

# Smart Coastline Alert System Using RSSI

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## Article Information

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**Abstract**— Countries with the International Maritime Boundary Line (IMBL) will always have security problems and continuous life threats for those fishermen whose family's main economic support is fishing. Even in peninsular countries like India have their boundary limit in the ocean, the people of these coastal regions have the main work of fishing, due to carelessness or without knowing their boundary limit of their country they cross the borders. In such a situation the lives of fishermen continue to be difficult. They may face bullets and attacks from the opposite Navy, at the end of attack fishermen are being abducted and their boats are being captured. So, our paper is designed to avoid such kinds of accidents and to alert the fishermen about the border area well before using the latest technology of Received Signal Strength Indicator (RSSI)

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**Keywords:** Attacks, boundary, IMBL, RSSI.

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## I. INTRODUCTION

The people's livelihood in coastal areas purely depends on fishing occupation in the sea. Crossing the border is being treated as a serious offense. Due to lack of unawareness about the coastline boundary limit, the fisherman unknowingly cross the border. Once they cross the border, they are arrested or killed by the relevant navy and they are being abducted and their boats are being captured by the neighboring country's coastal guards. Under such a situation the lives of fishermen continue to be in danger. Thus becoming one of the major issues to fishermen and the economy. To eliminate such difficulties, we have developed a system which saves the lives of the fishermen.

## II. RELATED WORKS

In this Section we have studied few papers which show that GPS about the boundary alert system and RSSI concepts.

In this paper, they presented a border alert system using GPRS and RFID. The RFID uses the tag for different locations and they are connected to raspberry pi. The GPRS (General Packet Radio Service) is a packet-switching technology that enables data transfers through cellular networks. This system has two modules. First module is used for authentication of Guard Station using RFID and Second module used for coastal border alert system using GPRS. The proposed system provides life security to the fishermen and also enables the fishing community to serve as a surveillance unit.

Design and Implementation of Low-Cost Maritime Boundary Identification System using Fiber Optic Technology. R Sathya, R Iswarya, V Revathi, R Sathyapriya, Year: 2021. In this paper they proposed a method of fiber optics technology for the border alert

system. A laser emits light in a very narrow path. Lasers has high spectral density and emits bright colored lights. Thus laser are used for long distance communication and it is useful of optical communication links.

IOT Based Fisherman Border Alert System using ZIGBEE. Michael Raj S, Lakshmi Sri Devi, Sathish Sridhar, C S Maheshwari, 2018. In this paper, they proposed a ZigBee based border alert system. In this model, the GPS antenna gets the signal from the satellite and the signal stored in the GPS unit is sent to the PIC microcontroller that stores and retrieves the information to the tracking unit ZigBee. Signal coverage is increases by GPS Antenna. Using GPS the signals from this is one reason for the cross-border atrocities.

## III. PROPOSED SYSTEM

This is one of the reasons for cross border cruelty. 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.

Main focus of the proposed approach is to Identify the boundaries and alert the fishermen as well as track the range of the boat. In this system, RSSI is used to track the boat location at any time. In this system, RSSI is used to track the boat location at any time. The system also helps identify the boats in the sea zone wise from Harbor or Control room.

In our proposed system, border identification is done using RSSI and an APR Voice system is provided to alert the fishermen. In addition, wireless communication is used to track the location between the boat and control room. Applications include reducing the speed of the engine automatically when it reaches the danger zone.

#### IV. PROPOSED MODEL

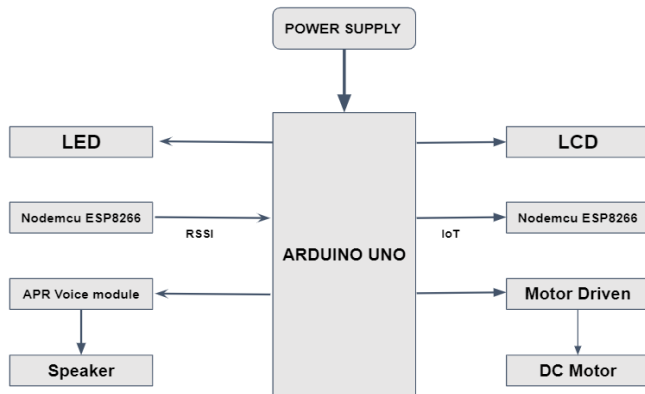


Figure 1:- Smart Coastline Alert System Model

#### V. PROPOSED MODEL DESCRIPTION

##### A. RSSI

In Wireless communication, received signal strength indicator (RSSI) is a measurement of the power present in a received radio signal's is usually invisible to a user of a receiving device. However, because signal strength can vary greatly and affect functionality in wireless networking, IEEE 802.11 devices often make the measurement available to users. In this project, there is a continuous connection between the boat and harbor/control room. Boat has a receiver and Control room has a transmitter. So, similarly receiving the transmitting signal by boat has high signal strength in the near control room and when the boat reaches the warning border it gets low signal strength.

