

# IoT based Fisherman Border Alert and Weather Alert Security System

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**Abstract:-** Area based alarm administrations are basic parts for fishermen, because of terrible atmosphere conditions and slacking of innovation in salvage bolster our anglers' confronting a lifetime issue with neighbor nations. On considering the issue we proposed a minimal effort and simple climate Alert framework for angler's which is utilized to follow their family members, companions and other anglers in the event that some angler confronting any issues like unexpected climatic changes or crises mean this framework will support the angler. In this venture, we are going to screen climate state of the angling zone and furthermore if angler cross the outskirt by utilizing sensors like stickiness and temperature, wind speed sensor and Rain sensor this sensor persistently faculties the angler angling zone and send information to the server utilizing Zigbee module consistently at whatever point they need any assistance implies there is crisis button is there in the event that they press mean alarm was sent to the specific principle server where they get the opportunity to safeguard and GPS Location is additionally sent. On the off chance that the climate condition isn't acceptable likewise ready will be sent naturally and the buzzer will begin to ring to caution the other individual in the vessel. In the event that anglers cross the outskirt mean it ringer is begun to ring and the vessel engine is halted. In typical climatic conditions, the information from the sensor's and GPS area of the pontoon is constantly refreshed in the primary server and furthermore showed in a LCD.

**Key Words:** GPS module, Zigbee, Arduino UNO, LCD Display, Buzzer.

## 1. INTRODUCTION

Sri Lanka and India seaside nations are isolated by their sea borders. In Tamil Nadu about 20,000 vessels make spinning in the Bay of Bengal. The main aim is to give a well equitable user friendly environment for Indian Fisherman to handle hazardous situation with the help of engine control. This paper comes with a consistent solution for this problem and protects the Indian fisherman from dangerous situation and being crossing the maritime boundary and save their life and improve the safety of fisherman. The system is designed by using GPS and GSM [1]. A GPS route device is a device that precisely discovers natural area by getting data from GPS satellites. This device can track the GPS data every single time at whatever point the fisher man's cross the Indian border. It is a significant depression issue and encourages trouble in the both people and also their economic expenditures.

The GPS device will repetitively give the signal which determines the latitude and longitude and indicates the position of the fishermen and which gets read and displayed in the LCD. The hardware which interfaces with

as follows micro-controller, LCD display, GSM modem and GPS receiver. GPS provides consistent positioning, navigation, and timing services to users on a continuous basis in every day and night. Then GPS store the storage of the maritime position [2]. While comparing the previous maritime restricted position and current position and result will be the latitude and longitudinal degree of the boat's location is determined if the boat nearer to the restricted zone the alarm will turn on and the sound keep on increasing and also speed of the engine will get reduced by using pulse width modulation. In its simplest pulse width modulation output signals are constructed by comparing two signals. The signals are restricted position (carrier signal) and current position (modulation signal) pulse width modulation operating at a low power frequency. While carrier frequency higher than the modulation frequency, the alarm will keep on increasing, if the other case carrier frequency lowers than the modulation frequency, the alarm will keep on decreasing. The controlling unit displays the boat position by using the LCD display and alert to the fisherman through the alarm and turn off the boat motor if the boat crossed the border [3]. The transmission unit sends the position of the boat in the sea to the base station through the Zigbee transceiver.

## 2. LITERATURE SURVEY

Vignesh M, et. al, "GPS Based Border Alert System for Fisherman with Boat Speedometer", March 2015. In this method the author foresees the use of GPS tracking system. The boat's position is measured using GPS and the speed of the boat motor is controlled in case of emergency. The alert message is sent to the user (fisherman). The advantage is for the purpose of identification the fisherman is using the GPS72h, equipment used for the navigation in the sea and it provides the fastest and most accurate method for mariner navigate, measure speed, and determines the location and this system enables increased levels of safety and efficiency [4]. The disadvantage here is that border alert is intimated only for the fisherman, but not to the control station.

R. Dinesh Kumar et.al. "Alert system for fishermen crossing border using Android", March 2016. The application can be widely used by people in the border to find the appropriate path to reach the destination. The notification will be sent to the border security forces which act as the server to all other devices that are operated by people in ships. The application will notify the information of where the devices are being located and intimate them

about the issues that occur due to opponent forces in ships to server. This can act as an incident management application to avoid conflicts at varying situations. This is processed mainly for Tamil fishermen's who are employed in the borders. The automatic alarming system is going to be provided along with this device which alerts in case any sort of issues. This is devised in such a way that the application can be easily been utilized by all the people in the surroundings [5]. The application operates based on device tracking. This provides ease to operate even for illiterate people.

