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Automatic Boat for Fisherman

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Abstract: ***This paper describes about the border alerting system for fishermen using GPS and engine control unit. In day-to-day life, many problems challenged by the Indian fishermen, and these were captured by the neighbouring countries because of crossing the border. The target of this system is to encourage the fishermen to explore and be always inside our sea nation border Using GPS (Global Positioning System) and GSM (Global system for mobile communication), GSM sends the message to the coastal guard office. If the boat nearer to the restricted zone the alarm will turned on and the sound keep on increasing and also speed of the engine will get reduced. If the fishermen fail to ignore the warning and they move to reaches the restricted zone, then automatically engine gets off and send the message to the costal guard along with the location of the fisherman. By this way, this system helps Fisherman.***

Keywords: Arduino uno, GPS, GSM, Buzzer.

I. NTRODUCTION

In the present day scenario, many countries are isolated by their sea borders. Like 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 this work is to give a well equitable user-friendly environment for Indian Fisherman to handle hazardous situation with the help of engine control. This work provides a consistent solution for this type of 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 , Arduino and GSM. A GPS route 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, 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. By this method, 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 defense mechanism to mariners using GSM technology.” In this proposed system using only GPS to receive the information from the satellite and stored border locations to detect whether the boat has crossed the border or not. If so the mariner is alerted and the message is transmitted to nearby coastal office through RF signals at VHF 30-300 MHz range which covers wide area.

II. 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 proposed 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 the fishermen with the alarm and emits the location of the boat to the nearest coast office via GSM communication office 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 towards 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 safety.

III. BLOCK DIAGRAM

Fig 1: Block Diagram

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IV. HARDWARE REQUIREMENTS

A. Arduino UNO

Overview The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. The Uno differs from all preceding boards in that it does not use the FTDI USBto-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-toserial converter. Revision 2 of the Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to connect to DFU mode.

B. GSM

GSM is a mobile communication modem; it is stands for global system for mobile communication (GSM). The idea of GSM was developed at Bell Laboratories in 1970. It is widely used mobile communication system in the world. GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz,900MHz, 1800MHz and 1900MHz frequency bands. GSM system was developed as a digital system using time division multiple access (TDMA) technique for communication purpose. A GSM digitizes and reduces the data, then sends it down through a channel with two different streams of client data, each in its own particular time slot. The digital system has an ability to carry 64 kbps to 120 Mbps of data rates.

C. GPS

GPS stands for Global Positioning System by which anyone can always obtain the position information anywhere in the world. Firstly, the signal of time is sent from a GPS satellite at a given point. Subsequently, the time difference between GPS time and the point of time clock which GPS receiver receives the time signal will be calculated to generate the distance from the receiver to the satellite. The same process will be done with three other available satellites. It is possible to calculate the position of the GPS receiver from distance from the GPS receiver to three satellites. However, the position generated by means of this method is not accurate, for there is an error in calculated distance between satellites and a GPS receiver, which arises from a time error on the clock incorporated into a GPS receiver.

For a satellite, an atomic clock is incorporated to generate on-the-spot time information, but the time generated by clocks incorporated into GPS receivers is not as precise as the time generated by atomic clocks on satellites. Here, the fourth satellite comes to play its role: the distance from the fourth satellite to the receiver can be used to compute the position in relations to the position data generated by distance between three satellites and the receiver, hence reducing the margin of error in position accuracy.

The Fig below illustrates an example of positioning by two dimensions (position acquisition by using two given points). We can compute where we are at by calculating distance from two given points, and the GPS is the system that can be illustrated by multiplying given points and replacing them with GPS satellites on this figure.

D. Step Down Transformer

Usually, DC voltages are required to operate various electronic equipment and these voltages are 5V, 9V or 12V. But these voltages cannot be obtained directly. Thus, the a.c input available at the mains supply i.e., 230V is to be brought down to the required voltage level. This is done by a transformer. Thus, a step-down transformer is employed to decrease the voltage to a required level.

E. L293D

L293D is a dual H-Bridge motor driver, so with one IC we can interface two DC motors which can be controlled in both clockwise and counter clockwise direction and if you have motor with fix direction of motion the you can make use of all the four I/O's to connect up to four DC motors. L293D has output current of 600mA and peak output current of 1.2A per channel. Moreover, for protection of circuit from back EMF Output diodes are included within the IC. The output supply (VCC2) has a wide range from 4.5V to 36V, which has made L293D a best choice.

F. LCD

Liquid Crystal Display also called as LCD is very helpful in providing user interface as well as for debugging purpose. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. The most commonly used LCDs found in the market today are 1 Line, 2 Line or 4 Line LCDs which have only 1 controller and support at most of 80 characters, whereas LCDs supporting more than 80 characters make use of 2 HD44780 controllers.

