



Fisherman Communication At Deep Sea Using Border System

MS. P. SOWMIYAA¹, AJAY A², KAVIN V³, HISHANTH S⁴

¹ASSISTANT PROFESSOR, DEPT OF ECE, MUTHAYAMMAL ENGINEERING COLLEGE, RASIPURAM, NAMAKKAL

^{2,3,4}STUDENT, DEPT OF ECE, MUTHAYAMMAL ENGINEERING COLLEGE, RASIPURAM, NAMAKKAL.

ABSTRACT:

This project allows us to use a global positioning system and a global mobile communication system to locate navigation and time information in any weather conditions and at any time. This technology, which is made up of three parts—the control unit, the space unit, and the user unit—has gained popularity for applications involving tracking, surveillance, and navigation that are sensitive to time and location. As the maritime boundary (navigation) of a nation, it is impossible to meet the requirements for civilian safety in the sea. The marine GPS navigation device and packages were a game-changer for fishermen's boats when it came to crossing maritime borders. A low-cost maritime border crossing alert system that combines the power of a marine GPS device is what the proposed system is. It continuously tracks, monitors, warns, and regulates the actions of the fishermen from the isolated shoreline station. GPS and GSM technologies are used in this system. While GSM allows communication, GPS allows tracking of the boat's current location. Border security personnel notify the crew via the ship's LCD display when fishermen approach the warning border. A relay system is set up to automatically cut off the boat's power to the motor in the event that the fishermen are unable to stop it. To quickly alert fishermen to possible hazards like severe weather, storms, or navigational obstacles, implement a live warning system. Create a GPS-based navigation system that helps fishermen find the best places to fish and navigate different waterways safely. Use distress signal tools or emergency beacons to increase the likelihood of finding and saving the fishermen who were in trouble.

Keywords: Arduino Microcontroller, Ultrasonic sensor, GSM, Motor, GPS.

1. INTRODUCTION

Nations with the International Marine time Boundary Line (IMBL) will consistently has security issues. Constant life undermines for as of late unmanned fringe watch framework comprise of innovative gadgets. Reconnaissance towers furnished with remote camera use anglers. From Tamil Nadu around 18,000 vessels of various types direct angling along the India-Sri Lanka oceanic fringe. Be that as it may, by coincidentally crossing fringe without information, they get shot by the Lankan naval force. This prompts misfortune in the two people just as their monetary earnings. We have built up a framework which wipes out such issues and spares the lives of the anglers. The beach front territory individuals are absolutely rely upon angling occupation in the ocean. In the event that the angler cross the outskirts it ought to be treated as a genuine offense. Because of ignorance about as far as possible, the angler cross the sea outskirts .Once they crossed the fringe, the vessels are being caught by the local nations seaside monitors. Under such circumstance lives of angler are in harm's way. In such cases our outskirts ready framework for angler will assist with defeating the venture .RF gadgets can transmit information over long separations by going information through a work system of middle of the road gadgets to arrive at more separation. It is most appropriate for irregular information transmission from a sensor or information gadget. The Indian Coastguard was officially initiated on 18 August 1978. It is set as an autonomous outfitted power of the Indian Union, through a demonstration of parliament. It is the fourth equipped power under the Ministry of Defense-the initial three being the Army, the Navy and the Air Force. It has a particular character for nonmilitary security however addresses to National Defense. It typically manages marine wellbeing, oceanic security, lifesaving, law authorization, sea natural security and fisheries. These call for observing, control, reconnaissance and reaction. The Coastguard has various duties and reinforcing the wellbeing of fishers.[4] Fishers are defenseless against debacles of a few kind-mishaps, losses, snatching, and outsider mediations. The Indian coastguard can't help fishers only yet worry for fishers is vital to its points. The vital job of the Coastguard is to shield the sea zones from criminal operations including penetration through oceanic courses and natural harm and give philanthropic and logical help inside the sea space.

