sensing element typically acts as a transducer; it generates a sign as a perform of the pressure obligatory. For the needs of his text, such a sign is electrical .Pressure sensors ar used for management and watching in thousands of every day applications. Pressure sensors may also be wont to indirectly measure different variables like fluid/gas flow, speed, water level, and Altitude. Pressure sensors will or else be known as pressure Transducers, pressure transmitters, pressure senders, pressure Indicators, piezometers and manometers, among different names. Pressure sensors will vary drastically in technology, design, performance, Application quality and value. A conservative estimate would be that there may be over fifty technologies and a minimum of three hundred corporations creating pressure Sensors worldwide. There is conjointly a class of pressure sensors that ar designed to live in an exceedingly dynamic mode for capturing terribly high speed changes in pressure. Example applications for this

Kind of sensing element would be within the measure of combustion Pressure in an exceeding engine cylinder or in a turbine. These sensors are commonly factory-made out of electricity materials like quartz. Some pressure sensors, like those found in some traffic social control cameras, perform in an exceedingly binary (off/on) manner, i.e., once pressure is applied to a pressure sensing element, the sensing element acts to complete or break a circuit in an electrical device. These kinds of sensors also are called a pressure switch.

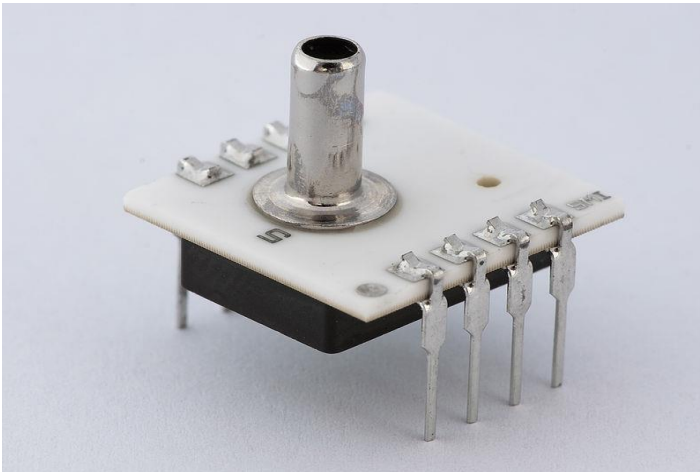


FIGURE.4.4 Pressure Sensor



FIGURE.4.5 Zigbee Transmitter

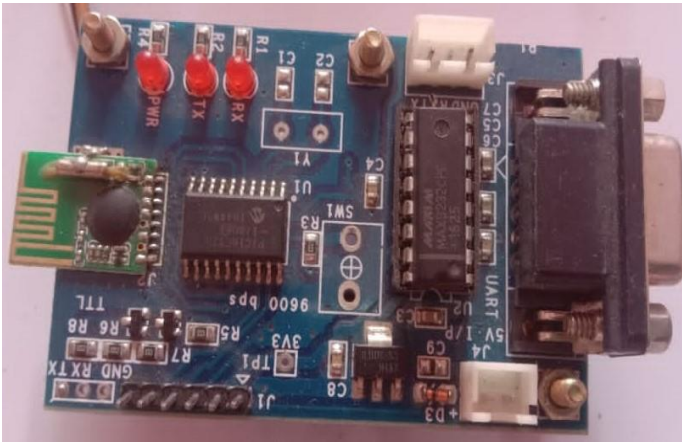


FIGURE.4.6 Zigbee Receiver



FIGURE.4.7 Arduino Board

4.10 UBIDOTS EXPLORER

Welcome to the Ubidots REST API hardware docs. Here you'd reference How to send or retrieve knowledge from your hardware devices mistreatment our supported Communication protocols: protocol, MQTT and TCP/UDP. The purpose of this section is to assist you perceive what happens within the Backstage once communication with Ubidots, therefore you'll replicate this in your Firmware. For this reason, we tend to avoid the employment of examples Mistreatment libraries. However, if you'd prefer to use one in all our libraries (Python, C, and more), checkout our compatible devices and API shoppers sections.

