

SMART MARINE BOUNDARY IDENTIFICATION SYSTEM USING GSM & GPS

Mr.Saurabh K. Bhise¹, Ms.Mayuri C. Sagare², Ms.Namita R.Wadate³, Ms.Karuna P. Girigosavi⁴

¹Assistant Professor,E&TC Engineering,AGTI's DACOE,Karad,Maharashtra,India

^{2,3,4} Student,E&TC Engineering, AGTI's, DACOE, Karad, Maharashtra, India

Abstract - Increasing tension across the indian and sri lankan borders caused much have between the two countries. Unintentional most of the times .the paper deals with a system tracking the location of the boat using GPS and to trigger an alarm which consist of buzzer, when the border is approached or crossed Also,in addition, the GPS information is sent to the control room where it is read and then through a GSM device, information is sent to the family at regular time intervals who are in anticipation about their family member's safety. The paper aims at providing a system that will alert the fisherman well in advanced and ensure maximum safety and peace at the borders and also notify the family members[1].

Key Words: : Arduino, GPS, GSM, LCD Display

1.INTRODUCTION

The tamil Nadu fisherman even today invoke the historical right and routinely stay in to international maritime boundary line (IMBL) for fishing. From tamilnadu about 18,000bout of different kinds conduct fishing along the india-srilanka maritime border .but by accidentally crossing the border without knowledge ,they get shot by the Lankan navy. This leads to loss in the both humans as well as their economic income. We have develop a system which eliminates such problems and save the lives of the fisher men. The system is used to detect the maritime boundary of the country where the long time dispute between sri-lankaa and India still exists. This mainly happens when fisherman crosses maritime border of neighboring country as he is not aware of the limits in sea.The proposed system uses a GPS receiver which receiver signals from the satellite and gives the current position of the boat. With already known details of the latitude and longitude of the maritime boundry,the AURDUINO calculate the current position and sorted boundary position and indicates the fisherman that he has crossed the boundary by an alarm system.it also uses a message transmitted to end message to the base station which monitors the boats in the sea. this system provide an indicator to both fisherman and to coastal guard. thus the system save the lives of the fisherman or reduce the damages caused to them by sri-lankan coastguards.[1]

2. GOAL AND OBJECTIVE

The main objective of the project to design and implement a smart marine boundary identification system is capable to

provide the safety for the fisherman's who has crossing the boundaries without any knowledge.

So this system will prevents them by causing the accidents as well as economic losses.

3. METHOD

Design Overview

The Block diagram of our proposed system is as shown below:

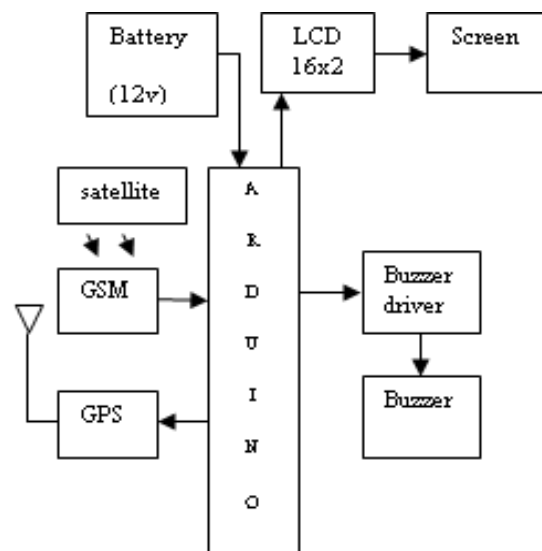


Fig-1: Block Diagram of Smart Boundry Identification System

This system consists of following component which are listed below.

1. Arduino (ATMEGA 328P)
2. LCD Display (16×2)
3. GSM Module(SIM800A)
4. GPS Module(SIM28ML)
5. Power supply

3.1 Arduino:

Arduino Uno is a microcontroller board based on the ATmega328P it has 14 digital input/output pins ,6 analog

pins, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and reset button .arduino boards are able to read inputs, light on sensor, finger on button. You can tell your board what to do by sending a set of instruction to the microcontroller on the board .it works on 12v dc supply both the modules GSM and GPS, LCD display are interface with these arduino board. This is the heart of the system. 0 (RX) and 1(TX) of the arduino board is connected to the TX and RX pin of the GSM module even Digital pin is connected to the GPS module. The data pin(D2 to D7) from the LCD display is also connected to the arduino board.[1]

3.2 LCD Display (16×2):

A 16x2 LCD means it can display 16 characters per line and there are two such line.in this LCD each character in displayed in 5x7 pixel. This LCD has tow registers namely command and data. The command register stores the command instructions given to the LCD .A command is an instruction given to LCD to do a predefined task like initializing it, clearing it screen setting the cursor position etc. The data register stores the data to be displayed on the LCD.

The data from the arduino is communicated using upper 4 bits of one-of the ports and the data pins of the LCD is connected to data pins D4, D5, D6, D7 of the LCD. The LCD is enabled using Enable (E) pin. Reading and writing of data to the LCD is handled using R/W pin.[2]

3.3 GSM Module (SIM 800A):

The term GSM stands from (global system for mobile communication). The idea of GSM is developed at Bell laboratories in 1970. GSM is a standard developed by the European Telecommunication standards institute(ETSI).to described the protocol for 2ndgeneration digital cellular network used by mobile devices such as tablet. The GSM module or a GPRS module is a chip or circuit that will be used to established communication between a mobile device or a computing machine and GSM or a GPRS system. . The module can perform following operations. [2]

1. Receive, send or delete SMS messages in a SIM.
2. Read, add, search phonebook entries of the SIM.
3. Make, receive or reject a voice call.

