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# GLOBAL INFORMATION SYSTEM – DEEP SEA FISHING DEVICE

**Dr. P. SUDHAKARAN, EZHIL MURUGAN UK, NITHISHNA S , DEVENDRAN K**

PROFESSOR AND HEAD, STUDENT, STUDENT, STUDENT
COMPUTER SCIENCE AND ENGINEERING
SRM TRP ENGINEERING COLLEGE, TIRUCHIRAPPALLI, TAMILNADU, INDIA.

***Abstract :*** International maritime border violations have been a serious source of worry. The government is entangling more fishermen; a solution to this situation is now needed. By creating a portable module that combines ECDIS border identification with GPS-assisted marine boundary confirmation, the system offers a solution to the issue. Additionally, because there are greater resources accessible beyond the boundary, the algorithm also takes into account the scenario in which fishers cross boundaries even after they are aware of their position. In these situations, our system sends out notifications to the Coast Guard, Land Control Station, and BUZZER for first and second border identification as well as automatic boat engine turn off via a motor reverse mechanism. When the fisherman get closer the first two boundaries, an LCD-equipped indicator and a loudspeaker that functions as a siren sound a warning. There is a fallback plan in place in case the warning system fails. The boat will automatically cut off its engine when it approaches the third border. The system will alert users to the location of any problems brought about by enemy forces in the ships to the server. As a result, the method strengthens accountability for both authorities and fishers. The fisherman may be able to save their lives with this straightforward, affordable, and user-friendly approach. The application will notify the information of where the ship/Boat are being located and intimate about the issues.

## I. INTRODUCTION

The fisherman cross marine borders because they are unaware of the boundaries. The boats are seized by the coast authorities of the neighboring countries as soon as they cross the border. These kinds of scenarios put the well-being of fishermen at peril. Our fishermen border warning system will help you get through these situations and wrap up the process.The latitude and longitude of the current location may be ascertained via GPS.The automatic decision-making system called ECDIS, which can frequently determine a ship's position in regard to land, designated objects, aids for navigation, and undetectable hazards. GPS tracking, position setting, and buzzer notification are used to track location for both first- and second-level nation boundary identification. The boat automatically switches off and reverses its engine using a reverse mechanism on the last border level.**[2]**

A predetermined table containing the coordinates of maritime boundaries is programmed into the module's control unit. At the ship, warnings are created if the coordinates of the input signal from the GPS receiver match those in the predefined table.The location we should be going may be mapped, and those using the Google Map API can also get directions to their destination. The API also gives users access to their present position. This option enables the user to trace the path that leads to the desired place by entering the present longitude as well as latitude of the object's position in the globe and using the corresponding button to determine the best route to get there. This gives details on the state of the system right now and the cause of the issue that arose. This allows the server to send out a message in the event of any inconsistencies, as well as to alert the information every minute. Here, the tracking

depends entirely on the rather than the presently in use network or signal.Using appropriate technology to monitor and improve safety protocols in marine operations by tracking deep-sea fisherman or their whereabouts. The system as a whole enables mobile phone tracking of the user's movements.To sum up, when the system detects that the first two boundaries are crossed, the warning notifications from the speaker-equipped buzzer s that have a voice interface board and reversing mechanism based on the system's level evolved.Creating and putting into place an integrated system that alerts fisherman use the global positioning system to learn about boundaries. We make use of the GPS unit. Latitude data are supplied to in order to determine the longitude and the position of fisherman. tiny controller. A few meters ahead of the limits, the fisherman are warned. then the engine will cut out if it moves any further. **[6]**

### 1.3 ISSUES AND CHALLENGES

India's diversified topography and disagreements with neighboring nations provide a number of border difficulties. The administration of borders is made much more challenging by the intricacy of center-state interactions. Stares often see the existence of central agencies in border regions negatively. ocular care practitioners may encounter several problems and difficulties when it comes to ocular power detection. Among these are a few of these test variability: The used, the operator's skill level, and other variables may all affect how accurately an eye power test is made. Over time, it may be challenging to get measurements that are precise and reliable due to this fluctuation. Patient participation is necessary for measuring ocular power, although it might be difficult in certain situations, such as when dealing with young children, people with limitations, or those who have cognitive problems. The price and accessibility of the apparatus: More sophisticated eye power meters may be costly, and they might not be easily accessible everywhere, especially in places with little resources. Time and resources: For eye care practitioners, especially in busy clinical settings, measuring eye power and doing a thorough eye exam may be time-consuming and resource-intensive. Proper or out-of-date prescriptions.

