International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016 [ICSSCCET 2016]

ISBN	978-81-929866-6-1	**VOL**	02
Website	icssccet.org	**eMail**	icssccet@asdf.res.in
Received	25 – February – 2016	**Accepted**	10 - March – 2016
Article ID	ICSSCCET127	**eAID**	ICSSCCET.2016.127

Development of Border Alert System for Fishermen Using GPS

S Anbarasu[1], V Vignesh Kumar[2], C Noorsait[3], G Ram Kumar[4], N Rajeshkannan[5]
[1]Assistant Professor, Department of ECE, [2,3,4,5]Karpagam Institute of Technology

Abstract— *In everyday life we find out about numerous Tamil anglers being gotten and put under srilankan care and even killed. The ocean fringe between the nations is not effectively identifiable, which is the principle explanation behind this cross outskirt savagery. Here we have planned a framework notifying so as to utilize installed framework which ensures the anglers the nation outskirt to them by utilizing Global Positioning System (GPS) and Global framework for portable correspondence (GSM). We utilize GPS recipient to locate the present area of the angling watercraft or vessel. Utilizing GPS, we can locate the present scope and longitude values and is sent to the microcontroller unit. At that point the controller unit finds the current location by looking at the present scope and longitudinal qualities with the predefined esteem. At that point from the consequence of the examination, this framework mindful the fisher men that they are going to achieve the nautical fringe. The territory is isolated into four zones-ordinary zone, cautioning zone, and zone close to limited zone lastly the confined zone. In the event that the pontoon is in ordinary zone, then the LCD displays typical zone. Along these lines they can make it clear that the watercraft is in typical region. In the event that it moves facilitate and achieves the notice zone, the LCD shows cautioning zone. On the off chance that the angler disregards the notice or neglect to see the showcase and move further, and if the pontoon enters the zone closer to the limited zone the caution will turn on and the rate of the vessel motor naturally gets controlled by half. In the event that the angler did not take any response about the caution and move further, then the pontoon will go into the limited zone, the alert keeps on beeping as some time recently, and once it touches the confined zone, the watercraft motor gets off by the control of fuel supply to motor.*

I. INTRODUCTION

The Tamil Nadu anglers even today summon the chronicled rights and routinely stay into the International Maritime Boundary Line (IMBL) for angling. From Tamil Nadu around 18,000 water crafts of various types conduct angling along the India-Sri Lanka oceanic fringe. Be that as it may, by inadvertently crossing the fringe without learning, they get shot by the Lankan naval force. This prompts misfortune in the both people and also their monetary salaries. We have added to a framework which wipes out such issues and spares the lives of the anglers.

II. Working Principle

The GPS Modem will persistently give the sign which decides the scope and longitude and demonstrates the position of the anglers to them. At that point it gives the yield which gets read and showed in the LCD. The same information is sent to the versatile of the angler and all the while the same information is sent to the Sea outskirt security. An EEPROM is utilized to store the information, got by GPS recipient. The equipment which interfaces with microcontroller are LCD show, GSM modem and GPS Receiver. GPS (Global Positioning System) is progressively being utilized for an extensive variety of uses. It gives solid situating, route, and timing administrations to worldwide users on a persistent premise in all climate, day and night, anyplace on or close to the Earth. 28 satellites slanted at 55° to the equator circle the Earth at regular intervals and 58minutes at a tallness of 20,180 km on 6 diverse orbital Lanes and every one of these satellites has up to four nuclear tickers on board. All we require is a precise clock. By looking at the landing

Cite this article as: S Anbarasu, V Vignesh Kumar, C Noorsait, G Ram Kumar, N Rajeshkannan. "Development of Border Alert System for Fishermen Using GPS". *International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016*: 631-634. Print.

time of the satellite sign with the installed clock time, at which the sign was discharged, the scope and longitudinal level of the pontoon's area is resolved. The present outline is an implanted application, which will consistently screen a moving Boat and once the watercraft goes past the level of the characterized layer the specific operation will be finished. For doing as such an AT89c51microcontroller is interfaced serially to a GSM MODEM AND GPS collector.