The TX and RX pin from these module is connected to the RX and TX pin of the arduino board.

3.4 GPS Model:

A GPS navigation Device, GPS receiver ,or simply GPS is a device that is capable of receiving information from GPS satellites and then to calculate a device’s geographical position .using suitable software the device may display the position on a map and it may offer direction’s. A GPS reception requires and unobstructed line of sight to four or

more GPS satellites. The TX and RX pin from these module is connected to the RX and TX pin of the arduino board.[2]

3.5 Power Supply:

For providing supply to this system we use a 12v 1A adaptor. The adaptor is a device which receives a voltage from 230v AC mains and converts into a 12v DC with 1Amp current. In adapter Rectifier, filtering and regulating circuit is used for pulsating DC and noise removing purpose. The supply is necessary to do work. Instead of adapter we also used DC battery depending on our requirement of the system.

3.6 Buzzer:

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke .Early devices were based on an electromechanical system identical to an electric bell without the metal gong. Similarly, a relay may be connected to interrupt its own actuating current, causing the contacts to buzz. Often these units were anchored to a wall or ceiling to use it as a sounding board. The word "buzzer" comes from the rasping noise that electromechanical buzzers made. In our system buzzer is used for generating a voice signal .

4. RESULT:

Position	Latitude	Longitude
Position 1	1717.4431	07411.1608
Position 2	1718.6970	07411.2570
Position 3	1718.9328	07411.7044
Position 4 (boundary crossed)	1719.0125	07411.6094

Fig-2 Displayed values of latitude and longitude in different positions.

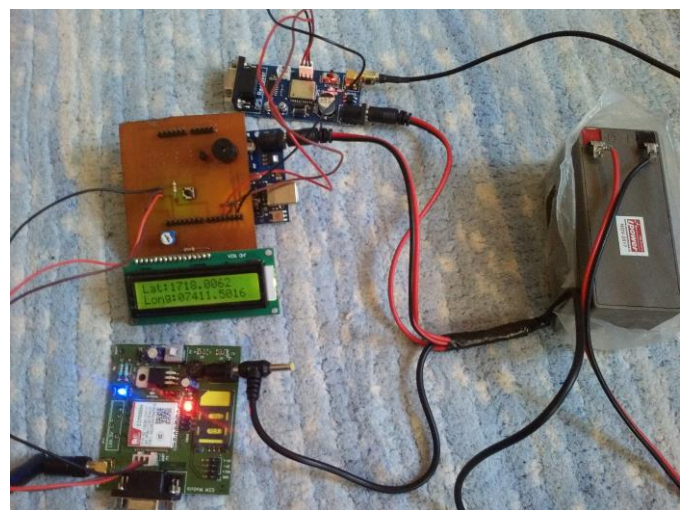


Fig-3 Hardware setup of system.

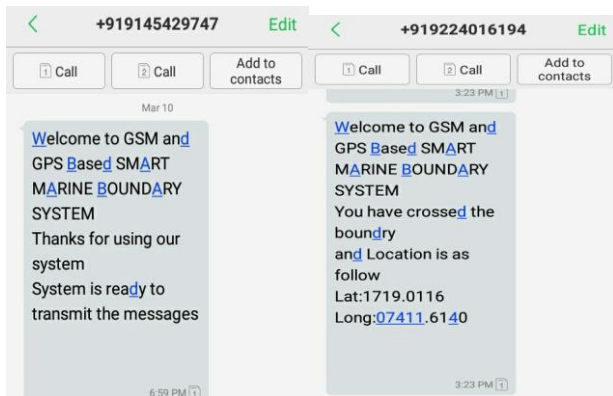


Fig (a)

Fig (b)

Fig-4 Fig (a) system is ready to transmit the message.
Fig(b) boundary crossed message.

REFERENCES:

- [1] Nishigandha Shirsat, Swati Nalawade, Monika mhaisdhune Study of maritime boundary identification and fisherman patrol system IJIRSE,3 MAR 2016.
- [2] Mahesh s. kartik Eshwar E. design of maritime boundary identification system and fisherman patrol system IEEE, 3(916-1503):OCT 2014.
- [3] E.Yuvaraj D.Arunvijay Design of border alert system for fisherman using GPS.IJSRT,2(2321-2543):MAR 2014.

5. FUTURE SCOPE:

1. We can use the memory chip to store the previous navigate positions upto to 256 locations.
2. We can navigate upto number of locations by increasing the memory .
3. We can reduce the size of kit by using GPS and GSM on the SIM module of GPS navigator.
4. We can increase the accuracy upto 3 meter by increasing the cost of GPS receiver.

6. APPLICATIONS:

1. We can used the system also school & colleges.
2. We also found to be the lost vehicle.
3. We can use this device also as bomb detector.
4. The lost ship wrecks to easily identify.

7. CONCLUSION:

In this way we conclude that this project displays the maritime boundary identification and fisherman patrol system using ARDUINO, GPS and GSM. This system implements GPS is to create a security system. The fisherman, while crosses the maritime boundary, unknowingly as they are unable to visualize it in the ocean which causes loss to its life. Through this project a GPS based security system is provided to the fisher man so that they can find out when they are in danger. Thus the fishermen can easily identify the national sea borders and therefore prevents them from entering their area. Thus saving their lives and providing good relationship with the neighboring countries.[1]