



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 3, March 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

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Fisherman Location Tracking and Health Condition Monitoring System Using Geofencing

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ABSTRACT: The fisherman's crossing the borders and identification of locations in the sea is becoming a difficult task with existing equipment's provide to the fisherman's as a result they cross the borders. In our day-to-day life we hear about many Tamil Fishermen being caught and put under Sri Lankan Naval custody. The sea border between the countries is not easily identifiable, which is the main reason for this offence. Moreover, in cases of imminent natural disasters, failure or delay in notifying concerned personnel to evacuate results in loss of life on a large scale. In this paper we have proposed a method which protects the fishermen by logging their entries and exits in the harbour using embedded system, notifying the country's sea border to them by using Global Positioning System (GPS), Geo Fencing and Mobile Systems.

KEYWORDS: Geofencing , Wireless Communication.

I. INTRODUCTION

Security systems and navigators have always been a requirement of a human's life. The developments of advanced electronics have brought revolutionary changes in these fields. Equipment theft is a severe problem in many industries including transportation and construction, especially for more significant businesses. There is no solution in monitoring the movement of the vehicle, and we do not know the current condition and position of the vehicles. The GPS - based vehicle tracking system is one of the most obvious ways to keep track of the vehicles. The Global Positioning System (GPS) is a system based on Global Navigation Satellite System (GNSS) that provides reliable location and time information at all times in any weather condition on earth. We want to solve the location tracking problem by using GPS based monitoring system with a geo-fencing capability to track the vehicle. This system comprised of a few major components which combined satellite communication components to communicate the location of the vehicle to a remote user. Geo-fencing enabled remote monitoring of geographic areas surrounded by a virtual fence (geo-fence), and automatic detections when it tracked mobile objects that entered or exited these areas.

Existing System

Geo fencing and accidental monitoring system based on AT89S52 as a central core to detect the road accident for immediate medical help as well as for security purpose in theft prevention. In case of accidental mode the system should inform automatically via text message to medical rescue team indicating the position of vehicle. When there is no driver the vehicle enters into security mode which provides security by using shock sensor.

Dis advantages:

The existing system does not have any security system to avoid thefts which is being added in the proposed system.

PROPOSED SYSTEM:

The system aims at monitoring the fisherman current location, when the fisherman enters the Geo fence. And he leaving the fencing then automatically send an alert SMS / Mail to the parents as well as represents. Geo fences are basically virtual regions that are considered around geo point with a specific radius. And also we can monitor the health condition of the fisherman like temp sensor is used to measure the body temperature, heartbeat sensor is used to



measure the pulse rate of the fisherman and also pressure sensor is used to measure the pressure level of the sea. So we can see the fisherman condition and take immediate actions.

Advantages:

- We can easily track the country borders in the sea.
- Tracking fisherman location will be easy and accurate.

II. RELATED WORK

INFERENCE ON RF COMMUNICATION

Geo-fencing in marine water is a difficult process as compared to land. Our fishermen, knowingly or unknowingly, cross the border and lands up in other country's marine water. They risk their lives for their daily wages. Sometimes it can be fatal. Also, in case of emergency, there is no one to help them. Our radio frequency (RF) communication based system (RFCS) will help them from not crossing country border. The device (Slave) on fishermen boats will periodically broadcasts its GPS signals integrated in data packets. This will be received by Patrolling boats or at the coast by a receiver(Master). Thus, the master has information about the location of each boat in real-time. If the slave is about to cross the border, the master will inform the boat about the crossing so that the slave should remain safe inside water boundaries. Tracking of a particular slave can also be done and an immediate help from the coast can be provided when a distress message is being transmitted from slave boats. It uses sub-GHz transceiver with additional power amplifier and RF switch integrated with each other to provide long distance communication range. This will greatly reduce the mortality rate as compared to the current scenario. Indian fishermen goes deep in the sea in search of better quality of fishes. Patrolling for the fishermen boats deep inside the sea is very difficult. A patrolling boat needs to go near the fishermen boat to check for activity. Also in case of an emergency, there is hardly anyone to help deep in the sea. Thus, safety is an important concern for them while they earn their bread and butter. Indian fishermen, while fishing, also have a tendency to cross the national marine border. Knowingly or unknowingly, they land inside the neighboring country's marine water. Recentcases includes fishermen from Tamil-Nadu getting caught by Sri-Lankan Coastal Police.

INFERENCE ON IOT

Monitoring Dams safety and water management is extremely important considering both the situations like water scarcity and excess of water. It is of crucial importance and needs to develop information system based on existing system allowing utilization of intelligent sensors network. Basic idea is to describe possibilities of IoT applications in Dam Safety and water management. Here the entire dam and the main pipeline is sensed 24x7 through various sensors. These wireless sensor nodes connected with each other and transmits the data to a gateway. Common storage space 'CLOUD' stores and provides on line information to the observer. Employing an IoT for the said purpose will definitely help saving the most precious natural resource the water. Here in this paper an attempt is made proposing an electronic circuit design employing an Internet of Things concept for the purpose..

