



# IOT BASED GSM AND GPS BASED FISHERMEN TRACKING AND ALERT SYSTEM

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## ABSTRACT:

In our day-to-day life we hear a lot of news about fishermen, once out on the sea the fishermen are subjected to various oceanographic and climatic conditions. The fishermen are unable to get the help from the government during emergency situations. This project gives them a solution to get rid of those problems. Neo 7m GPS module is interfaced to monitor the location of the boat all the time. We have also fed the location of the islands in the particular zone, so that they can land safely when the cyclone is severe. We can also use a GSM modules to transfer the message from the land mass or the coastal guards to the fishermen in the boat. In future, ISRO is planning to make marine communication successful with the help of launching a satellite. This helps to communicate their nearby land location to the rescue team or their family members.

## INTRODUCTION :

Fishing is one of the most dangerous profession in this world because they are subjected to various oceanographic and climatic conditions and the fishing activity is not being done peacefully. The fishermen are arrested, or shot, by the neighbour countries and they are died due to storm and cyclone. To develop an effective tool to provide the safe navigation system for commercial vessels through waterways is vital thing globally. Safety

studies have found that majority of them work at risk. The space research organizations taking this issue into consideration, and they are planning to launch a satellite for the betterment of marine communication. This project will be a solution for border crossing problems, cyclone detection and land safely in the nearby islands.

## LITERATURE SURVEY :

The Design of a Boat Safety and Accident Prevention System, developed in Kuwait by A. Al-Ramadhan, B. Al-Sahen, M. Ayesh, and S. E. Esmaeili, includes a radar that acts as an obstacle detector placed in front of the boat, which will help sailors avoid an underwater obstacle, reducing collision and preventing boat accidents. Their technology is capable of triggering an SOS in addition to avoiding an undesired impediment. In the event of an emergency, send a message to the coast guard with your GPS position. One of the most important features of this system is that if the obstacle sensor detects an obstacle, it will issue a warning to the sailor to change the boat's direction, and if the sailor does not change the direction within three warnings, the system will automatically change the boat's direction. This is excellent work on boat safety, but it is too expensive for Indian fisherman. For example, a radar and obstacle detector system built in Kuwait costs over 540 dollars, which is far too expensive for our fishermen. Furthermore, this system was designed for much bigger boats, not for Indian fishermen. As a result, we can state that

our gadget is far less expensive for Indian fisherman. Leigh McCue's article "Putting vessel motion research into the hands of operators" The Small Craft Motion Program (SCraMP) for the iPhone Operating System was published in 2011. (iOS). This software is designed to provide low-budget operators, particularly fishermen, with essential information about the condition of their fishing vessels. The accelerometer, gyroscope, location capabilities, and CPU of the iPhone are all used. This programme allows you to measure the motion of a ship. Despite the fact that the programme is available for free in Apple's app store, using it needs the purchase of an iPhone, which is fairly costly for an Indian fisherman. Measuring movements at many locations on the vessel at the same time would necessitate the use of multiple iPhones, as well as some effort to make the iPhone waterproof to prevent damage during operation, which would keep the cost quite high.

