BORDER DETECTION AND PROTECTING FISHERMAN USING IOT

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Abstract: Due to bad weather conditions and lack of innovation in salvage, local alarm services are essential for fishermen who are dealing with a long-term conflict with neighbouring countries. After careful consideration of the problem, we proposed a low- effort, straightforward climate alert system for anglers, which is used to keep track of their family members, friends, andother anglers in the event that some anglers encounter problems like unforeseen climatic changes or crisis. This proposed system will support the angler. By monitoring the weather conditions of the fishing area, in addition, sensors like stickiness, temperature, and rain sensor. Then sensors continuously monitors the fishing area and sends the information to the server whenever the angler needs any assistance. There is a crisis button is provided, and if they press it, an alarm will be sent to the specific primary server. In the unlikely event that the weather is unsuitable, a secondalert will be automatically dispatched passengers, and the buzzer will start to ring to warn the other passengers. If anglers cross the zone, the ship's engine will stop and the ringer will start to ring. The data from the pontoon's sensorsand GPS area iscontinuously updated in the main server anddisplayed in LCD of the climatic circumstances.

I.   INTRODUCTION

It is known that sea border crossing is a major problem in Indo-Srilankan border. This is mainly happening due to poor knowledge about the sea borders among the fishermen. To overcome this situation, we had come up with a framework to solve this issue. Our proposed system helps the fishermen to save their life who were shot by Lankan navy force for border violation. This issue can be rectified by providing proper monitoring system which will alert the fishermenabout the unidentifiable sea border through IOT based alert system. In this proposed work uses NEO-6M GPS receiver module which accurately track the latitude and longitude coordinates of the boat by using the signal sent by satellite in space and ground station on earth. Along with GPS receiver module, ESP8266 Wi-Fi Module is used to convert the serial port or TTL level signal into an embedded module which behave similar to the Wireless Network communication protocol stack and also TCP/IP protocol stack.

This traditional hardware device embedded in the ESP8266 Wi-Fi module can directly use Wi-Fi to connect to the internetand this plays a major part for uploading the location information in Internet of things cloud. The hardware interfaces are as follows Arduino Uno micro-controller, NEO- 6M GPS receiver module, ESP8266 wi-fi module, LCD display unit and Integrated with Engine control unit. The LCD (Liquid Crystal Display) is integrated with the proposed workto display the information about the latitude and longitude coordinates of the current position of the boat which helps the fishermen and also the base station to track the boats which are about to cross the Indo-SriLankan border. The information about the co-ordinates is stored in IOT cloudwith the help of ESP8266 Wi-Fi module. The information like latitude and longitude can be extracted from NMEA String (National Marine Electronics Association). The co-ordinates which are used to compare the current position of the boat are taken from GML file (Geography Markup Language) obtained from border security authority. By implementingthis system one can avoid the chaos which are happening dueto border violation of fishermen in the ocean.

II.   LITERATURE REVIEW

In this section, the review of the existing work on Border Detection and Fisherman Safety, which can be categorized as follows.

2.1   The "GPS Based Border Alert System for Fisherman with Boat Speedometer"
The author anticipates using a GPS tracking system in thisstrategy. GPS is used to determine the boat's location, and in an emergency, the boat motor speed is controlled. The user (fisherman) receives the alarm message. The advantage is that the fisherman is using GPS72h, navigational equipment,which offers the quickest and most accurate way for marinersto navigate, measure speed, and determine location, for the purpose of identification. This system enables higher levels of safety and efficiency. The drawback in this situation is that the control station is not informed of the border alert; only the fishermen are.

2.2 The "International Boundary Scanning and Ship Surveillance System"

The sea or ocean also forms the borders of the islands, peninsulas, and coastal nations. Fishing is the primaryoccupation of the majority of people in coastal locations and the need to protect them. Many people, particularly fishers sometimes, violate boundaries without being aware of them. This is one of the causes of cruelty that crosses borders. Their boats are being taken, and they are sometimes beingkidnapped. Hence it also causes a loss of life. Manual boundary line measurement and coordination with the navy are significant issues.

2.3 "Android alert system for fishermen crossingborders"

People living near the border can make extensive use of the application to find the best route to their destination. The warning will be delivered to the border security personnel who serve as the server for all other equipment used by mariners. The programme will alert users to the location of the devices and warn them of any problemsbrought on by enemy forces in ships that are connected to the server. This can serve as an incident management tool to prevent conflicts in a variety of settings. This is primarilydeveloped for Tamil fisherman working at the borders. Thisdevice will also come with an automatic alarming mechanism that alerts in the event of any problems. This has been designed so that everyone in the area can use if. The application relies on device tracking to function. Even illiterate individuals can easily run this.