INFERENCE ON ALERT SYSTEM

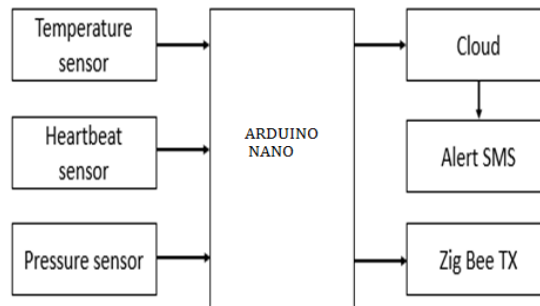
The application can be widely used by people in the border to find the appropriate path to reach the destination. The notification will be sent to the border security forces which act as the server to all other devices that are operated by people in ships. The application will notify the information of where the devices are being located and intimate them about the issues that occur due to opponent forces in ships to server. This can act as an incident management application to avoid conflicts at varying situations. This is processed mainly for Tamil fishermen's who are employed in the borders. The automatic alarming system is going to be provided along with this device which alerts in case any sort of issues. This is devised in such a way that the application can be easily been utilized by all the people in the surroundings. The application operates based on device tracking. This provides ease to operate even for illiterate people.



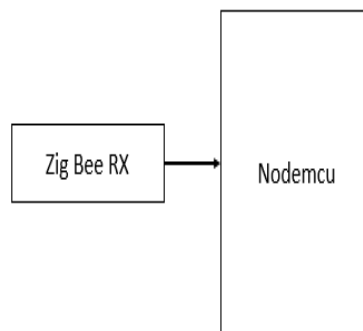
III. METHODOLOGY

BLOCK DIAGRAM

TRANSMITTER SECTION:



RECEVIER SECTION:



Here, The Temperature sensor and heartbeat sensor are tied to the fisherman for measuring their body temperature and pulse rate. If some abnormal conditions arise such as sudden increase in body temperature and pulse rate for the fishermen, it automatically sends an alert message through cloud to concerned authorities through zigbee communication protocol. The same alert signal will also be sent if the value of pressure sensor increases which indicates pressure level of the sea. All these parameters are controlled by arduino nano. At the receiver's side using the zigbee receiving protocol we receive the data of the fishermen periodically. Using Node MCU we feed that data in the server through IoT alerting the concerned authorities.



