

Ghosting Based Verge Heedful System Using Arduino



K Rajkumar, R Srinithi, K Thejaswini

ABSTRACT--- The Indian Ocean and its surrounding seas have the large number of fisher men in the world. And no where exist like killing firing or arresting of fisherman. In the last four years above 1,500 fishermen have been arrested. There cent survey based on the last disaster shows that many fisherman have gone missing. As safety and security plays a major role in the life of fishermen because of the marine border line problems. And due to this many of them have lost their life. Hence in order to protect the mour paper includes a system which reserve the life of the fishermen. The recent invention consists of GPS vehicle security information system Internet, GSM and Wave & Wi-max communication network, pulse sensor, laser range finder, hidden live steaming camera are interfaced through Arduino. The data of every individualship's GPS location will be displayed in the mapper. In order to find the intruder's ship distance we use the laser range finder which is connected with the LCD (display unit). And if the intruder comes in range of 200 meters from a particular ship automatic triggering will be provided to ON then the hidden camera will stream the data to base station. The purpose of pulse sensor is to check the pulse of the fishermen whether it is normal or abnormal status would be monitored. In case if it is abnormal it will send message to their respective relatives through the GSM. The wave & wimax communication network are transmitting the signal to control room and alarm the device in the boat. The fish finder senses where the movement of fish is high in the ocean through the reflection of sound. This helps the fishermen to find where the quantity of fish is high. This system ensures the safety and benefits for fishermen by themselves by fitting this system in their boat or ship boat.

Keywords: GPS, GSM, Antenna, Laser range finder, Wave & Wimax communication.

I INTRODUCTION

It is very important to save the lives of the fishermen who unintentionally or unknowingly cross their country border and to increase the income of fishermen.

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The GPS (Global Positioning System) plays a major role in the surviving system.

It helps to indicate the latitude and longitude of the fishermen ship and the intruder's ship. GSM (Global System for Mobile Communication) is a standard used to describe the protocol for mobile devices. GSM works on variation of time division multiple access and it is the most adequately used wireless telephony technology. It is used to digitize and lessen the data, then transmits it to the channel with other streams of user data. It operates at either 900MHz or 1800MHz frequency band. Though this technology is useful, it is bit difficult in case of middle of the sea. There exist a lack of signal due to some issues, so in order to overcome this problem we use antenna for different range of mobile communication. The whole system is interfaced using Arduino. Arduino is used in real time applications and it is a non-proprietary source computer hardware and software. It consists of physical programmable circuit board and Integrated Development Environment that runs on the computer. In this paper uses the pre-determined values of geo-magnitudes points of the maritime border should be accumulated in the microcontroller. When the boat reaches the border, boats position (latitude and longitude) is measured using GPS and compared with the stored value, if it exceeds then the boats seem to be crossed and alert message is sent through GSM or Antenna the accurate position of fishermen is informed to their family members from the control room. The fishermen are using wave & wi-max communication network equipment used for the navigation in sea and provide the swift and most accurate location of boat, measures the speed.

II. METHODOLOGY & RESULTS

2.1 Contemporary System

At this time there are few existing system, which enrolls gps and gsm to identify the present location of the maritime transports and it can be viewed on the electronic map. This system helps the fisherman to identify where they are. Then the laser range finder gives the information about the intruder ship which makes more alert. This system also has hidden live streaming camera which streams the data when it is automatically triggered on. This method provides fastest navigation in the sea. This accurate position information becomes critical when the vessel gets positioned in the port.

Drawback

- Memory required saving each point of latitude and longitude is more.
- Border alert is intimated only to the fishermen but it is cannot to the control station.

2.2 Proposed System

Our proposed system is interfaced with arduino. Initial the gps receiver receives the present location from satellite, so it's transmitted to the irrelations through the gsm technology or antenna (in case if gsm technology fails) then this additionally consists of pulse device and therefore the fish finder .The heartbeat devices senses the speed of pulses of the every and each fishermen and offers some knowledge. Then the aim of the fish finder is to trace wherever number of fish is high within the deep ocean that in the main helps of fisherman for their work .This additionally provides indication to each fisherman and therefore the coastal guard in this system used for boat reach the border limit the ignition to the motor is cut which means the motor is stopped it could not further move forward the boat and boat only move by taking reverse gear the boat can be restarted. As the boat reaches the restricted zone the boat stops and only when you reverse the motor it can start again. It ensures maximum safety to the fishermen well in advance.