### EXISTING SYSTEM:

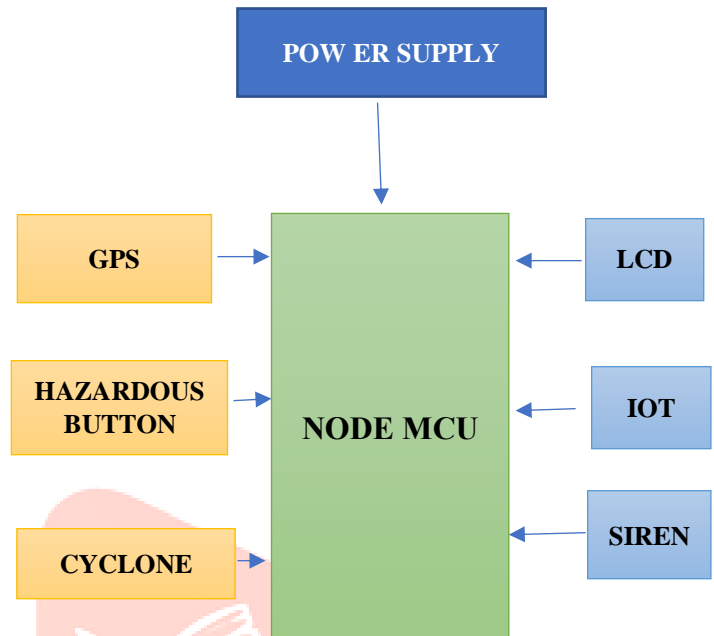
There is a central communication system to monitor the border between two countries and system intimates the command when fisherman crosses the border and provide an alert signal to them. The automatic border crossing and shipping system receives the exact location of the ship and broadcast the signal using antenna. The broadcasted signal is send to PIC Microcontroller using RS232. The microcontroller stores the current location and signal is send to Zigbee transmitter module. So that the location of ship is acquired by zigbee receiver module and send to the PIC 16F877A controller[2]. The PIC controller transmits the information to the GSM using MAX232. Also the information is passed to the Mobile phone. Then it alerts the fisherman that they reached the border.

### PROPOSED SYSTEM:

In proposed system, we are using Nodemcu, GSM module, GPS module and Wifi are used for fisherman communication. In this system embedded based model is developed to save the fishermen life and to avoid the problem between two countries. Each fisherman who is sailing in the boat has this device. This device consists of GPS receiver which continuously receives the GPS location of the fishermen. The GPS location is stored in a cloud storage which is monitored by the control room. The particular layer land that is

border level is predefined and it is stored in the microcontroller memory. A hazardous button is placed in this system, whenever fisherman pressed the button a message will be sent to the control room with location. If any cyclone occurs, control room will be alerted through message.

### BLOCK DIAGRAM:

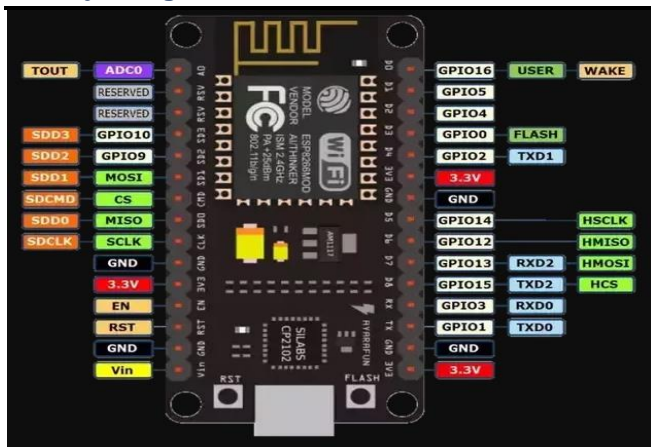


### HARDWARE DESCRIPTION:

#### NODE MCU MICROCONTROLLER

Node MCU is an open source LUA based firmware developed for ESP8266 WIFI chip. Node MCU firmware comes with ESP8266 Development board/kit i.e Node MCU Development board. Since Node MCU is open source platform, their hardware design is open for edit/modify/build. ESP8266 is Wi-Fi enabled system on chip (SoC) module developed by Espressif system. It is mostly used for development of IoT (Internet of Things) embedded application.





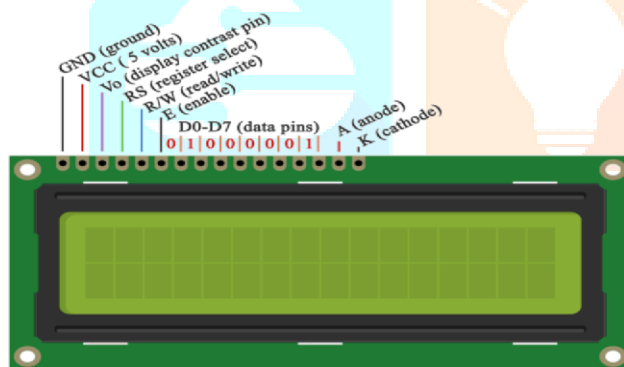
**IoT:**

The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools. With more than 7 billion connected IoT devices today, experts are expecting this number to grow to 10 billion by 2020 and 22 billion by 2025.