Pamarthi Satyanarayana et.al. "International boundary scanning and ship surveillance system", March 2017. The islands, peninsulas and coastal countries have their boundaries in sea or ocean also. Most of the people in coastal areas have fishing as their occupation. Some also take tourists in ships. Many people, especially fishermen cross the boundaries without knowing limits. This is one of the reasons for cross border cruelty [6]. They are being abducted and their boats are being captured. Sometimes, it results in loss of lives also. Major problems are border line measurement manually and communication with the navy. The main aim of our paper is to avoid such accidents and alert the people in ship about boundaries. In our proposed system, border identification is done using GPS and an alarm system is provided to alert the fishermen. In addition, wireless communication is used for transferring information and establishing communication between ship and navy control. Applications include border scanning and defense. The proposed system can effectively alert people in ship about borders as well as crew can intimate about accidents and thereby, they can get necessary help [7]. Driver unit can control the direction of boat near the border.

3. EXISTING SYSTEM

This existing system is an embedded technology which uses Arm microcontroller and RFID (Radio Frequency Identification) can avoid this. There are three boundaries of borders taken. Final state boundary will be the border between the two countries and other two borders before that comes under the parental country circumstances. First two border crossing will be monitored by Indian government. The fishermen's are warned by the warning devices such as speaker (a buzzer) and an LCD display while they crossing the first two borders.

❖ **DISADVANTAGES**

- Some ARM processors clock frequencies, which is why speeds and memory bandwidths are limited in such cases.
- The scheduling of instructions makes debugging difficult.

4. PROPOSED SYSTEM

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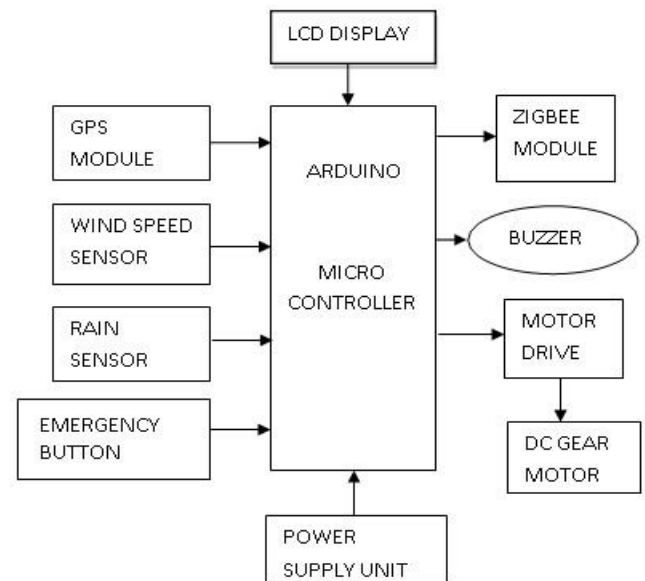
our proposed system, border identification is done using GPS and an alarm system is provided to alert the fishermen. In addition, wireless communication is used for transferring information and establishing communication between ship and navy control. Applications include border scanning and defense.

❖ **ADVANTAGES**

Thus the fishermen can easily identify the national sea borders and therefore prevents them from entering their area. The system provides high accuracy and high precision values of the Latitude and Longitude.

❖ **BLOCK DIAGRAM**

FISHERMAN SIDE



MONITORING SIDE

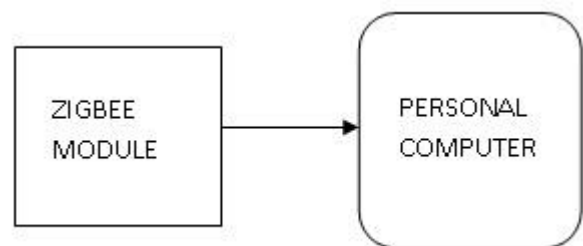


Fig.1 Schematic Diagram of Security System

❖ **DESCRIPTION**

➤ **ARDUINO UNO**

Arduino is an open source, electronics platform based on easy to use hardware and software. The Arduino Uno is a microcontroller based board. It has 14 digital input/output pins, 6 analog inputs, a 16MHz crystal oscillator, a USB connection, a power jack, ICSP header, and a reset button. The paper is based on microcontroller's board designs, produced by using various microcontrollers. The board features serial communication interfaces including Universal Serial Bus (USB) on some models, for loading programs from personal computers. The Arduino paper provides an Integrated Development Environment (IDE) based on a programming language.