2.3 Global Positioning System

GPS-Global positioning system is a ultimate navigation system which provides specific location and weather condition at all time. It also detects lattitude and longitude of the boat location and transfer it to the microcontroller. These data helps to find out whether the boat is in the boundry limits. The current boat position is given to the microcontroller in the engine unit and it is then compared with the stored value of the derestricted area. If the value is at a distance of three kilometer to the restricted area the processor is programmed to generate an alaram indication indicating the boat is about the reach the restricted area and it suddenly reduces the engine speed and simultaneously stop the engine when it reaches the mere restricted area.



Fig1: Global position system

2.4 GSM

A GSM/GPRS Module is an Integrated circuit that connects to the Global system for mobile Communication network using Subscriber Identity Module (SIM) and Radio Waves. GSM Module operates at 850MHz, 900MHz, 1800MHz and 1900MHz radio frequencies.

2.5 Laser Range Finder

A laser rangefinder is a rangefinder that uses a laser beam to determine the distance to an object. The most common form of laser rangefinder operates on the time of

flight principle by sending a laser pulse in a narrow beam towards the object and measuring the time taken by the pulse to be reflected off the target and returned to the sender. Due to the high speed of light, this technique is not appropriate for high precision sub-millimeter measurements, where triangulation and other techniques are often used.



Figure 2. Laser Range Finder

2.6 Working Principle

Our proposed system is so simple which is interfaced with arduino. The GPS provides continuous information regarding the position of each ship. This output is read and displayed in the Liquid Crystal Display.

This information is transferred to control room from where it is passed to the relatives of fishermen through mobile communication or using Antenna. The laser range finder with field mapping provides differentiation from his boat and its intruder boat and this is capable of measuring distance upto 20km. Pulse sensor senses the heart rate of the fishermen regularly .Then the automatic trigger is provided to ON the Hidden Camera which will stream the data to the control room when the intruder ship is nearer to their boat. The fish finder uses the transducer to find the schools of fish.

2.7 Block diagram

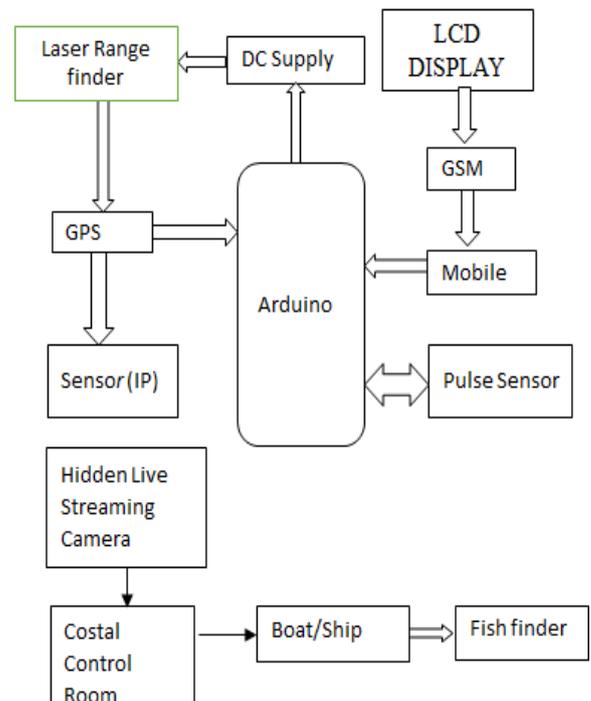


Figure 3. Block diagram

2.8 BLOCK DIAGRAM Description

1. Our proposed system mainly alerts the fishermen while crossing the border line. Arduino acts as an interfacing device. First, the GPS sends its input signal to the arduino which is interfaced with the GSM. This GSM works on the basis of mobile communication and gives information about the fishermen to their relatives.

2. In deep sea, there is less possibility for mobile communication. So in that case we proposed antennas for communication.