III. OBJECTIVE

The goal of this paper is to help the countries to increase the safety of fishermen by disseminating the knowledge developed via the FAO project "Safety at sea for small-scale fisheries in developing countries" (GCP/GLO/200/MUL). During the project, some important issues were brought to light, including the following:

i) The necessity of comprehending the dangers and risks insmall-scale fisheries.
ii) The significance of communication between governmentfishermen and government marine time bodies.
iii) The significance of addressing safety at sea as a crucialcomponent of fisheries management.

IV. SYSTEM OVERVIEW

The schematic block diagram of the proposed system with various components is shown in the fig 1. This includes mc, node MCU, GPS module, LCD display, buzzer, sensors, and dc motor with controller.

The main aim of proposed system is to save the lives of fisherman due to border crossing. our project is mainly working on GPS modu
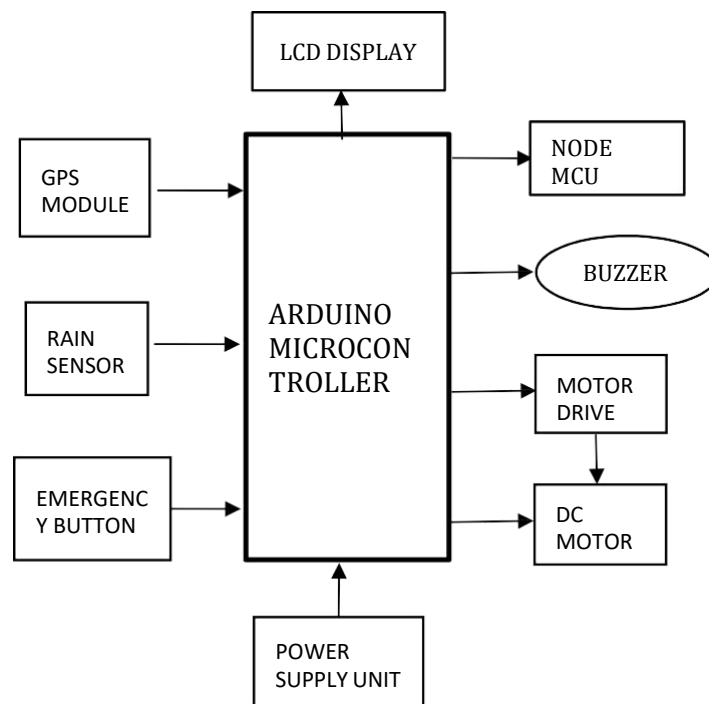

FIGURE 1: SCHEMATIC BLOCK DIAGRAM

WORKING PRINCIPLE

The main aim of proposed system is to save the lives of fisherman due to border crossing. our project ismainly working on GPS module.

Initially consider three zones using GPS latitude and longitude to respectively border after that first zone is warning zone. This is a first zone for boat get. the warning it is a safe zone for fisherman. And once fisherman's boat is entered tothe warning zone. The warning zone alert is displayed on LCD that is placed inside the boat and after that if the boat crosses the warning zone and it is moved to next zone that is danger zone. It is the second zone comes after the warning zone in this zone it is little close to the nation border and in this zone the fisherman gets two alert signal one from the LCD inside the board and another from the buzzer. It starts warning signals to the boat driver from this signal boat driver will alert for ride to safe zone the boat. After this if boat is crossed the danger zone it is moved to the final zone called restricted zone. It is close to the nation border in this zone the driver get a signal from the LCD and buzzer and after that the boat motor will stops by using motor drivers which leads to slow down the speed of boatso the boat is stop so no chance to cross the borderso after this the control room gets the continuous monitoring by using telegram bot with the help of node MCU it is a microcontroller.