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G. 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 key stroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices. Active buzzer 5V Rated power can be directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play."

V. FLOW CHART

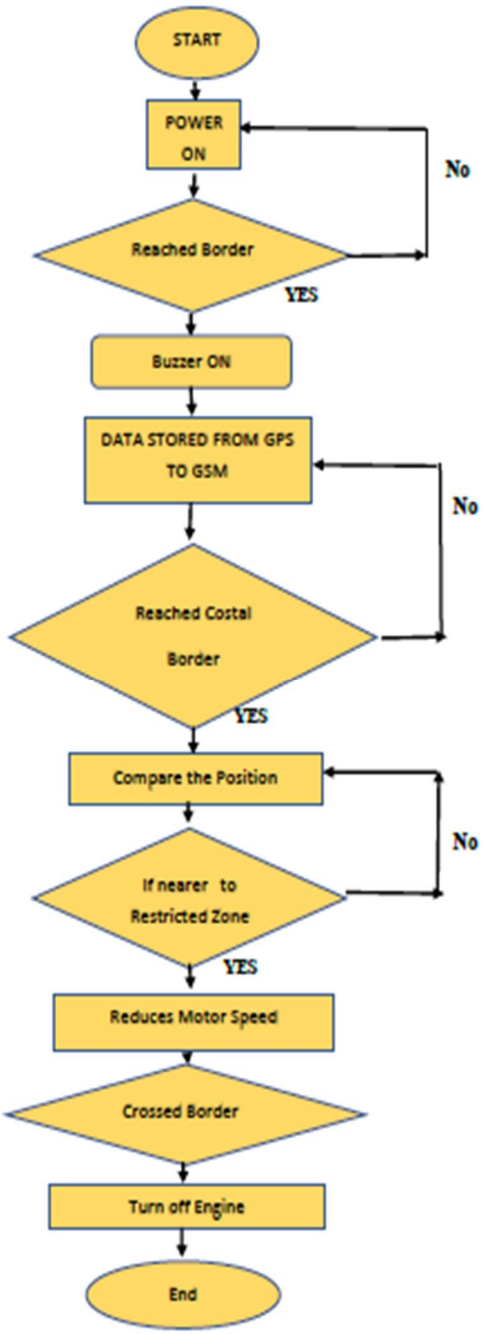

Fig 2: Algorithm

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VI. RESULT AND DISCUSSION

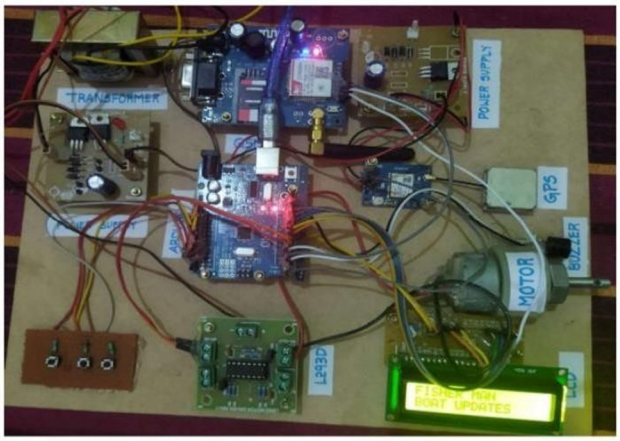

Fig 3: Project Ki

Fig 4: Border Crossed

Fig 5: Central Border Crossed

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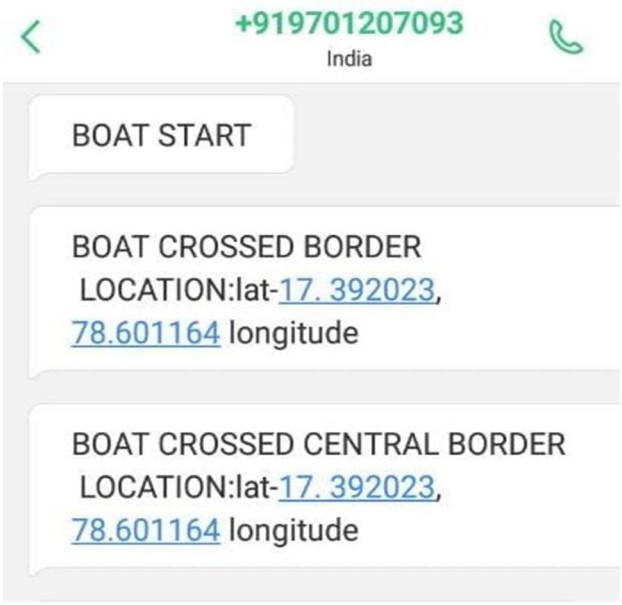

Fig 6: Coordinates in Text

VII. CONCLUSION AND FUTURE WORK

From this work life of a fisherman can be saved by tracking his location. It also give sufficient information to both fisherman and the coastal guardians of anyone crossing the border. This will be more helpful for fisherman as well as it is also helpful for the navy also. This model is of low cost efficient method of tracking system. The process of directing the fisherman can be controlled by placing the engine control unit system in the coastal office. They remotely control the engine to restart the boat for the safety of fisherman.