3. Then the laser range finder is applied with dc supply of 5V. It is used to find the distance of an object ranging 20 km mounted on a tripod with an angular mount tip. Mostly the laser range finder works on the principle of time of flight by transiting a narrow beam of pulse towards the focus and measures the time duration by the pulse to be reflected off from the focus and returns to the parent position.

Then the pulse gives the information about the respective fisherman when the Sensor is lightly hold by them. It is operated on either 3V or 5V. Once when it is placed in the finger the data will be read by LCD or the Serial monitor. The data that read on the serial monitor or the LCD should match with the source value, otherwise the LCD will glow.

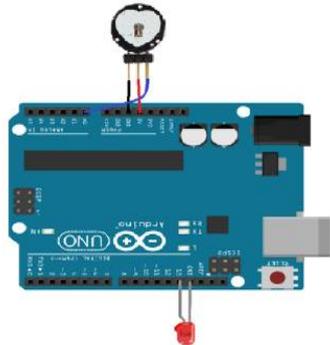


Figure.4 Aurdino board

Then the fish finder is fixed with fisherman’s boat. First the electrical impulse signal is emitted from transmitter which is converted into acoustic wave by an underwater transducer, and then sent into the water. When the wave strikes the fish, the location of the fish will be displayed on the screen that can be either LCD or CRT type.

The Dc power supply is supplied to BLDC motor and microcontroller as when the boat reaches the unrestricted area the DC power supply output polarity changes which causes the motor to run in the opposite direction When the boat reaches the border or it is nearer to the border, an alarm is indicated by buzzer and location transmitting signal to control room.

2.9 Position calculation

Present position received from GPS is stored as L1 (latitude), L2 (longitude). The latitude L1 is compared with stored latitudes.

Position 1	12°01'.0N	81°03'.0E
Position 2	12°05'.0N	81°09'.0E
Position 3	12°08'.0N	81°15'.0E
Position 4	12° 33'.0N	81°46'.0E

Table 1 position calculation method

If latitude L1 is correlated with stored latitude, adjacent latitudes (X1, X2, Y1, Y2) are retrieved from the above table and substituted in the equation given below

$$(Y-Y1) / (Y2-Y1) = (X-X1) / (X2-X1) --1$$

Solving the above equation, we get the below equation

$$Ax + By = C -----2$$

In the above equation, L1, L2 values are submitted. Based on substituting these values, there are three cases.

Case 1:

If LHS < RHS, then When the boat is inside the boundary, AURDINO gets input from GPS. Latitude and Longitude are extracted from the table and calculations are done in milliseconds.

Case 2:

If LHS > RHS, then When the boat crossed the boundary, alarm will be raised indicating that the boat crossed the boundary. Immediately the message will be sent to the coastal area unit via GSM. The alarm will be continuously alarming until the boat returned to boundary.

2.10 Results and Discussion

Border alert system for fishermen is used to detect the boundary location and warn the fishermen in Unconditional situations. It not only finds the GPS value, but also compares with the stored value in the microcontroller, and makes a decision as to whether the fishermen is in the warning range or not.

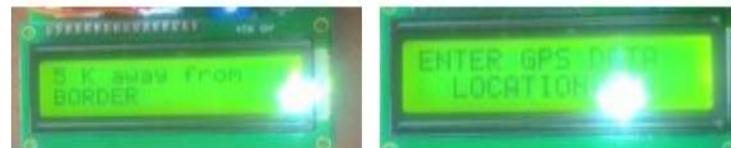


Figure.5 warning notification, Entering the GPS location

ZONES	LCD DISPLAY	GSM/ PULSE DETECTON /wave &Wimax
Normal	Transmitting	Idle
Warning	Transmitting	Alert message received ,fisherman health condition status passed the message to relatives ,Engine stopped that position

Table 2: At the control station

III. CONCLUSION AND FUTURE WORK

Thus the fisherman will simply determine their location fixed storage the national ocean borders and thus prevents them from going in others space.

This technique provides the correct worth of each the Latitude and line of Longitude .And this technique additionally has wide options than the already existing system.Thus this technique ensures the protection and necessary steps are often taken if any drawbacks exists. Thus the lives of many fisherman are often saved ,and this technique provides for simple fishing. In Future the navigating position storing capacity can be increased to 256 location using serial EEPROM or microchip technology.

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