

AIR VELOCITY DETECTION AND BOAT DISTANCE MEASUREING USING IOT

Prof.K.M.Nandhakumar¹, A.Sowmiya², G.Jeevadhharshini³, K.Hariprasath⁴

¹Professor,^{2,3,4}Student

Department of Information Technology
SNS College of Engineering

ABSTRACT:

Fishing is one of the chief sources of food and income for almost all coastal lands irrespective of its geological location in the earth. Since it has an important role to play in the economy of a country, there is no doubt that neighbouring countries sharing the same oceans frequently engage in disputes in regards to ownership of the area. This has resulted in deep problems to the fishermen community residing in the coastal regions of these countries. Often, we hear in the news and see in the papers, one article or the other describing the issues faced by these fishermen in their day to day commute to the oceans. In order to solve this issue, the governments of these countries decided to have a common territory of ocean as international waters and that it would act as the region common as well as a separation between the two lands. But even this did not prevent the fishermen from unknowingly wandering off into the other country's waters. Hence, there is a strong need to device methods to prevent this from happening and save the fishermen from severe punishments and border disputes. Our Model helps to ensure the location of the fishing boats through a new technology.

Keywords: Arduino IDE, Humidity sensor, Liquid Crystal Display, Relay

INTRODUCTION

In existing world, people run beyond technologies and they do not find the intensive use of the technologies. There are many technologies which are invented for the fisherman to safeguard their lives. But they are not aware of the technologies which will make their lives to be safe. Fisherman who go into the sea for fishing are not aware of the distance and the weather condition in the deep sea also they are not aware of the borders of their nation. Hence to solve all these issues we propose a system to measure up the air velocity, boat distance from the shore and indicate to the fisherman. This method uses the RF transmitter and RF receiver to identify the borders and sends the information to microcontroller. Then microcontroller perform function as turn off the motor and also GPS location sends the location in addition the humidity sensor measures the air velocity. These all the integration and measuring are done with the internet of things.

EXISTING SYSTEM

Technologies in the Morden world for fisherman are booming everyday but all the booming technologies are not utilised by them in an efficient and economical way. The main issue faced by the fishermen are such that they unknowingly go beyond their nation's border without knowing the limits fixed. Hence atleast they get into some sort of difficulties. Our paper involves the Global Positioning Satellite System technology for tracking the position of the boat in the form of latitude and longitude. The received signal from the boat position is compared with the present value time to time. As a result of the comparison, the motor of the boat is operated in three different modes such as normal, slow and reverse. By employing this technique, the fisherman could get enough knowledge about their position which helps them to be in the safer zone. This technique is economical too.

DISADVANTAGES

The above model is only having the GPS module so it does not able to provide high efficiency. This method does not detect the obstacles on the way of the boat. The velocity of air can't be detected Internet of things is not used in the above method

PROPOSED SYSTEM

The aim of the project is to help the fisherman for identifying border in the sea area while fishing and also provides additional benefits to the fisherman. This method uses the RF transmitter and RF receiver to identify the borders and sends the information to microcontroller. Then microcontroller perform function as turn off the motor and also GPS location also sends Ultrasonic sensors are used to detect the obstacles on the way of the boat it Saves lives of fishermen. This project also used to find the velocity of the air this is also additional helpful to the fisherman. This method is totally connected to the internet of things

ADVANTAGES

This method is identifying borders in the sea in an efficient way Rescue lives of fishermen. Stockpile from the property destruction of fishermen. Conserve the country from unwanted issues with the adjacent nations.

PROPOSED SYSTEM

ARDUINO MEGA 2560

The Arduino Mega 2560 could be a microcontroller board supported the ATmega2560. it's fifty four digital input/output pins (of that fourteen is used as PWM outputs), sixteen analog inputs, four UARTs (hardware serial ports), a sixteen megacycle quartz oscillator, a USB affiliation, an influence jack, associate ICSP header, and a push button. The Arduino board is shown in figure 1.



Fig:1 ARDUINO MEGA 2560 board

ULTRASONIC SENSOR

When associate electrical pulse of high voltage is applied to the inaudible electrical device it vibrates across a particular spectrum of frequencies and generates a burst of sound waves. Whenever any obstacle comes before the inaudible device the sound waves can replicate back within the type of echo and generates an electrical pulse. The ultrasonic sensor is shown in figure 2.



Fig:2 ULTRASONIC SENSOR

DHT11

The DHT11 could be a basic, low-priced digital temperature and wetness detector. It uses a electrical phenomenon wetness detector and a semiconductor to live the encompassing air, and spits out a digital signal on the info pin (no analog input pins needed). This sensor detects the absolute humidity in the air also detects the amount of water content in the air. This sensor is enabled once the fisherman goes into the sea it displays the humidity in the air to keep fisherman in a safer zone. The DTH11 is shown in figure 3.



Fig:3 DTH11

RF TRANSMITTER & RF RECEIVER

In usually, the wireless systems designer has 2 paramount constraints: it should operate over a definite distance and transfer a definite quantity of data at intervals an information rate. The RF modules are terribly tiny in dimension and have a good operative voltage vary i.e. 3V to 12V. The RF Transmitter and receiver is shown in figure 4.

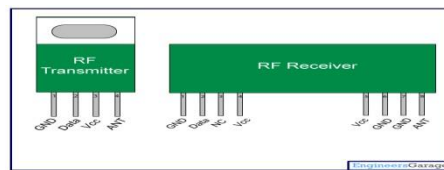


Fig:4 RF TRANSMITTER & RECIEVER

LCD DISPLAY 16*2:

LCD modules are very commonly used in most embedded projects, the reason being its cheap price, availability and programmer friendly. The appearance and therefore the pinouts have already been envisioned higher than currently allow us to get a touch technical.16×2 alphanumeric display is known as therefore because; it's sixteen Columns and a pair of Rows. The function of this IC is to get the Commands and Data from the MCU process them to display meaningful information onto our LCD Screen. The LCD is shown in figure 5.

