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Research paper

Automatic Identification of Maritime Boundary Alert System using GPS

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Abstract

Global Positioning System (GPS) is being used more and more for a wide range of applications. This is a reliable position, navigation for end-users of anywhere in the world or around the globe, on any weather, day or night. The synchronization benefit gives that the GPS has three segments: space, control and client GPS has turned into a broadly utilized route apparatus over the world and turn into a helpful instrument for mapping, overviews, business, logical utilizations, checking and diversion has gone. As in any of the current GPS systems of geographic and entertainment, the security requirements of civilian navigation in the sea are met because the sea border of a country cannot be marked. This work concentrates on the flexibility and utility of a GPS in the ocean. The principle motivation behind the work is to help anglers explore past the limits of different nations. In the event that an angler goes past the limits of the nation, at that point a notice emerges, showing that the anglers have crossed the outskirt. Furthermore, a GSM transmitter interface will make an impression on construct station situated with respect to the shore showing that a vessel has crossed the fringe. Hence protects in the shore can help and give extra help to those anglers if necessary. Remembering about existences of Indian anglers, this gadget has been made to help them not to move past Indian. Overall, it is an endeavor to fabricate an appropriate gadget for the anglers at a sensibly ease.

Keywords: *GPS, GSM and IMPL.*

1. Introduction

We know that the indo-srilanka relationship makes the problem of tamilnadu's fisherman very difficult. Repeated incidents of firing of Tamilnadu fishermen in Sri Lanka's Maritime Border have offended all the citizens of the state. In Tamil Nadu, about 18,000 different types of boats are fishing on sea edges between India and Sri Lanka. Since violence had erupted in Sri Lanka two decades ago, fishing activities have not been peaceful. Fishermen of tamilnadu have been arrested or sri lanka has shot them by the navy. From the point of view of the fishermen, due to the complete ignorance of sea routes, wrong guidance comes out. Here and there the float is because of motor disappointment or solid streams. In the meantime, in any case, the quantity of indian anglers is utilizing countless saltwater angle, which is being utilized to abuse marine assets in srilankan water assets, which can be utilized by the global sea limit line (IMBL) goes out on a limb in intersection. The increase in market for sea resources has forced tamilnadu fishermen to take risk.

This work consolidates the adaptability and utility of GPS gadget in the ocean. The fundamental reason for the work is to help fishermen not go past the limits of some other nation. On the off chance that an fishermen goes past the limits of the nation, a caution is created which shows that the fishermen is near the outskirt. With this notice, the fishermen can be cautioned and come back to the nation fringe. Likewise, a message transmitter interfaces with the gadget to make an impression on the base station situated along the drift, demonstrating that a ship crossed the outskirt. Therefore, drift protect can give extra help and help to these anglers if essential.

2. System Analysis and Specification

Right now, there are a few frameworks for distinguishing the present condition of pontoons/ships utilizing GPS framework and review them on electronic maps. GPS gives the quickest and most precise approach to explore speed and decide area; it gives expanded levels of security and effectiveness for mariners around the globe, and to guarantee exact position, speed and title. It is fundamental that the vessel securely achieves its goal. The data about exact position turns out to be more imperative when leaving the ship on the harbour or coming.

The proposed framework is utilized to recognize the nation's sea limit, where long dispute between Sri Lanka and India is as yet present. This is mostly when fishermen cross the oceanic limit of the neighbouring nation since they don't know about limit in the ocean. The proposed framework utilizes a GPS beneficiary that gets signals from the satellite and gives the present status of the pontoon.

Alongside the definitely known points of interest of scope and longitude of the marine limit, the microcontroller computes the present circumstance and recalls the limit conditions and shows to the angler that he has crossed the outskirt by an alert framework. It utilizes a message sender to send messages to the base station, which screens water crafts in the ocean. Our framework gives a flag to both anglers and drift watch. In this manner, the framework

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spares the life of an angler or diminishes the misfortune because of Sri Lankan Drift Monitor.