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BIOGRAPHIES

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Associate Professor EEE department, ACE Engineering College, India, received her B.Tech. from JNTU Kakinada, MTech. in Power Systems Engineering from NIT Warangal in 2008 and received her Ph.D. in Power systems for Enhancement of Power Quality from JNTU Kakinada in 2021.She has 15+ years of Teaching Experience. She is a Life member of Indian Society of Technical Education (ISTE) and also Life member of Indian Institute of Electronics & Tele-Communications (IETE). Her areas of interests are Power Quality Improvement, FACTS, PLC &SCADA.

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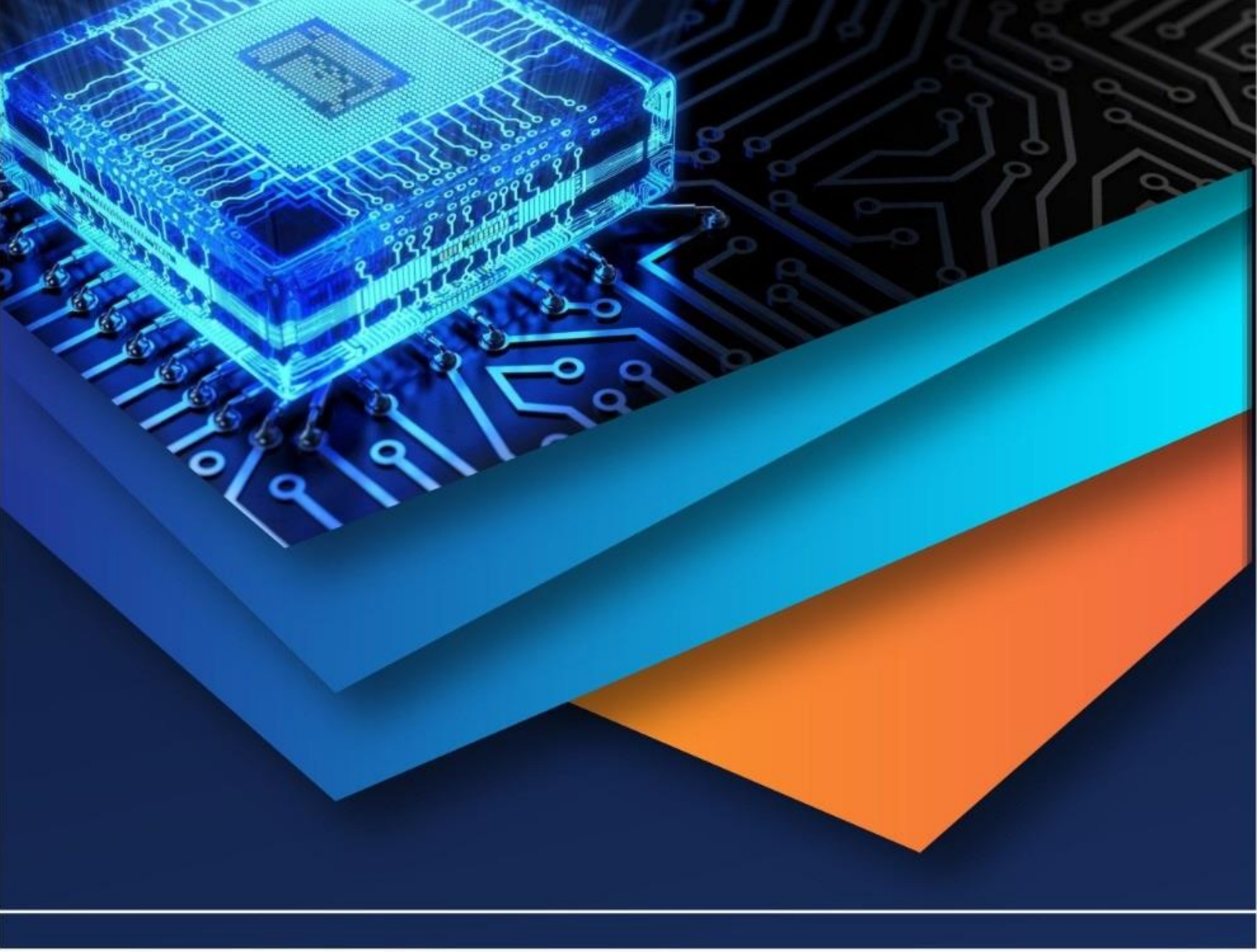

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