### 3.1 EXISTING SYSTEM

The previously used technologies in place that assist in using GPS to determine a ship's or boat's current location and display it on an interactive map. GPS72h: Fishermen utilize the GPS72h, a piece of technology used for maritime navigation, to identify themselves. It offers the quickest and most precise way to monitor speed, pinpoint position, and navigate in a marine environment. Enhanced efficiency and safety are made possible by this technology. It makes sure the ship arrives at its destination without incident. When the vessel leaves or approaches a port, the accuracy of the location intelligence becomes even more important.

Radio Frequency Identification (RFID) with arm microcontroller: The current system is an integrated technology that employs an arm microcontroller to prevent this. Three boundary boundaries have been taken. The line of separation between the two nations will be the final state boundary; the other two borders come under the conditions of the parent country. The Indian authorities would be watching over the first two border crossings.

Lora Module: Long-range, low-power, and low bit-rate wireless communication is possible using LoRa . It was mainly created for Internet of Things (IoT) sensors that have low throughput and low power requirements.[5] As a result, LoRa is being used here as a low-weight smart sensing gadget to transmit border crossing data.Ultrasonic sensor: The fisherman's boat's ultrasonic sensor prevents collisions. The target objects to the ultrasonic pulse sent by this sensor. The time elapsed between transmission and reception is used to calculate the target's distance, which is shown on the LCD.Low in range: The current system makes use of an 8051 microcontroller, which has a relatively small range of usable I/O pins and a restricted number of input and output ports. Additionally, the operating speed is slow.CDMA network: Help-seeking messages are sent using a GSM module. Since towers cannot be erected in the water, GSM cannot be utilized there. Thus, messages may be sent via satellites or the CDMA network. When a vessel passes a border, the required GSM module that has previously been saved receives the stored message together with the current latitude and longitude locations. Received Signal Strength Indication (RSSI): In any weather conditions and even at any

time of day, location-based positioning and timing information are provided by this rapidly advancing technology. To assist the fisherman, this approach focuses on installing border identifying systems in the boats.**[3]**

### 3.2 PROPOSED SYSTEM

The suggested system functions as an automated incident management tool that notifies the user in the event of a border crossing. The security force in frontier ranges monitors the server, which receives information from the system about reported difficulties. The primary module is designed to monitor fishermen's precise whereabouts. After location is captured, it is processed in the following module. A GPS receiver uses satellite data to monitor the position of fishermen**[1]**. The signal indicating that the boat has entered international maritime space is displayed by the CLCD.When a fisherman crosses the first two boundaries, a warning message is sent to the land control station and the fisherman. While passing the final level boundary, the arrangement of buzzers is being decided. The boat's motor shuts off on its own and engages the reverse motor to put it in reverse. to create a deep sea fishing location detection GIS application using AI/ML.

Prompt Decision Addressing the current problems by reporting via geotagged images, two-way communication with information from PFZ and IMD, etc. It is developed in colloquial English and provides users with access to maritime information at all times based on user involvement. Personalized reaction since the app has an incident report feature, an offline map with the path to the closest ports, and a rescue plan. Even in the absence of internet access, the app locates new places, optimizes deep sea fishing periods, and uses an ECDIS with boundary alert.

#### 3.2.1 Advantages

- We are able to collect continuous position values using this method.
- Designed for even the most ordinary people to utilize at their reasonable prices.
- In this case, the tracking is entirely dependent on the rather than the presently in use signal or network.
- No additional costs for gadget upkeep.
- Enhanced safety
- Requires extremely little power; requires little maintenance.
- It will function flawlessly in any climate conditions.