The whole system is run by using GPS module with the help of latitude and longitude for decide the border and also set three zones coordinates to declare the specific zones. As and when the boat reaches to this coordinate it will detect the corresponding zones by using these coordinates and in control room also gets the information by using node MCU and also gets the boat location by using emergency button placed in boat. When this button is pressed then the controlroom gets the exact boat location which helpful to rescue the boat in emergency

V.   RESULT

The prototype model developed has been used for its validity. The result obtained are presented in the following fig.
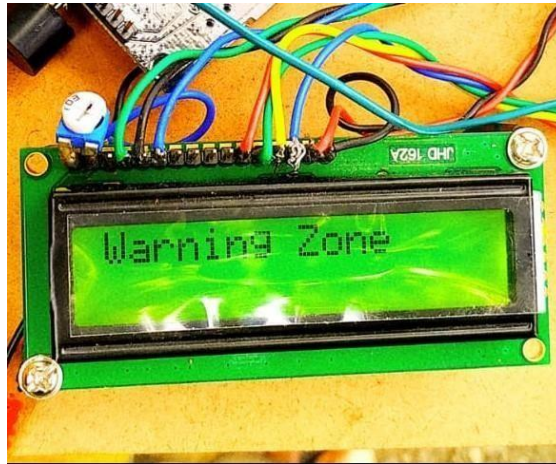

FIGURE 2: LATITUDE AND LONGITUDE

FIGURE 3: WARNING ZONE

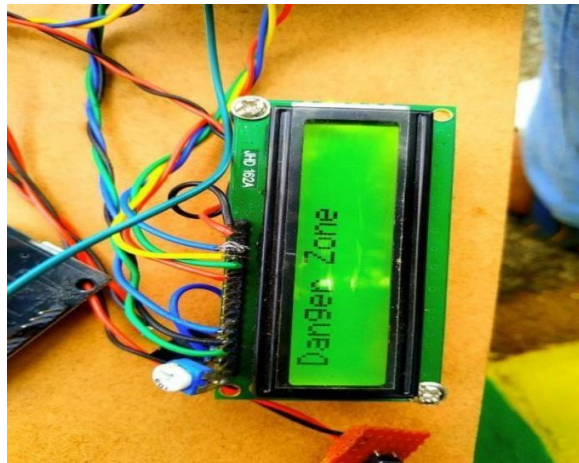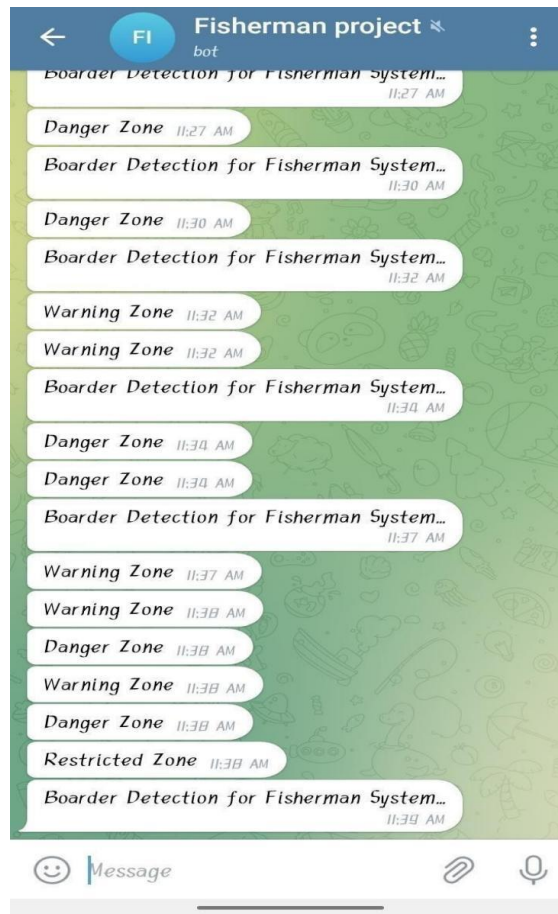This figure shows a boat is at the first zonecalled warning zone

FIGURE 4: DANGER ZONE

This figure shows a boat is at the second zonecalled danger zone

FIGURE 5: RESTRICTED ZONE

This figure shows a boat is at the last zone called Restricted zone

FIGURE 6: TELIGRAM BOT RECEIVINGALERT MESSAGES

This figure shows the telegram bot receiving alert messages

VI.   CONCLUSION

The Border detection and fisherman safety using IoT technology have the potential to significantly improve border security and safeguard fishermen lives. IoT gadgets, such sensors and cameras, enable short response times in case of emergencies by enabling authorities to instantly spot border crossings and track fishing fleets in real-time. The developed model helps to improve everyone's safety and security by incorporating Iot into border and fishing operations. To guarantee the security and privacy of people using these technologies, effective implementation and legislation must be in place.

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