

A Review on GPS Tracking and Border Alert System for Fishermen

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Abstract

In this paper, a survey is done on various methods of tracking and alerting the fishermen in maritime using GPS. Navigation in marine is the most important factor used by the fishermen. The tracking system uses the electronic system installed on a vessel, and with software design which allows the user or owner to track the vessel location based on latitude and longitude data. Today Global Positioning System (GPS) technology is becoming the safe tool for navigation purpose. The position and location information can be viewed in electronic map via GPS receiver.

Keywords: GPS (Global Positioning System), GSM (Global Service For Mobile Communication), Navigation, Alarm System

I. INTRODUCTION

Navigation in transportation is one of the most important application mostly used by drivers in both road and seaways transportation. Maritime navigation is not as easy as road transportation since its spread widely and lack of path. For the safe navigation purpose of fishermen in within the country border and thereby preventing them from crossing the border limits. GPS and GSM module based alerting system provide effective, real time boat tracking and location found and reporting [1]. This system informs where the boat is exactly located, since the geographical data is being fetched with this system. When the vessel moves further towards the border limit, the real-time parameter such as exact latitude and longitude data's are reported by SMS. [3].

II. LITERATURE SURVEY

A. Intelligent Boundary Alert System Using GPS:

In this paper, An Intelligent Boundary Alert System (IBAS) is proposed. This system helps the fishermen in maritime navigation. The system uses a GPS which continuously receiving signals from the satellite and provide the current position of the boat based on the latitude and longitude data. ARM processor is already fetched details of the latitude and longitude of the maritime boundary between India and Srilanka. Comparison is done by the processor with stored data and current position of the boat, and it generates the alarm signal whenever the boat crosses the border. They used wireless sensor network to transmit the message to the base station, there they monitors the boat in the sea. This system provides an indication to both fisherman and to coastal guard. Thereby fishermen lifespan will be saved. [1].

B. Implementation of GPS Based Security System for Safe Navigation Of Fisherman Auto Boat:

This system also uses GPS technology for navigation and vessel tracking purposes. Using microcontroller, the stored border data between India and Srilanka is being compared with the current location details of the boat, and then alarm signal is being generated when the vessels crosses the border. Simply the message will be transmitted to the base station. In addition, some sensor is used to detect the natural calamities for sea way travel. The ultrasonic sensor is used for the detection of the iceberg, and MEMS is used for tsunami detection. In addition to this weather forecasting report can also be obtained with the help of temperature and humidity sensor. [2]

C. Implementation Of GPS Based Surveillance Navigation System For Fisherman:

This paper aims at surveillance system for fishermen from preventing them from border crossing. With the help of GPS the current position of boats/vessels with latitude and longitude data is continuously being extracted. The microcontroller compares the stored value and current value and alert the fishermen when crosses the border line. Then the message is transmitted to coast guards through the RF signals. The RF module is the low cost and preferable solution for wireless communications in wired communication is not feasible in marine. RF module can be used for both transmission and reception purpose. Wireless communication in maritime use VHF band range provides long way transmission. Thus, it overcomes GSM module which may fail some critical situation. [3]

D. Implementation of Maritime Border Alert System:

This paper proposed 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 of the boat and transmitter. The processing unit fetched with already known details of border between the countries, and comparison is being done with known data and current position data. The controlling unit will make decision in order to alert the fishermen and coast guards. [4].

E. Arm Based Fishing Boat Security System:

In this paper, the idea is to help the fishing boat for safe navigation using GPS. When the fishermen boat crosses the border limit, the controller unit generates the alarm signal. ARM processor is used in controller unit. In addition to it, voice alert is also generated. ZIGBEE module is used instead of GSM module for continuous signal transmission. If so the boat is further moving towards the border, DC motors will be turned off. Thus the system provides the maritime security for fishermen. [5]

III. COMPARATIVE STUDY

So each method of tracking system can have different controlling unit and message transmission unit. But some system uses GSM for message transmission, thus we need to replace communication unit with long range transmission. From the first system, we conclude that GPS is used for tracks the vessel location and send it to the controller. The controller then generates the alarm in regarding to border limits. In the remaining system zigbee module is used for message transmission but the transmission range is limited. From the all above consideration, those disadvantages must overcome by new implementations, and then the system will be user friendly.

Table – 1

Existing system	Platform/Technology	Methodology	Comment
GPS based alert system[1], [4]	GPS, GSM modem.[1] Zigbee[4]	Tracking system, location analysis, sending information	The system is User friendly
Implementation Of GPS Based Security System For Safe Navigation Of Fisherman Autoboat	GPS, Sensors, ZIGBEE, MEMS	Location analysis, zigbee for message transmission.	The system is quite complex, since more number of sensors are used.
Implementation Of GPS Based Surveillance Navigation System For Fisherman	GPS, GSM modem, RF module.	Location analysis, Radio frequency used for long range communication	Easy to upgrade
Arm Based Fishing Boat Security System	ARM, GPS module, DC motor and ZIGBEE	Location analysis, Zigbee communication, motor control	User friendly

IV. CONCLUSION

GPS is the safest tool for fishermen, especially in maritime navigation purpose. All these systems completely integrated and possible solution for alerting fishermen in maritime when they are crossing border limit. This system keeps control on navigation purpose for seaway transport, and help fishermen for safe fishing. Basic modules need for these systems are GPS and GSM for navigation and monitoring respectively. With the help of this system user can determine the vessel location, can get distance information from destination point. This system can be easily upgradable with any module to make it efficient.

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