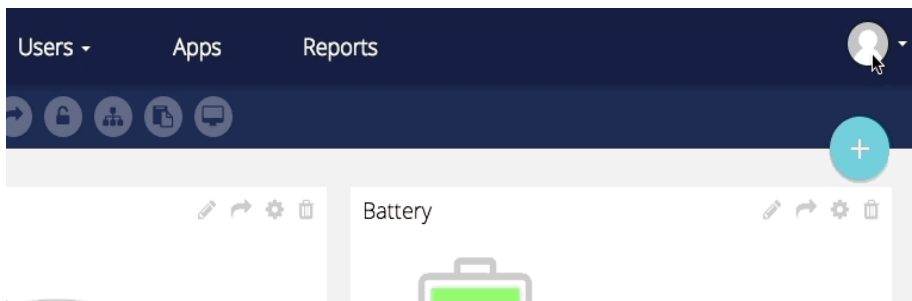


FIGURE.4.8 UBIDOTS

4.11 TCP URLS

API accesses are often over plain transmission control protocol or secure transmission control protocol with TLS, mistreatment the subsequent Endpoints supported your Ubidots Account type

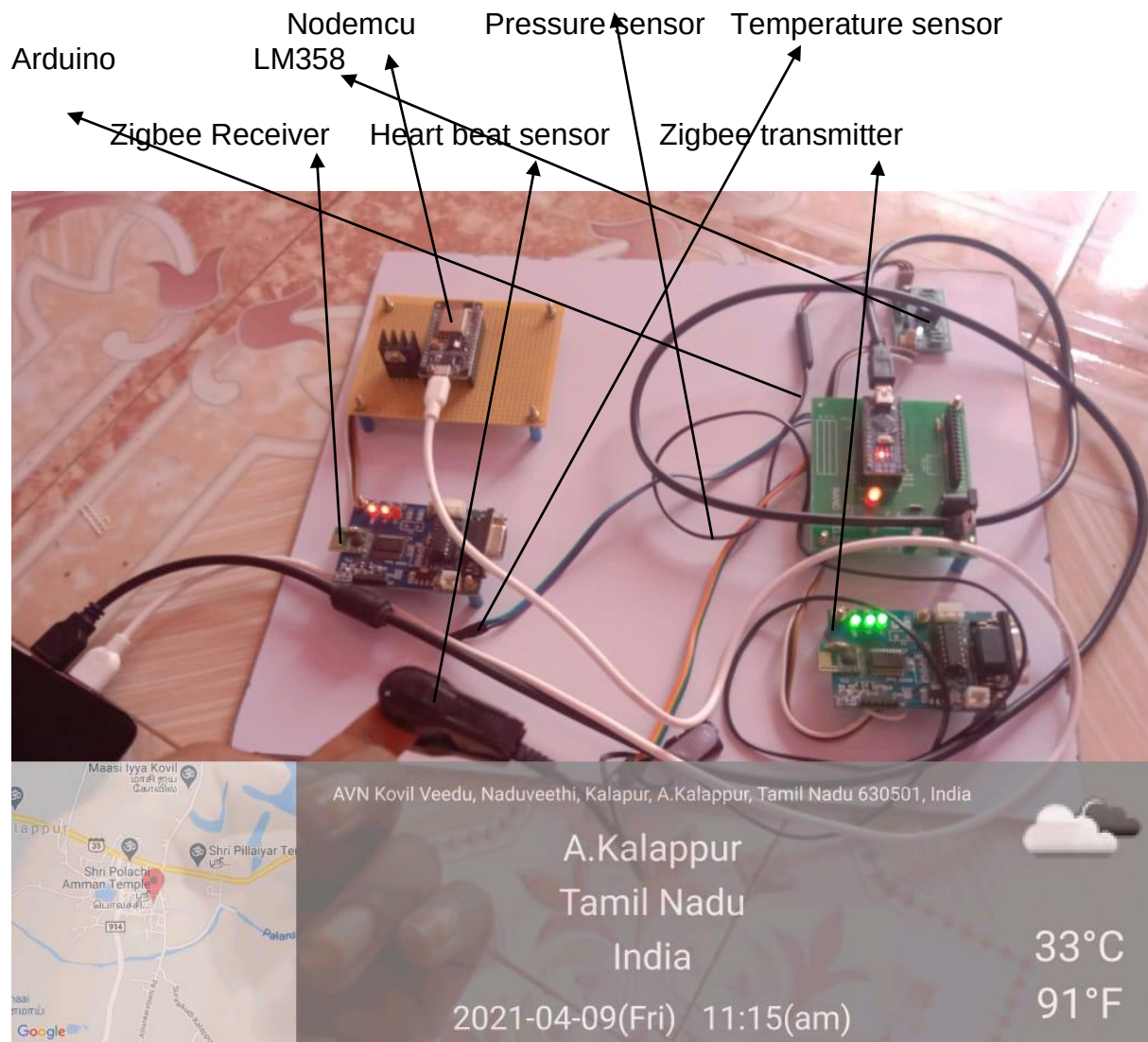
TABLE 4.1 Non-TLS

Ubidots Account	Endpoint	Port
Educational	things.ubidots.com	9012
Industrial	industrial.api.ubidots.com	9012

