

## IOT BASED FISHERMAN BORDER ALERT AND ENGINE CONTROL SECURITY SYSTEM

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### Abstract:

Recently unmanned border patrol system consisting of high tech devices, like unmanned aerial vehicles, surveillance towers equipped with wireless camera used to monitor fishermen whose family's main economic support is fishing. Coastal 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. From Tamil Nadu about 18,000 boats of different kinds conduct fishing along the India-coastal border. But accidentally crossing border without knowledge, they get shot by the other countries navy. This leads to loss in the both humans as well as their economic incomes. We have developed a system which eliminates such problems and saves the lives of the fishermen. Border systems have recently achieved interest to address concerns about national security. The major problem in protecting long stretches of borders is the need for large human involvement. 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 Wifi/GSM. 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. This system is designed to avoid such kind of accidents and to alert the fishermen about border area well before using latest technology of Global Positioning System (GPS) and Global System for Mobile communication (Wi-Fi) and



monitored using IOT. Fig.1.Border Positioning

## LITERATURE REVIEW:

Literature survey earlier to begin a research project is essential in understanding fishermen order alert system, as essential this will supply the researcher with much needed additional data on the methodologies and technologies available and used by other research complement around the world. This chapter provides a compressed summary of literature reviews on key topics which related to fishermen border alert systems.

1. D.Jim Isaac et al [1] the paper titled as “Advanced border alert system using GPS and with intelligent Engine control unit “In our system using GPS and Wi-Fi, where GPS is used to find the location of the boat. If the boat nearer to the boundary primarily it warning for a fishermen with the alarm and emits the location of the boat to the nearest coast office via Wifi communication. When it further nears the maritime boundary an interferer is sent to the Engine Control Unit which controls the speed of the engine with the help of the electronic fuel injector. and its low cost maritime. By this method, we can alert the fishermen and also monitor them thereby avoiding banned activities such as smuggling, intruders, etc.

2. S. Kiruthika et al [2] the paper titled as” A Wireless mode of protected defense mechanism to mariners using GSM technology “In our system using only GPS to receive the information from the satellite and stored border locations to detect whether the boat has crossed the border or not which covers wide area.

3. Naveen Kumar.M et al [3] the paper titled as” border alert and smart tracking system with alarm uses DGPS and Wi-Fi and this system uses DGPS to track the location of the boat and to activate an alarm which consists of a Piezo-buzzer, when the border is move toward or crossed. Also, in addition, the DGPS information is sent to control office, and also the information is sent to the family at regular time intervals that are in expectation about their family member's safety.

## PROPOSED METHOD:

The proposed system is to help the small scale fishermen for safe navigation in maritime and then preventing them from entering other country border line. Data collection unit consists of GPS thus provided the information of location based on the position the boat and transmitter.

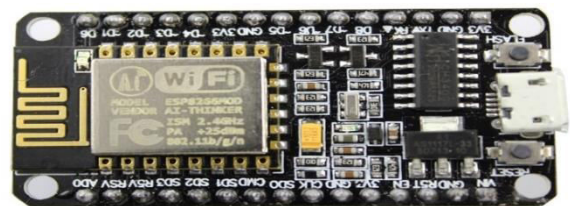
The processing unit fetched with already known details of border between the countries, and comparison being done with known data and current position data. The controlling unit will make decision in order to alert the fishermen and coast guards. The android Blynk application uses the Global Positioning System (GPS) to provide the latitude and longitude information and its being used for tracking devices. The system entirely uses the device based tracking which avoids failure in the system.

Initially existing systems mobile phones were developed only for voice communication but now days the scenario has changed, voice communication is just one aspect of a mobile phone. There are other aspects which are major focus of interest. Two such major factors are web browser and GPS services. Both of these functionalities are already implemented but are only in the hands of manufacturers not in the hands of users because of proprietary issues, the system does not allow the user to access the mobile hardware directly. But now, after the release of android based open source mobile phone a user can access the hardware directly and design customized native applications to develop Web and GPS enabled services and can program the other hardware components like camera etc.

### Hardware description:

#### Node MCU ESP8266:

NodeMCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which was based on the ESP-



12 module. Later, support for the ESP32 32-bit NODEMCU was added....

Fig.2 Node MCU

- The term NodeMCU stands for Node Microcontroller unit. It has open source hardware and it is onboard software environment. NodeMCU is also called as Devkit 1.0 system on chip (SOC) called ESP-8266. The ESP8266 is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability.
- The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from

existing micro controller to WiFi and is also capable of running self-contained applications

- This module comes with a built-in USB connector and a rich assortment of pin-micro outs. With a USB cable, you can connect a NodeMCU device to your laptop and flash it without any trouble, just like Arduino. It is also breadboard friendly

### Circuit Description:

Fig shows the quite simple schematic. The LCD panel's Enable and Register Select is connected to the Control Port. The Control Port is an open collector / open drain output. While most Ports have internal pull-up resistors, there are a few which don't. Therefore by incorporating the two 10K external pull up resistors, the circuit is more portable for a wider range of computers, some of which may have no internal pull up resistors. We make no effort to place the Data bus into reverse direction. Therefore we hard wire the R/W line of the LCD panel, into

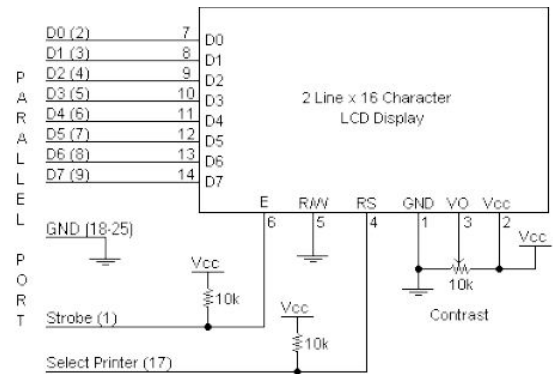


Fig.3 Schematic LCD Display

write mode. This will cause no bus conflicts on the data lines. As a result we cannot read back the LCD's internal Busy Flag which tells us if the LCD has accepted and finished processing the last instruction. This problem is overcome by inserting known delays into our program.