IV. EXPERIMENTAL RESULTS

HARDWARE OUTPUT

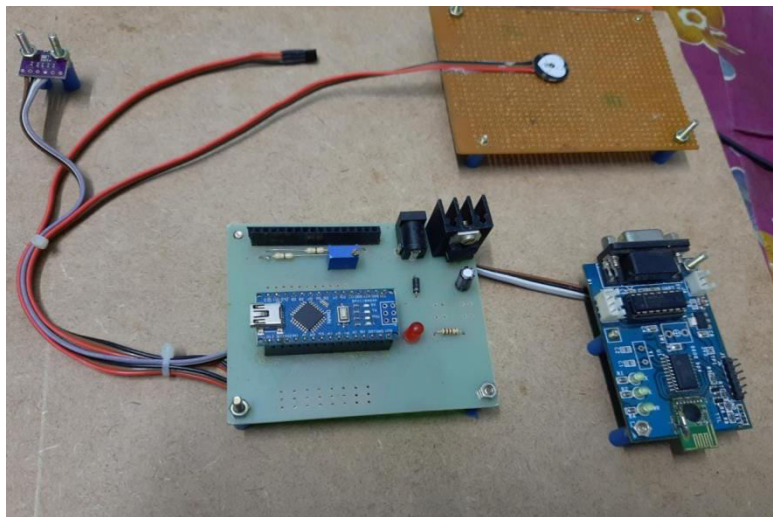


FIG 4.1 TRANSMITTER SECTION

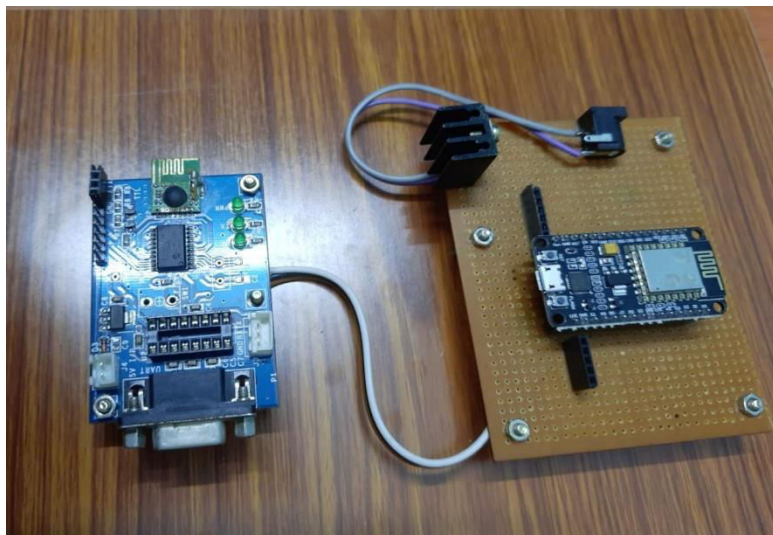
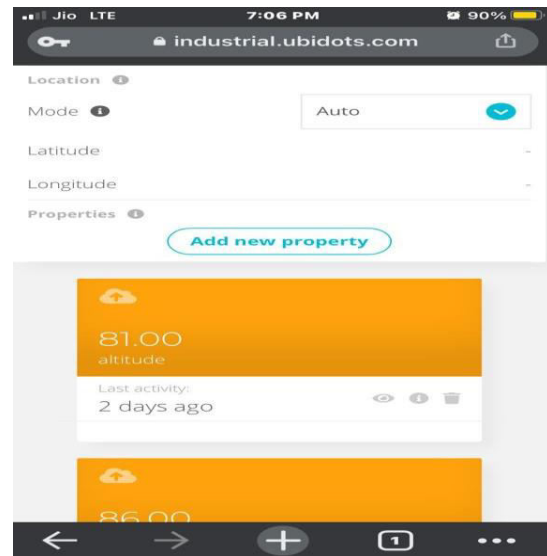
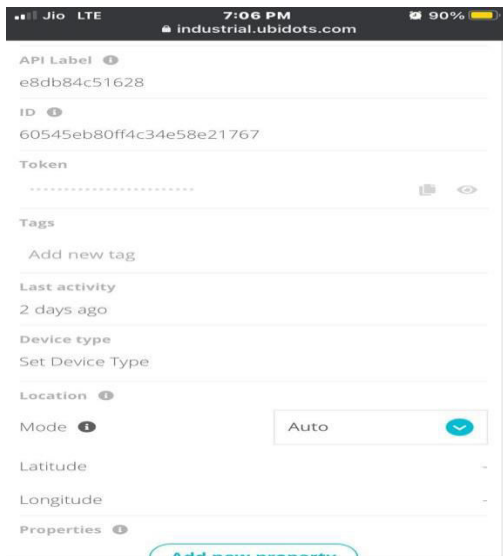
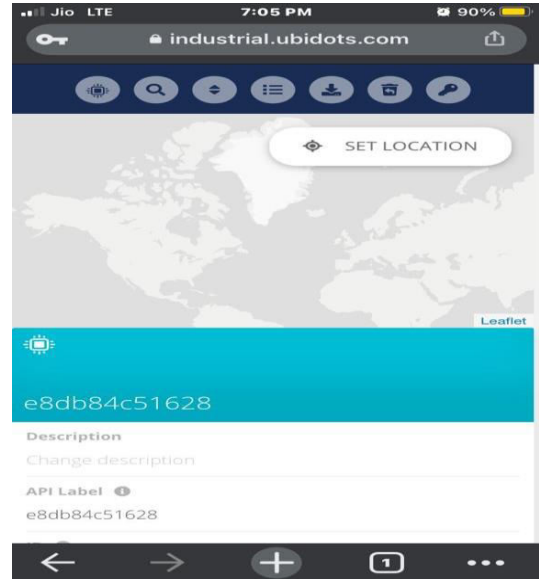
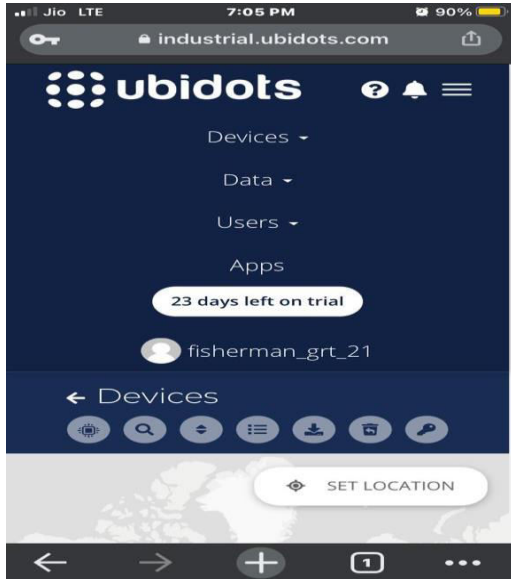


FIG 4.2 RECEVIER SECTION



SCREEN SHOTS



V. CONCLUSION

The system designed provides safety and reduces the after effects of the incident. The system is used for locating country boundaries and alerts fisherman about crossing borders . Sensors gives us live information about fisherman health condition. Android application built for the system will ensure the smooth functioning of the system, users have to wear a device, so that the health condition will be seen through android application which is connected to device through nodemcu . By using this system we can ensure that our fisherman are safe even in the middle of sea . It provide better security to the fisherman .The main aim of this system is to reduce the risk and danger .



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