2.LITERATURE SURVEY

2.1.J Charles Finny Joseph, R Dinesh Kumar, M Shubin Aldo “Ready System for Fishermen Crossing Border utilizing Android”International Conference on Electrical, Electronics, and Optimization Techniques – 2016.The application can be broadly utilized by individuals in the fringe to locate the suitable way to arrive at the goal. The application will advise the data of where the gadgets are being found and close them about the issues that happen because of adversary powers in boats to server. This can go about as an episode the executives application to maintain a strategic distance from clashes at different circumstances.

2.2 Archana Gupta, Mohammed Abdul Qadeer, Sandeep Kumar Location Based Services using Android 2012 IEEE From the accessible GIS handling instruments in Android we can understand every one of the three kinds of LBS benefits as a portable can be arranged as a server and for that we can likewise utilize the SQLite database to store data as android additionally underpins this innovation. We can design the two mobiles to give peer-peer LBS benefits through SMS or MMS with the utilization of fitting plans.

2.3.PulathisiBandara, UdanaBandaraTagciti: A Practical Approach for Location-Aware and Socially-Relevant Information Creation and Discovery for Mobile Users 2010 IEEE Tagciti is a novel area mindful and socially-pertinent data making and finding administration for portable clients. Rather than relying upon industrially made area related data, Tagciti gives clients the important way to turn out to be a piece of the data creation process. It empowers the production of dynamic, modern, and socially-pertinent shared data. Additionally, it gives a viable instrument to find made data in a socially-significant and area mindful way using clients' interpersonal organization and area data.

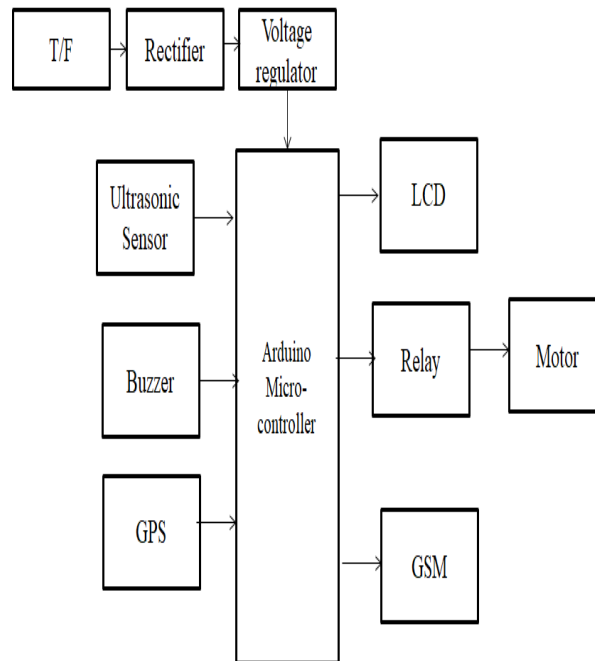
3.EXISTING SYSTEM

There are some existing works for the problem statement identified but they are not much reliable because the probability of getting erroneous output is more. Those works also lacks complete embedded systems for instance, in some system there is no proper data monitoring system and in other system the alert information is not sent properly to the control unit i.e., the alert message is sent only to the boat but the alert message is not sent to the centralized data hub . The engine control unit is not present in some existing system. Here the border is divided into warning and restricted zone. Thus, an alert message will be sent when the boat is in warning zone, before crossing the national border which is not in the existing system. If the existing system for fishermen border security alert is very accurate, the number of fishermen caught by other country people must be reduced. But still the fishermen are caught by the other country peoples. Recently on March 25, 2021 the Sri Lankan Navy had arrested 20 Indian fishermen and seized two vessels for allegedly fishing in the country's waters.

4.PROPOSED SYSTEM

In this work, we propose a wireless network, which provides an efficient positioning service and restores the lost sea-to-land link from small fishing boats which help to our fishermen from border crossing problem by getting alert sound and message in display before crossing the border.Ultasonic sensor, GSM and GPS border alert information sending and receiving the information between fishermen boat and control room. This project discusses about a monitoring system which is designed measure to speed of waves and height of river through ultra-sonic sensor using microcontroller (Arduino). On the off chance that the waterway can't oblige the volume of water, then all the water will submerge with land and this phenomenon is called as flood or surge. The proposed networks combine global positioning system (GPS) and wireless sensor network communication system. The proposed concept approach provides continuous reporting and monitoring of all boats and its exact locations for search and rescue process during emergency situations by mistake the fishermen try to cross the border first they will get buzzer sound and another few minutes the boat will shutdown automatically. For any emergency situation the fishermen get help from control room by pressing SOS switch in boat using GSM and GPS

4.1 BLOCK DIAGRAM



5. SYSTEM REQUIREMENTS

5. HARDWARE DESCRIPTION

5.1 Power Supply

The 12V advanced step-down transformer is powered by an AC source. The 12V AC transformer is rectified by means of a diode connection. A capacitor separates the 12V DC diode bridge yield.