**FLOAT SENSOR:**

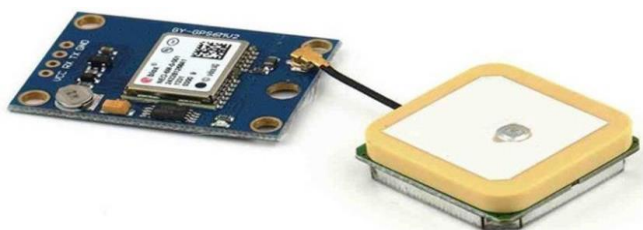
**LCD:**

A liquid crystal display (LCD) is a thin, flat display device made up of any number of colour or monochrome pixels arrayed in front of a light source or reflector. A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display.



**GPS Module:**

Global Positioning System (GPS) is a satellite-based system that uses satellites and ground stations to measure and compute its position on Earth. GPS is also known as Navigation System with Time and Ranging (NAVSTAR) GPS. GPS receiver needs to receive data from at least 4 satellites for accuracy purpose.



A float switch is a type of level sensor, a device used to detect the level of liquid within a tank. The switch may be used to control a pump, as an indicator, an alarm, or to control other devices. Here in these project we are using float sensor to find cyclone in marine by detecting water level

**HAZARDOUS BUTTON:**

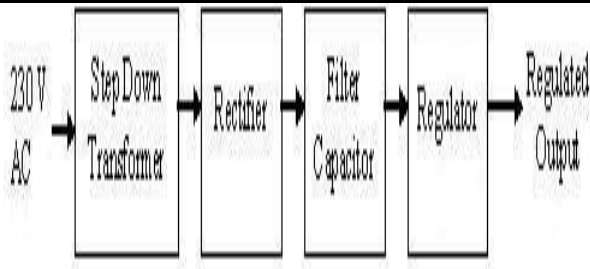


These button is used to press when in emergency situations and it is linked with nodemcu and iot and sends alert message to mobile

**POWER SUPPLY:**

All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains su





**SIREN:**

An electronic siren is an electronic device intended for use as a warning device for. It can emit a typical, loud fluctuating sound. Stationary sirens serve to provide early mass public warning against or during natural disasters, fires, industrial accidents, or to sound air raid or chemical alerts at the times of war.

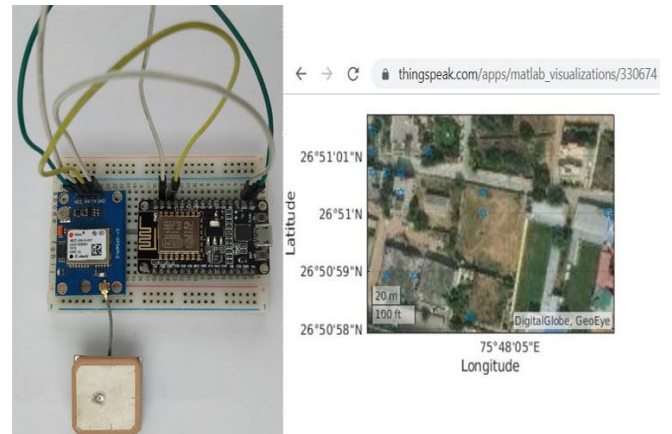


**WORKING PRINCIPLE:**

we are using Nodemcu ,GSM module,GPS module and Wifi are used for fisher man communication.In this system embedded based model is developed to save the fishermen life and to avoid the problem between two countries.Each fisherman who is sailing in the boat has this device. This device consists of GPS receiver which continuously receives the GPS location of the fishermen. The GPS location is stored in a cloud storage which is monitored by the control room. The particular layer land that is border level is predefined and it is stored in the microcontroller memory. A hazardous button is placed in this system,whenever fisher man pressed the button a message will be sent to the control room with location.If any cyclone occurs,control room will be alerted through message.Ever wondered how your phone software pinpoints your location while driving using GPS? The answer to this is that a small GPS module embedded in your phone communicates with a network of satellites to determine the location of your phone. In this project, we are going to understand how a GPS module works, and we will get acquainted with one of the popular GPS receiver module called NEO 6M, this module differs in size from the one used in mobile phones but the working is same. By using

the information provided by the GPS receiver module and the Thingspeak IoT platform, we will try to plot the data on the graph. In addition to this, we will also visualize the location on the satellite view map by generating a URL using the inbuild function in the Thingspeak- Matlab visualization (needs coding, which is explained in the code explanation section). By using this URL, anyone from any browser can track the location of the GPS device to which it is attached.