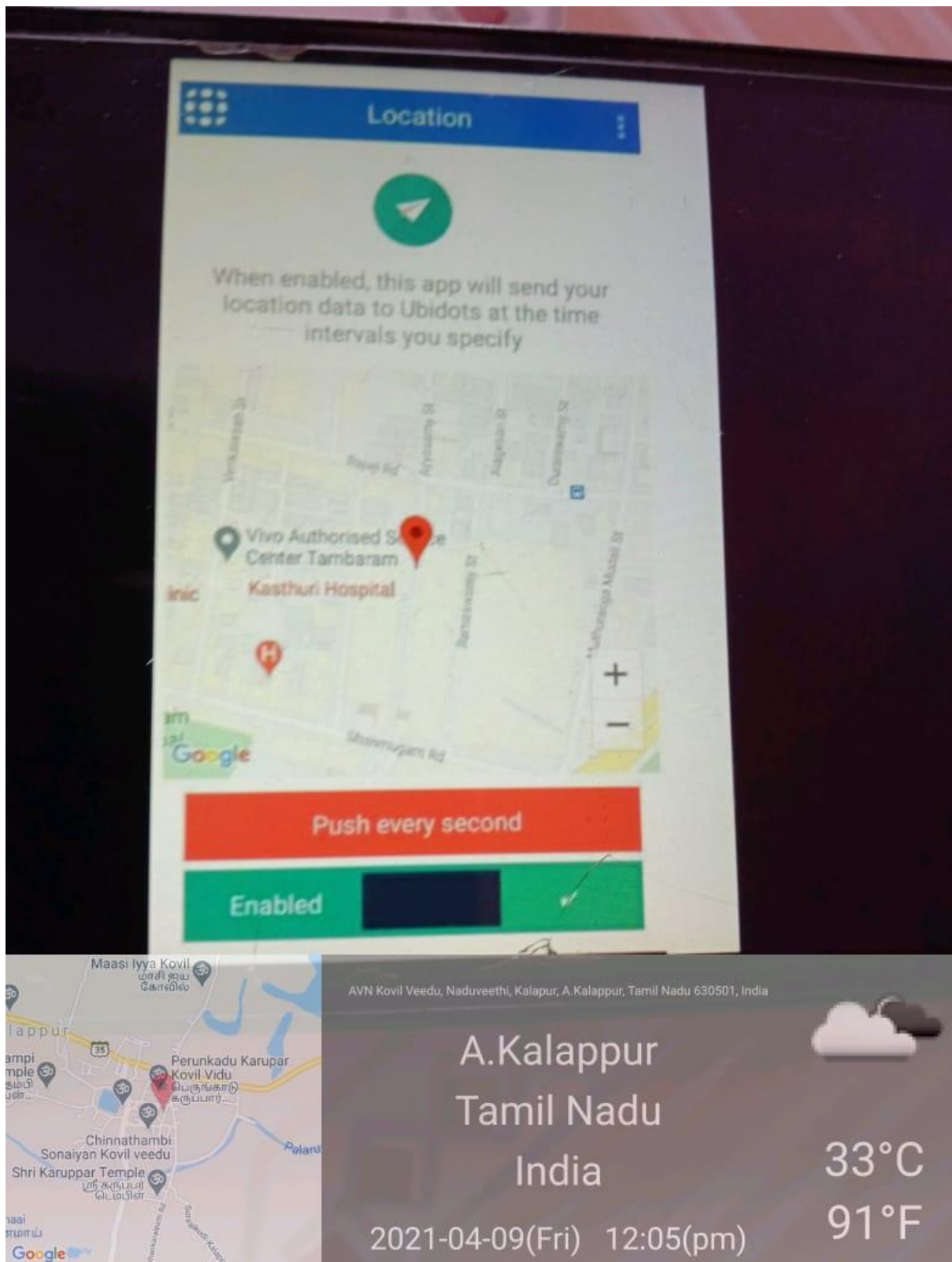
TABLE 4.2 TLS

Ubidots Account	Endpoint	Port
Educational	things.ubidots.com	Not Available
