PROVIDING A BORDER ALERT SYSTEM FOR FISHERMEN BY USING GPS & GSM TECHNOLOGY IN WIRELESS SENSOR NETWORKS

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Abstract : -*The main idea to design a border alert system is to safeguard the fishermen from being caught by SriLankans in coastal area. In this system we implement GPS and GSM technology .The GPS technology is to navigate or to track the current location of a boat. Whenever fishermen reaches the warning border, the border security forces will send notification to the LCD display in ship, so that fishermen will be alerted. Even if they dint stop the boat, we use a relay to stop the boat. The relay will cut off the power supply to the motor, so that boat will be automatically stopped. This system is mainly designed for Tamil fishermen.*

Keywords-GPS tracker, GSM communication, Relay.

1.INTRODUCTION

Sri Lanka and India seaside nations are isolated by their sea borders. In Tamil Nadu about 20,000 vessels make spinning in the Bay of Bengal. The main aim is to give a well equitable user friendly environment for Indian Fisherman to handle hazardous situation with the help of engine control. This paper comes with a consistent solution for this problem and protects the Indian fisherman from dangerous situation and being crossing the maritime boundary and save their life and improve the safety of fisherman. The system is designed by using GPS and GSM. A GPS route device is a device that precisely discovers natural area by getting data from GPS satellites. This device can track the GPS data every single time at whatever point the fisher man's cross the Indian border. It is a significant depression issue and encourages trouble in the both people and also their economic expenditures.

2.LITERATURE SURVEY

D.Jim Isaac et al [1] the paper titled as "Advanced border alert system using GPS and with intelligent Engine control unit "In our system using GPS and GSM, where GPS is used to find the location of the boat. If the boat nearer to the boundary primarily it warning for a fishermen with the alarm and emits the location of the boat to the nearest coast office via GSM communication. When it further nears the maritime boundary an interferer is sent to the Engine Control Unit which controls the speed of the engine with the help of the electronic fuel injector. and its low cost maritime. By this method, we can alert the fishermen and also monitor them thereby avoiding banned activities such as smuggling, intruders, etc

S. Kiruthika et al [2] the paper titled as" A Wireless mode of protected defence mechanism to mariners using GSM technology "In our system using only GPS to receive the information from the satelliteand stored border locations to detect whether the boat has crossed the border or not which covers wide area.

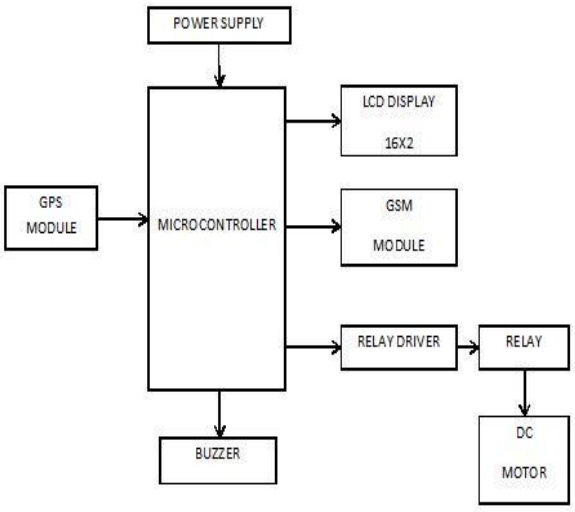
Naveen Kumar.M et al [3] the paper titled as" border alert and smart tracking system with alarm uses DGPS and GSM and this system uses DGPS to track the location of the boat and to activate an alarm which consists of a Piezo-buzzer, when the border is move toward or crossed. Also, in addition, the DGPS information is sent to control office, and also the information is sent to the family at regular time intervals that are in expectation about their family member's safety.

3. METHODOLOGY

The GPS device will frequently give the signal which determines the latitude and longitude and indicates the position of the boat and it is displayed in the LCD. The hardware which interfaces with microcontroller, LCD display, GSM modem and GPS Receiver. GPS provides consistent positioning, navigation, and timing services to users on a continuous basis in every day and night.