**RESULTS:**



**Thingspeak Channel created successfully**

**GPS tracking**

Channel ID: 993328  
 Author: mwa0000017021407  
 Access: Private

Private View Public View Channel Settings Sharing API Keys Da

**Channel Settings**

Percentage complete 50%

Channel ID 993328

Name GPS tracking

Description to find the location using Neo 6M

Field 1 Latitude

Field 2 longitude

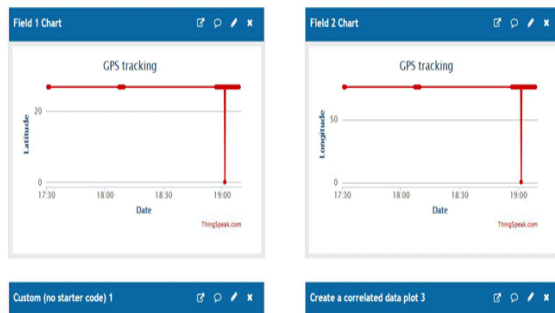
Field 3

Field 4

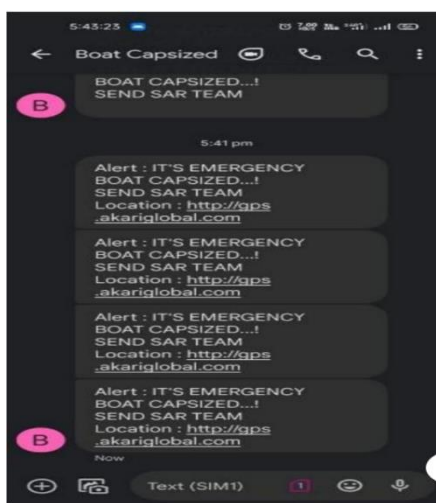
**Thing speak App Tracking Location from GPS**

## Channel Stats

Created: 4 days ago  
 Last entry: about 23 hours ago  
 Entries: 930



After completing Thingspeak Account setup Successfully as shown above its ready to give notifications to our mobile phone about system setup and Emergency alerts to mobile



## APPLICATIONS:

Used in marine applications  
 In NAVY For Security Purposes  
 Safety For fishermen in marine

## FUTURE SCOPE:

The system with Satellite communication improves longrange fishing activities and works out of cellular coverage and will give a wide range of coverage. A further prediction of wave activity with two-way voice communication which shares the voice message from the shore to the vessel and vessel to shore makes faster recuse of fisherman if any incident happens. This will help in introducing the latest technologies to the fishers and make safer coastal fishing activities for the local fisherman communities and improvement in surveillance.

## CONCLUSION:

Local fishermen can afford to have the device installed in their boats. Fishermen are the most

susceptible during a crisis since they have absolutely no communication technology onboard that can bring them aid on their location during an emergency. The suggested solution intends to protect fishermen's safety by employing GPS and GSM technologies in conjunction with the Internet of Things to keep a constant eye on the fishing vessel. According to our evaluation, our system identifies location with high precision and provides data in a matter of seconds, so in the event of a crisis, it will be able to rapidly send a distress signal to the search and rescue team with their position. The suggested system would allow the turnover to be automatically detected, and it will be able to connect with the coast guard or SAR team in the event of an emergency. As a result, the proposed system will help save the lives of many fishermen in India

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- [5] Mandal, S., Hasan, I., Hawlader, N., Sultana, I., Rahman, M. and Majumder, M., 2020. Occupational Health Hazard And Safety Assessment Of Fishermen Community In Coastal Zone Of Bangladesh. [online] Article.sciencepublishinggroup.com.