Fig.2 Prototype of Arduino Uno

➤ **GPS MODULE**

It is a global navigation satellite system that provides geo location and time information to a GPS receiver anywhere on or near the earth where there is a unobstructed line of sight to four or more GPS satellites. The GPS system does not require the user to transmit any data, and it operates independently of any telephonic or internet reception. The GPS system provides critical positioning capabilities to military, civil and commercial users around the world. GPS satellites continuously transmit their current time and position [10]. A GPS receiver monitors multiple satellites and solves equation to determine the precise position of the receiver and its deviation from true time.



Fig.3 Prototype of GPS Module

➤ **LCD DISPLAY**



Fig.4 LCD Display

LCD (Liquid Crystal Display) is the technology used for display the output. All LCD display have same 14 pins (0-13) or 16 pins (0-15).Alphanumeric displays are used in a wide range of applications. It has many sizes. Many multinational companies make their own special kind of LCD'S to be used in their products. If LCD is interfaced with microcontroller it should not exceed 5v of power supply.

➤ **POWER SUPPLY**

A Power supply unit converts mains AC to low voltage regulated DC power for the internal components of a computer .There are two types of power supply linear and switched mode. Linear power supply uses a transformer to reduce the voltage.AC adapter are used with electrical devices that requires power but do not contain internal components to derive the required voltage and power from the main power.

➤ **ZIGBEE**

Zigbee is a wireless technology developed as an open global standard to address the unique needs of low cost, low power wireless IOT networks. Zigbee communication is specially built for control and sensor networks. The Zigbee WPAN's operates at 868MHz, 902-928MHz and 2.4GHz frequencies. This communication system is less expensive and simpler than the other proprietary short range wireless sensor networks as Bluetooth and wifi.



Fig.5 Prototype of Zigbee Module

➤ **BUZZER**

A Buzzer or beeper is an audio signaling device. Buzzer is an integrated structure of electronic transducers. Active buzzer 5V rated power can be directly connected to a continuous sound. Typical uses of buzzers and beepers include alarm devices, timers. It generates consistent single tone sound just by applying D.C voltage.

➤ **DC GEAR MOTOR (100RPM)**

The series DC motor is an industry workhorse for high and low power, fixed and variable speed electric drives. Applications range from cheap toys to automotive applications. They are inexpensive to manufacture and are used in variable speed household appliances such as sewing machines and power tools. Gear motors are an all-in-one combination of an electric motor and gears or a gearbox.



Fig.6 DC Gear Motor

A gear motor simplifies combining a motor with a gear reducer system. Gears are used with motors to lower the motor's speed while increasing the output torque. A gear motor adds mechanical gears to alter the speed/torque of the motor for an application. Usually such an addition is to reduce speed and increase torque. A DC motor without gears is useful in many applications.

5. CONCLUSION

Area based alarm administrations are fundamental segments for fisherman's, because of awful atmosphere

conditions and slacking of innovation in salvage bolster our angler's confronting an actual existence time issue with neighbor nations. On considering the issue we proposed an ease and simple climate alert framework for angler's which is utilized to follow their family members, companions and other fisherman's.

In the event that some fisherman confronting any issues like unexpected climatic changes or crisis mean this framework will help to the angler. Right now are going to screen climate state of the angling territory by utilizing sensors like stickiness and temperature, wind speed sensor and Rain sensor this sensor ceaselessly sense the angler angling zone consistently and send information to the server utilizing zigbee module constantly at whatever point they need any assistance implies there is crisis button is there on the off chance that they press mean alarm was sent to the specific primary server where they get salvage and GPS Location is additionally sent. On the off chance that the climate condition isn't acceptable additionally ready will sent naturally and bell will begin to ring to caution the other individual in the vessel. In typical climatic condition the information from sensor's and GPS area of the pontoon is constantly refreshed in the principle server and furthermore showed in LCD show.

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