GPS store the storage of the maritime position. While comparing the previous maritime restricted position and current position and result will be the latitude and longitudinal degree of the boat's location is determined If the boat nearer to the restricted zone ,automatically warning message will be send to the LCD display which is in boat. The warning message are send by using a GSM Modem.

Then the fishermen fails to ignore the warning and they move to reach the restricted zone automatically engine gets off by means of relay and send through the message to the coastal guard. A microcontroller is interfaced serially to a GSM modem and GPS receiver. The block diagram of the entire system is given.



part of seas as towers cannot be placed in middle of the ocean so it place in coastal control office. Thus the coastal continuously receive the GPS information from the GPS Address. The main aim of this GSM system is to ensure continuous monitoring of each boat and information given to the coastal office. When boat crosses border, the stored message adjacent to with compared position and message sent to the desired authority person by using GSM module.

4. HARDWARE COMPONENTS

4.1 GSM MODULE

GSM network operate in a number of different carrier frequency and its frequency up to 900MHz or 1800MHz. GSM module is utilized for transmission of message looking for help. The GSM makes use of narrowband Time Division Multiple Access (TDMA) technique for transmitting signals. It cannot be utilized as a part of seas as towers cannot be placed in middle of the ocean so it placed in coastal control office. Thus the coastal continuously receive the GPS information from the GPS address.

The main aim of the GPS system is to ensure continuous monitoring of each boat and information given to the coastal office. When boat crosses the border, the stored message adjacent to with compared position and message sent to the desired authority person by GSM module.

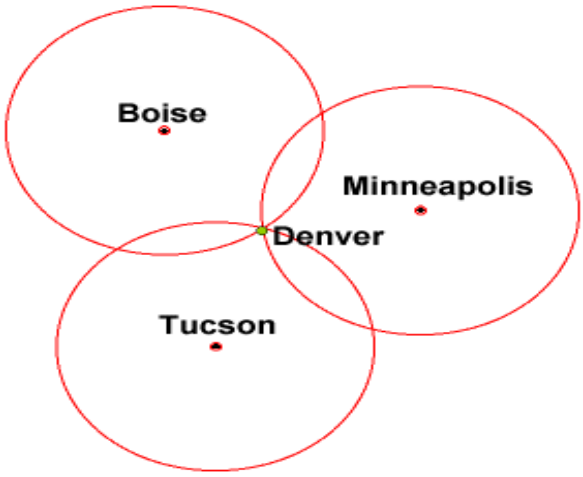
4.2 GPS

The **Global Positioning System** (**GPS**) is a space-based navigation system that provides location and time information in all weather conditions.. The GPS detects the latitude and longitude of the boat's position and sends the data to the microcontroller. This capability allows finding out whether the boat has crossed the restricted area or not. This gives the current position of the boat. Microcontroller in the Engine Control Unit. It compares the current position and stored restricted position if the boat is at a distance of Three kilometre from the restricted area and then processor to generate a message and also reduced the speed of the engine, The latitudes and longitudes received from the microcontroller is compared with the stored restricted area values and reaches the restricted area, the engine will get off.

A GPS receiver's job is to locate four or more of these satellites, figure out the distance to each, and use this information to deduce its own location. This operation is based on a simple mathematical principle called **trilateration**.

In order to make this simple calculation, then, the GPS receiver has to know two things:

i. The location of at least three satellites above you.
ii. The distance between you and each of those satellites.



4.3 ENGINE CONTROL UNIT

The ECU consists of random access memory (RAM), read only memory (ROM), and an input/output interface. This unit is used to stop motor when it is reaches the restricted area. If it is nearer the restricted area, the motor speed reduced. The Electronic Control Unit (ECU) can control almost every operation in an engine together with explosion systems.. In electronic control unit operate at electronic fuel injector with a solenoid valve to control the fuel supply in the engine When the alarm is generated it is necessary to stop the engine from moving forward The fuel injector is fitted with a solenoid valve which is a electromagnetically controlled mechanical valve. When the GPS position matches the stored restricted value, the result of the value give to the fuel injector. So this in turn reduced the fuel supply which stops the engine from moving forward.