5.2 LCD Display



LCD displays characters, numbers, and designs. The microcontroller's (P0.0–P0.7) I/O port is interfaced with the showcase. Multiplexed mode is used for the presentation. The next showcase flashes on in 1/10th of a second. Because of Vision's diligence, the show will result in a continuous display of tally.

5.3 ARDUINO UNO R3 MICROCONTROLLER



A microcontroller board based on the ATmega328 IC is called the Arduino Uno R3. There were 6 analog inputs, a 16 MHz crystal oscillator, a USB port, 14 digital input/output pins (six of which may be utilized as PWM outputs), a power button for resetting, an ICSP header, and a jack. Everything required to support the microcontroller is included; all that's left to do is power it with a battery or an AC-to-DC adapter or connect it to a computer via a USB cable.

5.4 GPS

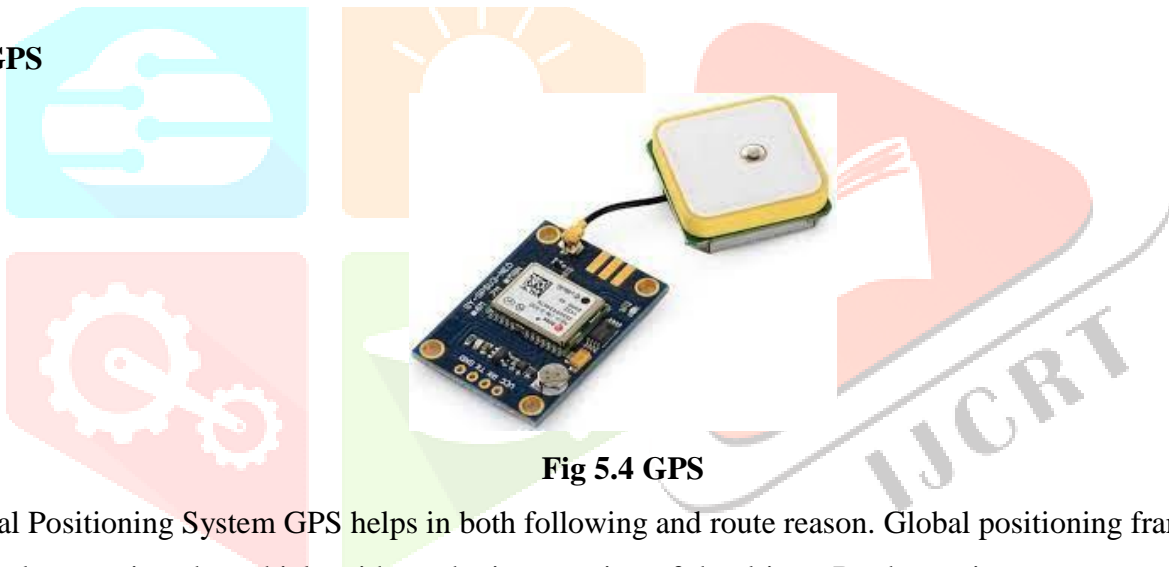


Fig 5.4 GPS

Global Positioning System GPS helps in both following and route reason. Global positioning frameworks is utilized to monitor the vehicle without the intercession of the driver. Be that as it may, a route framework directs the driver to arrive at the objective with next to no interruptions. Both following and route utilizes a similar design. As a mishap happens the following stem distinguishes the clumsy vehicle and a message is shipped off the salvage group through a SMS

5.5 Buzzer



Fig 5.5 Buzzer

A buzzer or beeper is a sound flagging gadget, which might be mechanical, electro mechanical or piezoelectric. Typical employments of ringers and beepers incorporate caution gadgets, clocks, and affirmation of client information