3. Methodology

In our undertaking, we have the accompanying equipment parts GPS recipient, GSM module, Microcontroller, max232, vibration sensor and alert

In this undertaking, GPS is utilized to screen the position of vessel anyplace on the planet. The watercraft that needs to screen the vessel ought to be a GPS framework. GPS utilizes a satellite that enables you to make your position triangular. As it were, the GPS unit measures the season of development of signs transmitted by the satellite, at that point decides the amount of the unit is taken by the satellite by locking the signs of the satellite, to decide if the light Duplicate by speed. No less than three distinct satellites, a GPS recipient can ascertain a 2D (two-dimensional) turning point, which incorporates your scope and longitude.

GPS collector got pontoon position scope and longitude from satellite through GPS receiving wire. GPS collector is interfaced with the microcontroller through max232 convertor. Most extreme 232 converters are utilized to change over greatest 232 rationales into TTL rationale in light of the fact that the GPS beneficiary is most extreme 232 rationales and microcontroller is TTL rationale. At that point, the beneficiary microcontroller sends the flag got to the microcontroller in the programmable microcontroller in which we have just customized. Presently, microcontroller shows scope and longitude on the LCD. The status data flag is then transmitted through GSM or portable system. Data Cable is the special type of cable which is available with mobile phone, if go to srilankan boundary, the GPS system transmits the current location to the Indian navy system. If one any need of help to press the push button it will automatically send the request for base station. The accident occurs in any place its also possible. The accident is found through vibration sensor. We can easily track out the accident place, boundary place, helping place by receiving end mobiles.

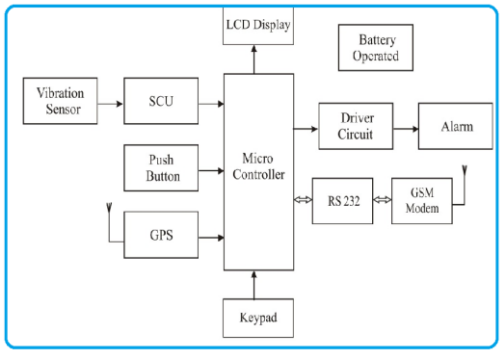


Fig. 1: Transmitter block diagram

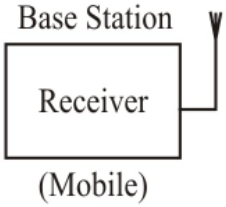


Fig. 2: Receiver block diagram

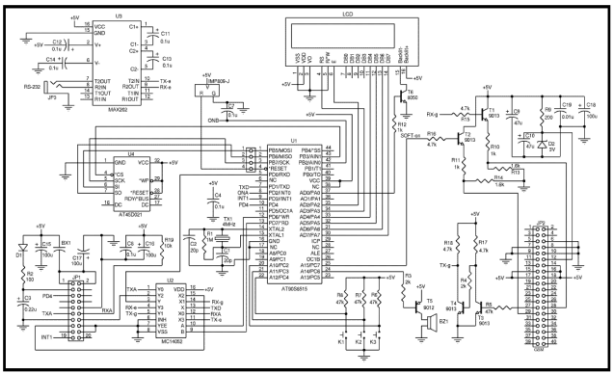


Fig. 3: Boundary identification of GPS

The oceanic limit amongst Srilanka and India in the Inlet of Mannar might be arcsof awesome circles between the accompanying positions, in the arrangement given underneath, characterized by scope and longitude: Sea limit in Bay of Mannar (Table 1).

Table 1: Maritime boundary in Gulf of Mannar

POSTIONS	LATITUDE	LONGITUDE
Position 1	09° 06'.0 N	79° 32'.0 E
Position 2	09° 00'.0 N	79° 31'.3 E
Position 3	08° 53'.8 N	79° 29'.3 E
Position 4	08° 40'.0 N	79° 18'.2 N
Position 5	08° 37'.2 N	79° 13'.0 E
Position 6	08° 31'.2 N	79° 04'.7 E
Position 7	08° 22'.2 N	78° 55'.4 E
Position 8	08° 12'.2 N	78° 53'.7 E
Position 9	07° 35'.3 N	78° 45'.7 E
Position 10	07° 21'.0 N	78° 38'.8 E
Position 11	06° 30'.8 N	78° 12'.2 E
Position 12	05° 53'.9 N	77° 50'.7 E
Position 13	05° 00'.0 N	77° 10'.6 E

The oceanic limit amongst Srilanka and India in the Inlet of Mannar might be arcsof awesome circles between the accompanying positions, in the arrangement given underneath, characterized by scope and longitude: Sea limit in Bay of Mannar (Table 2).