4.4 POWER SUPPLY

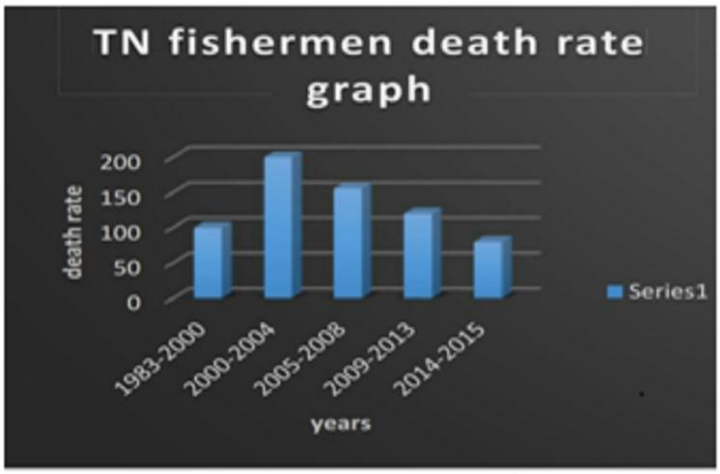
The power supply is provided DC motor and microcontroller. The DC power supply with both positive and negative output voltages, a centre-tapped transformer is used and Ardino operates at low power.

4.5 RELAY

A relay is an electrically operated switch. Where many relays are used to an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid state relays .Relays are used where it is necessary to control a circuit by a low-power signal where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers they repeated the signal coming from one circuit and re-transmitted it on another circuit.

5.CONCLUSION

In the recent times the capture of Indian fishermen across Sri Lanka border has been increased. It is difficult for the fishermen to discover the borders and lost into other country' borders. Our objective is to give wireless support to those fishermen and aside from to go out after them if they are found missing. This project is a low cost efficient method of wireless tracking. It also gives sufficient information to both ship and coastal guardians of anyone crossing the border.



Fishermen death rate graph

6.REFERENCE:

1. Jim Isaac , the paper titled as "Advanced border alert system using GPS and with intelligent Engine control unit "International Journal of Electrical and Computing Engineering (IJECE) Vol. 1, Issue. 4, June 2015.
2. S.Kiruthika, N.Rajasekaran the paper titled as" A Wireless mode of protected defense mechanism to mariners using GSM technology "International Journal of Emerging Technology and Innovative Engineering Volume I, Issue 5, May 2015 (ISSN: 2394 – 6598).
3. G.Sivagnanam , A.J.Midhun, N.Krishna, G.Maria Samuel Reuben A.Anguraj5 "Coast guard alert and rescue system for international maritime line crossing of fisherman" " at International Journal of Innovative Research in Advanced Engineering (IJIRAE) ISSN: 2349-2163 Issue 2, Volume (February 2015).
4. Naveen Kumar.M Ranjith.R The paper titled as" Border alert and smart tracking system with alarm using DGPS and GSM" International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE) ISSN: 0976-1353 Volume 8 Issue 1 – APRIL 2014.

5. R.Karthikeyan, A .Dhandapani, U.Mahalingham" Protecting o Fishermen on Indian Maritime Boundaries", Journal of Computer Applications ISSN: 0974 – 1925, Volume-5, Issue EICA2012-3, and February 10, 2012.
6. K. Suresh Kumar, "Design of low cost maritime boundary identification device using gps system" International Journal of Engineering Science and Technology Vol. 2(9), 2010, 4665-4672.-2010.
7. Abid khan and Ravi Mishra (2012) , "GPS – GSM Based Tracking System" International Journal of Engineering Trends and Technology Volume3 Issue2.
8. Charles Finny Joseph , R Dinesh Kumar , Alert System for Fishermen Crossing Border using Android , International Conference on Electrical, Electronics, and Optimization Techniques(ICEEOT) – 2016.
9. Brones T.Costa,P.D.Etter R,"A rule based approach towards context- aware user notification services," IEEE International conference on Pervasive service,pp.281284,2006.
10. Michalski, J.Czajewski,The accuracy of the global positioning systems, IEEE Instrumentation & Measurement Magazine,vol.7(1), pp.56–60,2004.

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