5.6 GSM

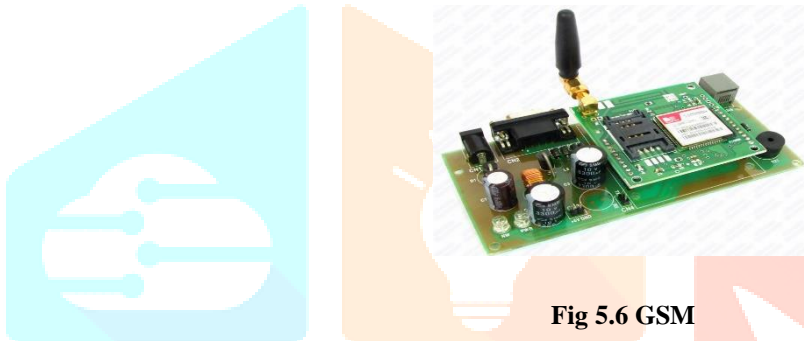


Fig 5.6 GSM

This GSM Modem are accept any GSM network operator SIM card and acts just like a mobile phone with its own unique phone number. It is a wireless MODEM that send and receive data through the GSM network. It required a SIM card and connectivity to the GSM network. It can also be used in GPRS mode to connect to the internet and use all the application for data logging

5.7 Ultrasonic sensor



Fig 5.7 Ultrasonic sensor

Ultrasonic sensors (also known as **transceivers** when they both send and receive) work on a principle similar to radar or sonar **which** evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively. Ultrasonic sensors generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object.

5.8 DC MOTOR



Fig 5.8 DC Motor

Any rotary electrical motor that transforms electrical energy from direct current into mechanical energy is referred to as a DC motor. The most often used kinds depend on the forces generated by magnetic fields. Almost all varieties of DC motors contain an internal mechanism—electromechanical or electronic—that allows the motor's portion of the current to be periodically reversed.

6. CONCLUSION

The proposed internet of things-based fishermen's border security alert system will be a fully embedded system, including data collection, processing, actuator activation upon sensor triggering, and cloud uploading for centralized data monitoring without sacrificing accuracy. With an industry-standard accuracy of two meters, this system actively tracks the boat's location and transmits the information to the cloud. Additionally, if the fisherman crosses the border, the alert system will notify him. Additionally, the boat's speed will be lowered by 50% by the engine control unit. Naval forces can keep an eye on the centralized data hub and demand justice if other nations apprehend our fishermen on our soil. Therefore, an effective system aids in preventing fishing.

7. REFERENCE

- [1] K. T. Krishnamurthy, "A Low-Cost Embedded Sea Navigation and Security Systems for Fisher Man", 2018 International Conference on Networking, Embedded and Wireless Systems.
- [2] E. Krishnamoorthy et al, "Border alert system and emergency contact for fisherman using RSSI", 2017 International Conference on Information, Communication & Embedded Systems (ICICES 2017).
- [3] V. Ulagamuthalvi, G. Kulanthaivel, A. Jesudoss, Anudeep and A. Sharma, "IoT-BASED NAUTICAL TRACING SYSTEM," 2019 International Conference on Intelligent Computing and Control Systems.
- [4] Design of border alert system for fishermen using GPS. International Journal of students Research in Technology & Management, Vol 2 (02), March-April 2014.
- [5] R. Dinesh Kumar, M. S. Aldo and J. C. F. Joseph, "Alert system for fishermen crossing border using Android," 2016 International Conference on Electrical, Electronics, and Optimization Technique.
- [6] K. Suresh Kumar, K. Sharath Kumar, "Design of low-cost maritime boundary identification device using GPS system", International Journal of Engineering Science and Technology 2010.

[7] Jim Isaac, the paper titled as Advanced border alert system using GPS and with intelligent Engine control unit International Journal of Electrical and Computing Engineering, June 2015.

[8] R. Karthikeyan, A. Dhandapani, U. Mahalingham” Protecting the Fishermen on Indian Maritime Boundaries”, Journal of Computer Applications.