III. Existing System

At the present time there are few existing frameworks which help to distinguish the present position of the water crafts/ships using GPS System and perspective them on an electronic guide. For the purpose of ID the angler are utilizing the GPS72h, hardware utilized for the route as a part of ocean. It provides the quickest and most precise technique for mariners to explore, measure speed, and decides area. This system empowers expanded levels of security and effectiveness. It ensures whether the boat achieves its destination securely. The precise position data turns out to be much more basic as the vessel leaves from or lands in port.

IV. Proposed System

The proposed framework utilizes a GPS collector which gets signal from the satellite and gives the present position of the watercraft. The proposed framework is utilized to recognize the outskirt of the nation through the predefined longitude and scope of the position between Sri Lanka and India as well as all over the world. The specific layer level i.e. outskirt can be predefined and this can be put away in microcontroller memory. The ebb and flow quality is contrasted and predefined values and if these values are same, instantly the specific operation will be done i.e. the microcontroller offers direction to the alert to buzzer. It likewise utilizes a message transmitter to send message to the base station which screens the water crafts in the ocean. The system gives a sign to both angler and to beach front gatekeeper. Subsequently it spares the lives of the fisherman and cautions the base station to give assistance.

VI. Proposed System

The GPS receiver receives the signal and converts it into desired data message. The data is sent to microcontroller and microcontroller extracts the latitude and longitude from the data. The positions are compared with the stored Boundary latitude and longitude positions. If the vessel is found past the fringe, then a caution is created alongside a message transmission by a GSM.

VII. Global Positioning Device

A GPS route gadget is any gadget that gets Global Positioning System (GPS) signals with the end goal of deciding the gadget's present area on Earth. GPS devices give scope and longitude data, and some might likewise compute height. GPS gadgets are utilized in military, flying, marine and shopper item applications.

VIII. GPS Accuracy

The precision of GPS relies on upon the sort of beneficiary. Most hand-held GPS units have around 10-20 meter precision. Different sorts of recipients utilize a strategy called Differential GPS (DGPS) to get much higher exactness. DGPS requires an extra recipient altered at a known location nearby. Perceptions made by the stationary recipient are utilized to right positions recorded by the meandering units, producing an exactness more prominent than 1meter.

IX. Controller

Microcontroller gets the information from the GPS receiver through UART. The information got contains many details alongside scope and longitude. The latitude and Longitude of the present position is isolated from the nitty gritty information from GPS. The present positions are compared with as of now put away scope and longitude of countries boundary areas. At first the scope is contrasted and put away scope which distinguishes if the present position is situated close to the limit. In the event that the scope coordinates then the neighboring scopes and longitudes of the present scope is recovered from the microcontroller. The present position got from GPS is put away as S1 (latitude), S2 (longitude). The scope S1 is contrasted and put away scopes.

On the off chance that scope match, then nearby scope and longitudes (X1, Y1 and X2, Y2) are recovered from put away table and substituted in the comparison given below:

Postions	Latitude	Longitude
Position 1	12° 05'.0 N	82° 03'.0 E
Position 2	12° 05'.8 N	82° 05'.0 E
Position 3	12° 08'.4 N	82° 09'.5 E
Position 4	12° 33' 0 N	82° 46'.0 E

Cite this article as: S Anbarasu, V Vignesh Kumar, C Noorsait, G Ram Kumar, N Rajeshkannan. "Development of Border Alert System for Fishermen Using GPS". *International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016*: 631-634. Print.

(Y-Y1)/(Y2-Y1) = (X-X1)/(X2-X1) By simplification, we get ax + by = c

Now, S1 and S2 are substituted in above equation of line. Here two cases are possible:

Case 1: If LHS<RHS, then vessel is inside nation fringe.

At the point when vessel is inside nation's fringe, the microcontroller gets the data from GPS beneficiary after a short delay loop. Latitude and longitude is extricated and control with the new locations is done in the calculation.

Case 2: If LHS>RHS, then vessel has crossed border.