Table 2: Maritime boundary in Bay of Bengal

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
Position 4	10° 33' 0 N	80° 46'.0 E
Position 5	10° 41'.7 N	81° 02'.5 E
Position 6	11° 02'.7 N	81° 56'.0 E
Position 7	11° 16'.0 N	82° 24'.4 E

The limit amongst India and Srilanka in the waters from Adam's Extension to Palk Strait might be circular segments of Sea limit in Palk Strait Incredible Circles between the accompanying positions, in the arrangement given beneath, characterized by scope and longitude (Table 3).

Table 3: Maritime boundary of latitude and longitude

POINT	LATITUDE NORTH	LONGITUDE EAST
1	10° 05'	80° 03'
2	09° 57'	79° 35'
3	09° 40'.15	79° 22'.60
4	09° 21'.80	79° 30'.70
5	09° 13'	79° 32'
6	09° 06'	79° 32'

The boundary points are marked above on the following map are shown in Figure.4. These points should be stored in microcontroller. The computation is done in microcontroller with these points. Thus vessel crossing the border is being calculated.

Working of GPS: Since, all or the satellite signals are changed onto the same L1 conveyor repeat, there is a need to detach the signs after demodulation. This is done by consigning each satellite a stand-out twofold gathering known as a Gold code, and the signs are decoded, after demodulation, using modulo 2 growths of the Gold codes identifying with satellites n1 through nk, where k is

the amount of stations in the GPS beneficiary and n1 through nk are the PRN identifiers of the satellites.
Each satellite's PRN identifier is unique and in the range from 1 through 32. The outcomes of these modulo 2 growths are the 50 bit/s course messages from satellites n1 through nk. The Gold codes used as a piece of GPS are a gathering of 1,023 bits with a period of one millisecond. These Gold codes are significantly normally orthogonal, so it is unimaginable that one satellite banner will be confounded as another. Likewise, the Gold codes have awesome auto-relationship properties.

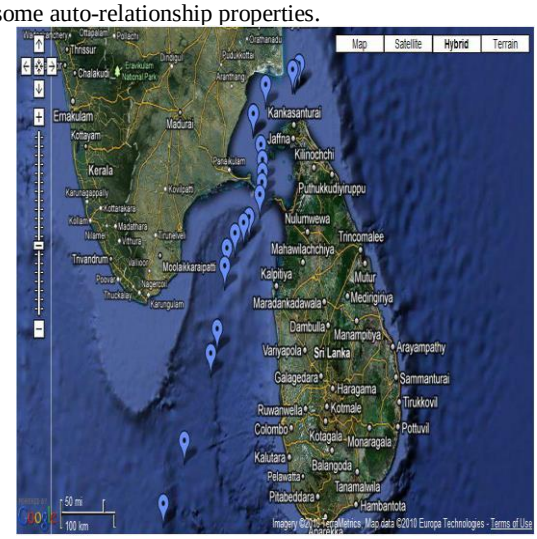


Fig. 4: Graphical Representation of Border

4. Conclusion

It is a helpful gadget for more secure route, particularly for anglers. Since Srilanka and India have heaps of issues with respect to the oceanic limit of the nation, this gadget is made to recognize the sea limit and to give help if necessary. The fundamental favourable position of this work is reduced and minimal effort. Our work can be stretched out to propel future segments and PIC microcontroller, so it can be augmented to extensive applications with more exact outcomes. The outline of the gadget can be made significantly littler than proposed by altering the plan details. Effectiveness can be enhanced by executing more precise GPS frameworks. This application can be coordinated with cell phones, PDA in order to make it convenient. This aides in stretching out its extension to oceanic limit recognizable proof, as well as to different thoughts.

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