

Fishermen Aid and Nautical Border Alert System

V. Yogalakshmi, R. Benazir Begam, V.Bakyalakshmi



Abstract: Now-a-days, we can see many fishermen were caught by other country because of border violation. This is mainly due to the reason that sea borders are unidentifiable. This application helps the fishermen to track their location at national borders. This embedded system continuously tracks the location using a GPS [Global Positioning System]. The GPS aids in continuous tracking of the fishermen boat. Using GPS, we can find the current latitude and longitude values which is then sent to the Raspberry pi unit. The Raspberry pi unit finds the current location by comparing the present latitude and longitude values with the predefined value. Then from the result of the comparison, this system indicates the fishermen that they are about to reach the nautical border and helps in motor speed controlling. This system also helps the fishermen to detect the weather condition which senses and displays various parameters of surrounding weather.

Keywords: GPS [Global Positioning System], latitude and longitude, motor speed controlling.

The main aim is to give a user friendly environment for Indian fishermen.

III. PROPOSING SYSTEM

In the proposed system we are using a Raspberry pi module which acts as a brain to our entire project. It compares the present location of the boat with the national border and takes action when it is crossed. In the raspberry pi module the national border details are stored. The area near the international border is divided into warning zone and restricted zone. If the boat reaches the warning zone then the motor speed of the boat is reduced by 50%. If the fishermen ignore the alert and moves further towards the border the motor will be turned off as soon as the boat reaches the restricted zone. This system also provides information about the surrounding weather condition.

I. INTRODUCTION

The current issue that is happening in the Indo-Srilankan border is of major concern and this project mainly focuses to help fishermen. The GPS helps to provide a wide range of location tracking facility. The topographic location of sea borders along with latitude and longitude is obtained and given to controller unit. The GPS continuously monitors the latitude and longitude which determines the location. The sea border is divided into two zones – warning zone and the restricted zone. If the boat crosses the warning zone, the motor speed of the vehicle is reduced to 50%. If it moves further and reaches the restricted zone then the motor stops. Thus, it prevents the fishermen from crossing the international borders and save their lives. To detect the weather condition, surrounding temperature and wind rate are continuously displayed in LCD.



Fig 1.1 GPS System

II. EXISTING SYSTEM

In Existing system, we have PIC16F877A Micro controller interfaced with GPS and GSM. The current location of the fishermen is compared with the border location. If the boat crosses the border then the fishermen is notified with a SMS through GSM. As GSM is a network/cellular based device, its network coverage is a question mark when the boat moves towards mid of the sea. So, usage of GSM for border alert is not a better idea.

IV. FLOW DIAGRAM

The basic working principle of our research is comparison of latitude and longitude ranges with the help of mobile GPS. The mobile GPS continuously monitors the moving location of the boat. The latitude and longitude values of the sea border limit is already stored in raspberry pi. With this reference location of the boat is determined. As soon as the current location matches with the stored location of the border, the function automatically moves to motor relay. The motor relay is connected to the motor which control its speed. The regions near sea border is divided into two regions – the first zone is called warning zone in which if the boat enters the motor speed is reduced by 50%. The other zone is restricted zone which is near the international border. Here when the boat enters the motor turns off thus stopping the boat from crossing the border. This project also helps the fishermen in determining the weather condition.

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Parameters such as temperature, wind rate and wind direction are continuously displayed on LCD. Temperature is an analog value and it has to be converted to digital in order to display in LCD. Thus, MCP3008 analog to digital converter is used for such purpose.

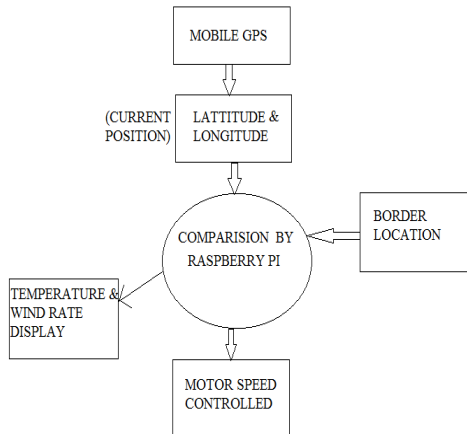


Fig 1.2 Flow diagram

V. BLOCK DIAGRAM

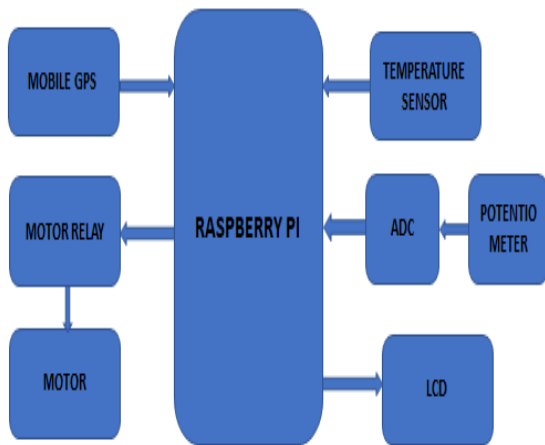


Fig 1.3Block diagram

1. Raspberry pi is a small single chip microcontroller which acts as the brain for the entire project. It can be easily connected with the PC/laptop through USB device in the USB port. The heart of the Raspberry Pi is a Broadcom System on Chip (SOC) which includes ARM compatible CPU and on-chip graphic processing unit and Video core IV. The key feature from First generation to the Third generation include CPU speed ranges from 700 MHz to 1.2 GHz on board Memory (RAM) ranges from 256 MB to 1 GB.USB slot differs from 1 slot to USB slots. HDMI, composite video output and 3.5mm phone jack.
2. The reason for using mobile GPS in this project is its accuracy and precision. Mobile GPS is 30% more accurate than handheld GPS device. The current position with latitude and longitude is quickly tracked by mobile GPS.
3. Motor relay is another important device used in this project. It works with the principle that the current flow is dependent on a coil of wire which become a temporary magnet when current flows through it. In this project the

speed of motor is controlled by this relay. This relay decides whether the 9 volt supply should reach the motor or not.

4. DHT11 is a temperature sensor that can be interfaced with any microcontroller. It gives digital output which can be directly displayed in the LCD.

POSITIONS	LATITUDE	LONGITUDE
Position 1	10° 05'.0 N	80° 03'.0 E
Position 2	10° 05'.8 N	80° 05'.0 E
Position 3	10° 08'.4 N	80° 09'.5 E

Table 1 GPS system parameter

VI. FUTURE SCOPE:

The future advancement in this research may be to establish connection between the fishermen boat and the coastal region. This scope can help them to communicate their status to the control room.

VII. CONCLUSION

Thus, the fishermen can easily identify the national sea borders and therefore prevents them from entering neighboring borders. The system provides high accuracy and high precision values of the Latitude and Longitude which helps the device to locate the current position easily and quickly. It also helps the fishermen to inform about the surrounding temperature, wind direction and wind speed. The project highly concentrates on the safety of fishermen. It is cost efficient and reliable.

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