##### B. APR Voice Module:

APR Voice module is the digital inscription and re-creation of sound waves, such as spoken voice, singing, instrumental music, or sound effects. The two main classes of sound recording technology are analog recording and digital recording.

Sound recording is the transcription of visible vibrations in air onto a storage medium such as a phonograph disc. The process is reversed in sound reproduction, and the variations stored on the medium are transformed back into sound waves. In this project APR Voice module creates playback sound when the boat reaches a warning region.

##### C. Cloud Data:

Plotting of data can be extensively made possible in an interactive way by Matplotlib, which is a plotting library that can be demonstrated in Python scripts.

Plotting of graphs is a part of data visualization, and this property can be achieved by making use of Matplotlib. Matplotlib makes use of many general-purpose GUI toolkits, such as python, Tkinter, QT, etc., in order to provide object-oriented APIs for embedding plots into applications. John D. Hunter was the person who originally

wrote Matplotlib, and its lead developer was Michael Droettboom. One of the free and open-source Python libraries which is basically used for technical and scientific computing is Python SciPy. Matplotlib is widely used in SciPy as most scientific calculations require plotting of graphs and diagrams.

MATLAB. This can make it extremely easy for MATLAB users to migrate to matplotlib. Matplotlib can be used to create publication quality figures in a variety of hardcopy formats and interactive environments across platforms.

##### D. Motor Driven:

The function of the motor drive is to draw electrical energy from the electrical source and supply electrical energy to the motor, such that the desired mechanical output is achieved. Typically, this is the speed of the motor, torque, and the position of the motor shaft. An adjustable speed motor drive that is used in a system that includes multiple operating speeds.

In this project, the main involvement of the motor driver is to reduce the speed of the boat when it reaches near to the danger zone to avoid trespassing.

#### VI. EXISTING SYSTEM

At present, there are few existing systems which help to identify the current position of the boats using a GPS system and view them in an electronic map. GPS provides mariners to navigate, measure speed, and determine location. This enables increased levels of safety and efficiency for mariners worldwide and accurate position, speed and heading are needed to ensure the vessel reaches its destination safely. The accurate position information becomes even more critical as the vessel departs from or arrives in port.

Disadvantages:

- GPS distortion can arise from a variety of sources, including radio emissions in nearby bands, intentional or unintentional jamming, and naturally occurring space weather.
- Lack of local knowledge
- High cost
- Complex Design and implementation.

#### VII. RESULT AND FUTURE WORKS

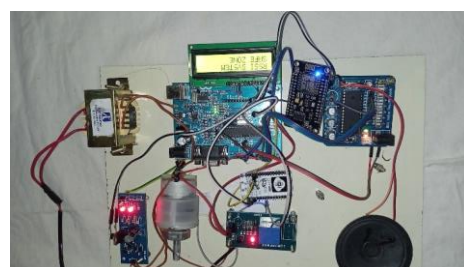


Figure 2:- Smart Coastline Alert System

Smart Coastline Alert System using RSSI is a model for border alert system which can be implemented by using IoT Technology. The location information comes from the IOT Cloud data Storage. As many fishermen unknowingly cross the maritime border, this Alert System will help them know their position and will allow them to avoid the consequences of crossing the border. The project is low budget and it will help the poor fishermen to a great extent. This border alert system provides sufficient information to both the coastal guards and to the fishermen to track the vessel in real time.

Figure 3: Home page



Figure 3: Home page

## VI. CONCLUSION

This system depends on fishing occupation in the sea. Crossing the border is being treated as a serious offense. Give more awareness about the coastline boundary limit, the fisherman knowingly cross the border. Once they cross the border, they are arrested or killed by the relevant navy and they are being abducted and their boats are being captured by the neighboring country's coastal guards it will be avoided. This project will solve the one of the major issues to fishermen and the economy. To eliminate such difficulties, we have developed a system which saves the lives of the fishermen

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