At the point when vessel crosses outskirt, a caution is generated immediately. Alongside caution a sign is additionally sent to GSM module for transmission of message to coveted sender. Caution proceeds until the vessel returns inside the nation's fringe.

The limit in the middle of India and Sri Lanka in the waters from Adam's Bridge to Palk Strait might be circular segments of Great Circles between the accompanying positions, in the sequence given above, characterized by latitude and longitude.

X. Maritime Boundary between INDIA and SRI LANKA

The limit focuses are set apart above. These focuses ought to be put away in microcontroller. The computation is done in microcontroller with these focuses. In this way vessel crossing the fringe is being ascertained.

XI. Consequence

Vessel Position and Navigation System contains,

- Layer1: Green LED sign
- Layer2: Red LED sign
- Layer3: Alarm sign &speed control
- Layer 4: Engine off

XII. GSM Module

GSM module is utilized for transmission of message looking for help. GSM can't be utilized as a part of seas as towers can't be put in seas. In this way CDMA system or satellites can be utilized for message transmissions .When vessel crosses outskirt, the put away message alongside current scope and longitude positions is sent to the wanted GSM module which is put away as of now. The model of the gadget is show in the beneath.

XIII. Calculating the Positions

Since GPS recipients don't have nuclear timekeepers, there is a great arrangement of vulnerability when measuring the size of the Spheres. Every span relates to the separation calculated to the satellite. Every single conceivable separation to the satellite are located on the periphery of the circle. In the event that the

Position above the satellites is avoided, the area of the receiver is at the careful point Where the three circles cross beneath the satellites. In spite of the fact that the separation to the satellites can only be generally evaluated at initial, a GPS recipient can precisely ascertain these separations in respect to each other. Because the relative size of the circles is known, there is only one conceivable point where they can meet.

XIV. Display Unit

A LCD display16×2 is utilized for showing the scope and longitude. LCD presentation is associated with port 1 of the Microcontroller. Each pin of port 1 is associated to LCD show. Message is sent through orders via serial Communication.

XV. Future Scope

- We can utilize the EEPROM to store the past Navigating Positions up to 256 locations. we can explore up to N number of areas by expanding the memory of EEPROM.

Cite this article as: S Anbarasu, V Vignesh Kumar, C Noorsait, G Ram Kumar, N Rajeshkannan. "Development of Border Alert System for Fishermen Using GPS". *International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016*: 631-634. Print.

- We can lessen the span of the unit by utilizing GPS+GSM on the same module of GPS guide.
- We can build the precision up to 3m by increasing the expense of the GPS collectors.

XVI. Benefits

- We can build the precision up to 3m by increasing the expense of the GPS collectors.
- The lost boat wrecks because of normal catastrophes can be recognized
- By keeping the units in the whole vessels and by knowing the areas of the considerable number of pontoons we can utilize our pack to help the activity.
- By keeping the units in the whole vessels and by knowing the areas of the considerable number of pontoons we can utilize our pack to help the activity.

XVII. Application

- We can use this device also as bomb detector
- Location of any lost vehicle could be found

XVIII. Advantages

- Accuracy determination of location
- Maintenance cost is low
- Easily replaceable

XIX. Conclusion

In this manner the anglers can without much of a stretch recognize the national ocean fringes and along these lines keeps them from entering their zone. Accordingly sparing their lives and giving great relationship the neighboring nations. Likewise, the theft of boat can be effortlessly brought under control.

References

1. GPS-based vessel position monitoring and display system. Aerospace and Electronic Systems Magazine, IEEE, Jul 1990.
2. www.falcomusa.com.
3. A. Michalski, J. Czajewski, The accuracy of the global positioning systems, IEEE Instrumentation & Measurement Magazine, vol. 7 (1), pp. 56–60, 2004.
4. http://earth.google.com/.
5. M. Diaz, 'Integrating GPS receivers into consumer mobile.

Cite this article as: S Anbarasu, V Vignesh Kumar, C Noorsait, G Ram Kumar, N Rajeshkannan. "Development of Border Alert System for Fishermen Using GPS". *International Conference on Systems, Science, Control, Communication, Engineering and Technology 2016*: 631-634. Print.