## 4.1 SYSTEM ARCHITECTURE

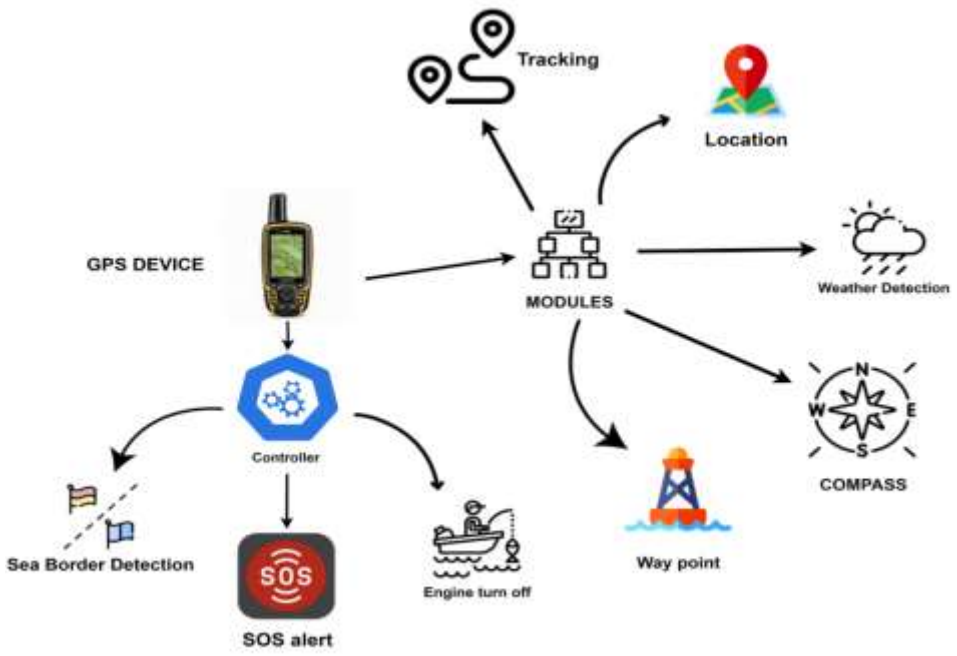


Figure 4.1 **System Architecture**

## 5. SYSTEM CONFIGURATION

### 5.1 HARDWARE REQUIREMENTS

LOCATION RETRIEVAL

GSM Module (900 or 1800 MHz)

GPS Neo-6M receiver

Very High Frequency transceiver (30MHz – 300MHz)

BUZZER (First and second border)