### Methodology:

Small-scale fishermen will benefit from the proposed system, which will help them navigate the water safely while also preventing them from crossing into another country's territory.

A GPS receiver is included in the data collection device, which provides location information based on the boat's and transmitter's positions.

The Android Blynk application uses the Global Positioning System (GPS) to offer latitude and longitude information as well as track devices.

The border position is set and saved using the blynk programme.

The processing unit retrieved previously known details of the countries' borders and compared them to the current position data.

If the data does not match, the control unit will alert the fishermen and the coast guard via the LCD display ("BORDER CROSSED GO BACK").

The relay is then given a delay of 100 seconds to turn off the DC motor if it crosses the boundary specified at the start.

The system is entirely based on device tracking, removing the potential of system failure.

### Results and Discussion:

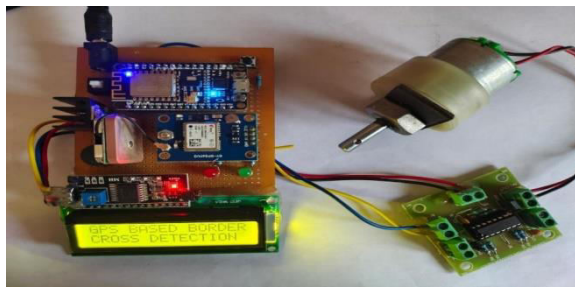


Fig. 4.1 Project module Representation

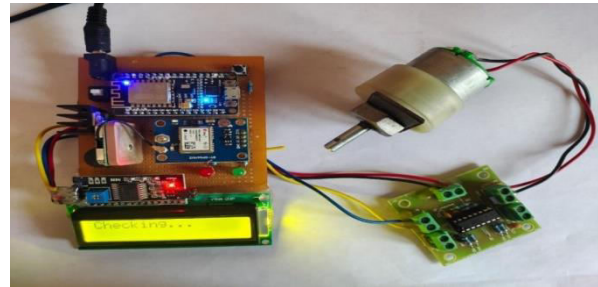


Fig. 4.2 Module Representation for checking the position.

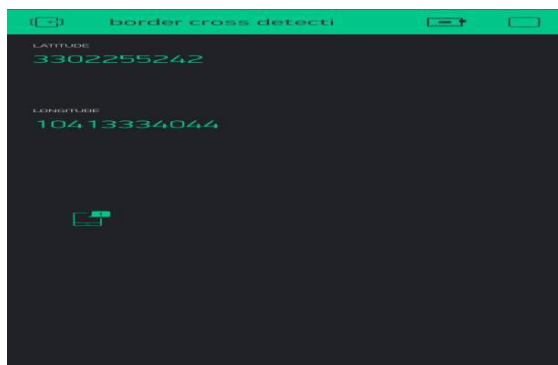


Fig. 4.3 Latitude and longitude representation in Blynk app

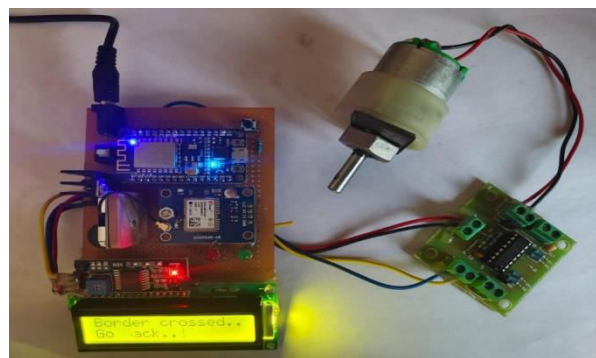


Fig. 4.4 Warning representation through LCD with a message

In this section, exact working of the module was represented where our working of the module will start from taking the location of Nations border in to the GPS module, which was initiated in the program. When the ship starts it we check at every time latitude and longitude by comparing the Nations border location, if it come near to the border by giving the message as border crossed GO BACK which will display on the LCD, then the buzzer indicated in the module starts working by alerting the fisherman, such that they can take necessary steps before they cross the border..



If they won't stop then the relay will come into existence as per the program scheduled and it stops the motor and it will start until and unless the ship was away from the warning border... Really which was used is given 100 seconds of time to make it On or Off

## Conclusion:

In the recent times the capture of Indian fishermen across Sri Lanka border has been increased. It is difficult for the fishermen to discover the borders and lost into other country's borders. Our objective is to give wireless support to those fishermen and aside from to go out after them if they are found missing. This project is a low cost efficient method of wireless tracking. It also gives sufficient information to both ship and coastal guardians of anyone crossing the border. The alert system which we have developed will provide an effective solution for fishermen problem and prevent them from crossing other country border. This conclusion will save many fishermen lives from crossing the national border. Our project mainly focuses on smooth relationship between two countries. Death rate will be decreased and fishermen life time can be increased.

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