Industrial	industrial.api.ubidots.com	9812

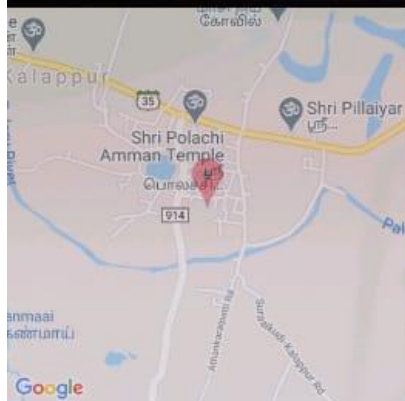
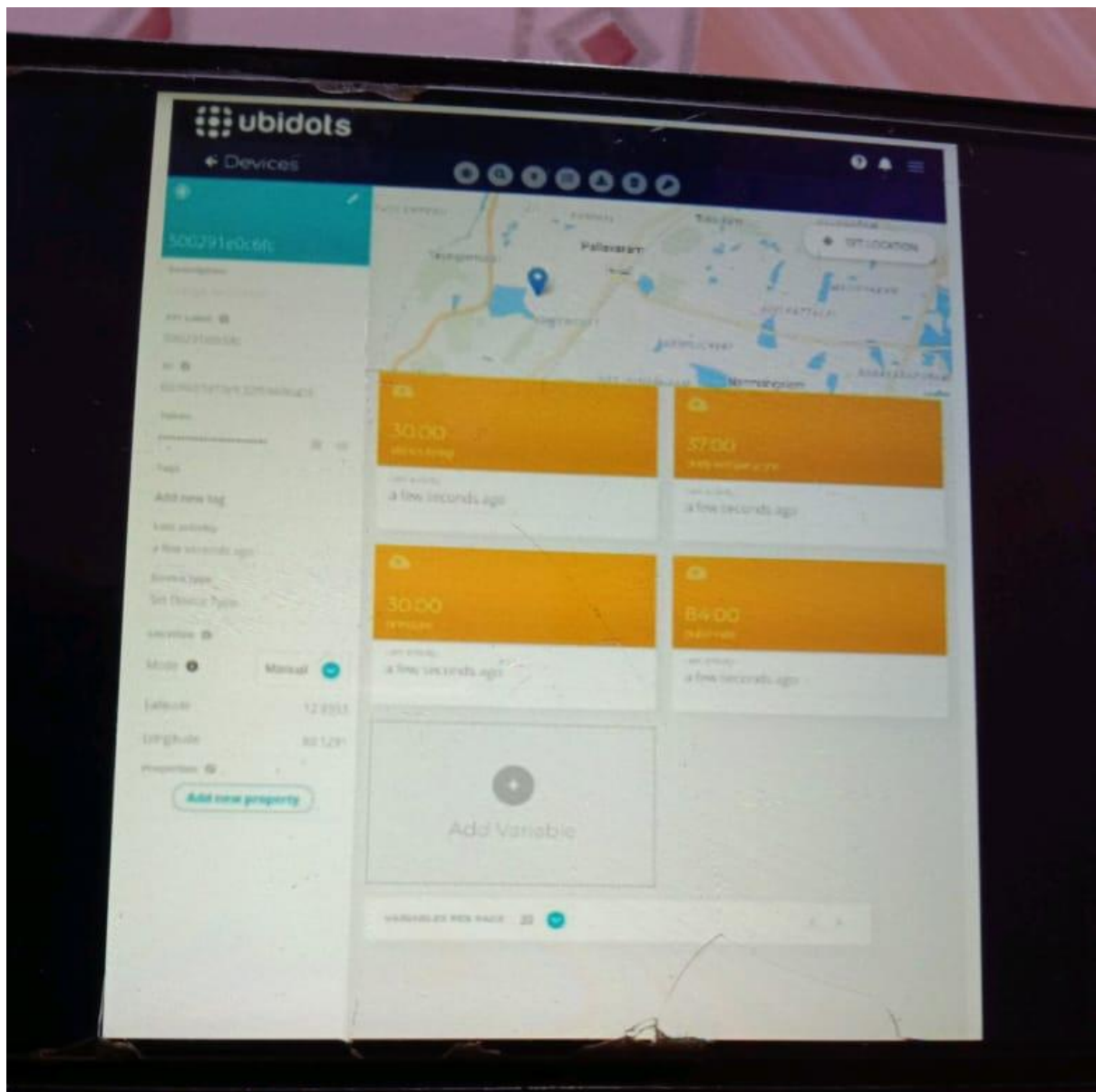
RESULT:



LOCATION:



UBIDOTSVARIABLES:



South St, Kattappalli, A. Kalappur, Tamil Nadu 630501, India

A. Kalappur
Tamil Nadu
India



33°C

91°F

2021-04-09(Fri) 12:01(pm)

CHAPTER 5

CONCLUSION

5.1 CONCLUSION:

The system projected won't solely alert the fishermen however conjointly Carries the data to the management station and conjointly notifies the relations through the GSM system. The system devise will embrace a water-proof casing such That the circuit isn't vulnerable to any injury. This model proves to challenge the already existing model that simply uses a GPS device to trace the border and build the boat move backwards as motor. Just in case the boat is lost thanks to rough conditions of the ocean (or) intentional crossing of the border is finished, then the data is immediately sent to the border security and also the necessary action is taken.

- [1] Arunvijay, D. and Yuvaraj, E. (2014). "Design of border alert system for Fishermen mistreatment gps." International Journal of Students' analysis in Technology & Management, 2(2), 67–70.
- [2] Bharavi, U. and Sukesh, R. M. (2017). "Design and development of Gsm and gps chase module." Recent Trends in natural philosophy, data & Communication Technology (RTEICT), 2017 2d IEEE International Conference on, IEEE. 283–288.
- [3] Bilgic, H. T. and Alkar, A. Z. (2011). "A secure chase system for gps-Enabled mobile phones." data Technology and transmission (ICIM), 2011 International Conference on, IEEE. 1–5
- [4] Choi, S.-G., Chimeddorj, G., Altankhuyag, B., and Dunkhorol, S. (2016). "Design and implementation of a gps-enabled mobile wireless detector Network for eutherian herd chase in Mongolian unsettled social." Strategic Technology (IFOST), 2016 eleventh International Forum on, IEEE. 423–427.
- [5] Dhinakaran, K., Srinath, S., Sriram, S., and Venkateshwar, R. (2017). "Gps based mostly chase system for transit objects." Science Technology Engineering Management (ICONSTEM), 2017 Third International Conference on, IEEE. 194–201.
- [6] Hofmann-Wellenhof, B., Lichtenberger, H., and Collins, J. (2012). Global Positioning system: theory and observe. Springer Science & Business Media