SOS Alert system

TIOMAP3530 processor

### 5.2 SOFTWARE REQUIREMENTS

ARDUINO CODE FOR MODULES

ARDUINO IDE 2.3.2 SOFTWARE

## 6. MODULES LIST

GPS Tracking

Setting up waypoint

Location retrieval

Tracking and recording the track logs

Validating buzzer and reverse mechanism output

Integrating three-layer border setup

Integrating all processed features

### 6.1.1 Maritime border area between India and Sri Lanka

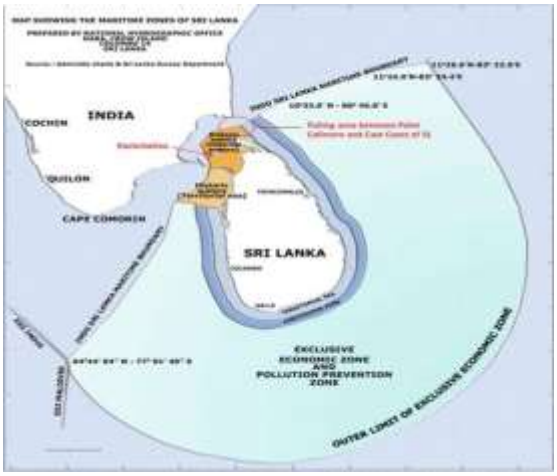


Figure 6.1 Maritime border area between India and Sri Lanka

## 7. EXPERIMENTAL ANALYSIS

### 7.1 RESULTS

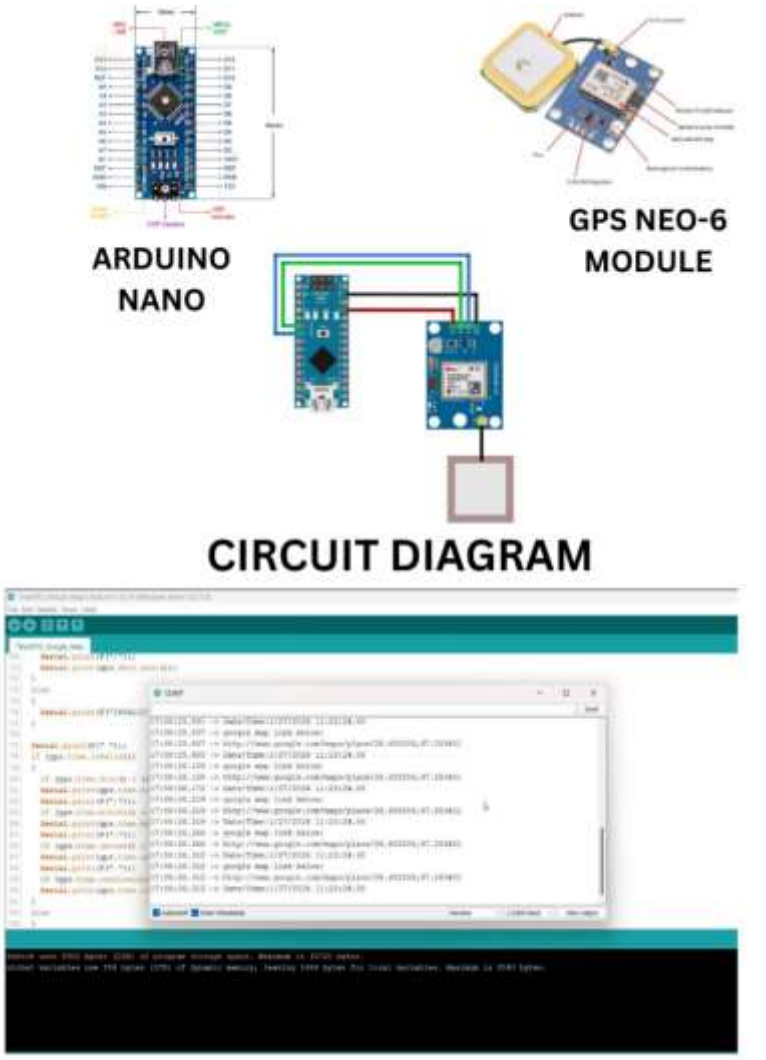


Figure 7.3 Outcome of GIS-DEEP SEA FISHING APP

The Flutter framework was effectively used in the development of the EPDS application, which was then coupled with algorithms for machine learning to identify eye conditions and power from user-submitted eye photos. To guarantee the model's correctness

for a broad spectrum of users, it was trained using an extensive and heterogeneous dataset of eye pictures and associated eye power measurements. When the program was evaluated on a small number of users who submitted photos of their eyes, the model accurately identified any disorders that were present and correctly predicted the users' eye alignment. In addition, users may buy glasses straight from the app if necessary and retain their optical alignment and reports.

### 7.2 EXAMINING

It is essential to remember that the EPDS venture was created to provide a very precise method of identifying eye conditions and power utilizing handheld s and artificial intelligence algorithms. The model can identify a user's eye power with up to 97% accuracy, according to preliminary testing conducted on a sample of users. This high degree of accuracy is a result of both the efficiency of the techniques used in the the EPDS applications and the caliber of the information that was that was utilized to train the model. But, it's crucial to remember that the model's accuracy might change based on unique elements like user behavior and lighting circumstances. It could take more investigation and work to improve the algorithms and guarantee their correctness in a range of scenarios. Considering this, the EPDS initiative has an opportunity to provide consumers a dependable and practical way to utilize mobile s for monitoring their vision health and evaluate their visual activity.

## 8. CONCLUSION AND FUTURE WORK

### 8.1 CONCLUSION

With the use of cutting-edge technology, the "GIS-DEEP SEA FISHING APP" creates a secure system along with multi-lingual languages for fishing boats by fusing GPS with embedded technologies. This gives fishermen access to a GPS-grounded system that helps them recognize danger and stay out of prohibited seas. In addition to saving their lives, the method promotes positive relations with neighboring nations.The hardware module that gives fisherman a maritime boundary alarm was created and put through testing. This approach offers a responsible, affordable answer to the problem that fisherman around the nation are facing. Because notifications created at sea and alarm signals broadcast to shore control stations mean that everyone involved in the procedure will know if a maritime boundary is broken, this technology also serves to promote responsibility on the part of authorities and fishermen. With the use of an LPC2148 ARM Micro-controller and advanced embedded system technology, GSM implementation will protect fishermen in the middle of the sea from unintentionally crossing international borders, as well as from legal action that could result in their arrest and illegal actions such as killing or shooting by the navy of another nation. This could potentially allow for the protection of innocent fishermen. The approach we have created will work well and stop fishermen from entering other countries. Numerous fishermen's lives might be saved by the program.

### 8.2 Future Work

To increase its efficacy in the future, the GPS-based border warning system may be coupled with other technologies including sensors, drones, and other trackings. In our study, we have taken into consideration using a Zigbee - based UART module to wirelessly transmit alarm signals to the land control station and also implementing multilingual languages. This was done since the VHF 156.6 MHz marine frequency band is licensed and not available to us. In the future, satellite phones and smart watches may be used to improve this concept. **[4]**

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