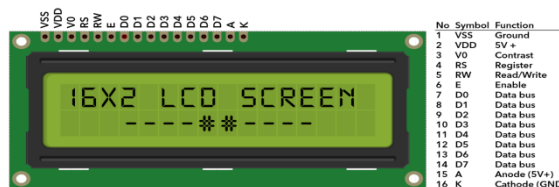


Fig:5 LCD

RELAY:

COM - Common connection--> it is the center terminal, It is hot as power to the load is connected at this terminal. NO Normally open ---> It acts like a switch, since it is open - there will be no contact between COM and NO, When we trigger the relay module, it connects to COM by the electromagnet inside the relay and supply to the load is provided, which powers up the light. Thus the circuit is closed until we trigger the state to low in relay. NC Normally closed---->It is always in contact with COM, even when relay is not powered. When we trigger the relay it opens the circuit, so the connection is lost. it behaves just opposite to NO. The relay is shown in figure 6.



Fig:6 RELAY

GPS

The working/operation of worldwide positioning system relies on the 'trilateration' mathematical principle. The position is set from the gap measurements to satellites. From the figure, the four satellites area unit wont to confirm the position of the receiver on the planet. The target location is confirmed by the fourth satellite, And 3 satellites area unit wont to trace the placement place. A fourth satellite is employed to verify the target location of every of these area vehicles. Global positioning system consists of satellite, management station and monitor station and receiver. The GPS receiver takes the data from the satellite and uses the strategy of triangulation to work out a user's precise position. The GPS is shown in figure 7.



FIG 7:GPS

MICROCONTROLLER:

Microcontrollers area unit utilized in mechanically controlled merchandise and devices and different embedded systems. It uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes.

UART

Universal asynchronous receiver and transmitter to transmit the data from end to end. It is a microchip which enables the program to be controlled in a computer interface. It provides some amount of buffering so that the computer and serial devices remain coordinated.

METHODOLOGY

- 1) switch on the power supply and microcontroller
- 2) In this project when the boat starts moving, the sensors are ready to monitor the required condition
- 3) When the boat is near any object, the ultrasonic sensor is enabled and it gives alert to the fisherman; here the buzzer is used to provide the alert
- 4) The DHT11 sensor is enabled and it is used to know the velocity of air
- 5) rf transmitter and receiver is placed on the border and rf receiver is placed on the boat
- 6) While the boat is reaching the border rf receiver is enabled and the motor is turned off also
- 7) The GPS location is shared
- 8) LCD is used to display the various values the overall things are monitored via internet of things

ALGORITHM

- 1) Switch on the power supply and microcontroller
- 2) Sensor is ready to monitor
- 3) If any object then
- 4) Send alert to fisherman
- 5) Else no alert
- 6) If boat reach border then
- 7) Send the message using GPS
- 8) Else no message
- 9) Calculate the air velocity
- 10) Display in LCD
- 11) Stop all process

FORMULA

Distance = speed*time

D = distance travelled by the boat

S = speed rate at which the boat travelling

T = time rate at which the boat is travelling

SYSTEM ARCHITECHTURE:

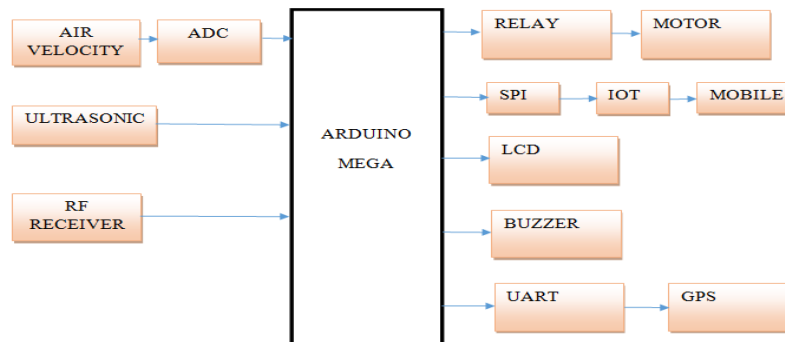


FIG 8: SYSTEM ARCHITECHTURE

CONCLUSION

This project works exactly to calculate the distance and determine the air velocity, this helps the fisherman to know the weather and distance from the shore. It is displayed in LCD screen and buzzer alert also adds additional alertness to the fisherman.

REFERENCE

- [1] B. Obama, "The National Strategy for Maritime Security," National Maritime Domain Awareness Plan for National Strategy for Maritime Security, 2013.
- [2] Sutin, H. Salloum, M. Delorme, N. Sedunov, A. Sedunov, and M. Tsionskiy, "Stevens Passive Acoustic System for Surface and Underwater Threat Detection," 2013 IEEE International Conference on Technologies for Homeland Security, HST 2013, pp. 195–200, 2013.
- [3]"2014 Recreational Boating Statistical Abstract," tech. rep., National Marine Manufacturers Association, 2015. [13] A. Pollara, A. Sutin, and H. Salloum.
- [4] J. J. Leonard and H. F. Durrant-Whyte, Directed Sonar Sensing for Mobile Robot Navigation, ser. The Kluwer International Series in Engineering.
- [5] Fillinger, A. Sutin, and A. Sedunov, "Cross-correlation of ship noise for water traffic monitoring," in Acoust. Soc. Am., vol. 126, (San Antonio), p. 2251, 2009.

WORKFLOW MODEL

