

RSSI Based Fisherman Border Alerting System

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Abstract- *The technology proliferation of Received Signal Strength Indication (RSSI) is used to provide location based positioning and time details in all climatic conditions and even anywhere any time. Telecommunications, received signal strength indicator(RSSI) is a measurement of the power present in a received radio signal. RSSI can be used internally in a wireless networking card to determine when the amount of radio energy in the channel is below a certain threshold at which point the network card is clear to send(CTS). Once the card is clear to send, a packet of information can be sent. The end-user will likely observe a RSSI value when measuring the signal strength of a wireless network through the use of a wireless network monitoring tool like Wire shark, Kismetor Insider. As an example, Cisco Systems cards have a RSSI_Max value of 100 and will report 101 different power levels, where the RSSI value is 0 to 100. Another popular Wi-Fichipset is made by Atheros. An Atheros based card will return an RSSI value of 0 to 127 (0x7f) with 128 (0x80) indicating an invalid value. There is no standardized relationship of any particular physical parameter to the RSSI reading. The 802.11 standard does not define any relationship between RSSI value and power level in mW or dBm. Vendors and chipset makers provide their own accuracy, granularity, and range for the actual power (measured as mW or dBm) and their range of RSSI values (from 0 to RSSI_Max).One subtlety of the 802.11 RSSI metric comes from how it is sampled—RSSI is acquired during only the preamble stage of receiving an 802.11 frame, not over the full frame.To became a revolutionizing tool for fisherman boat's border crossing issues. The proposed system coins a low cost border crossing alert system that amalgamating the potency of RSSI device.It continuously monitoring, tracking, alerting and controlling the fisherman's activity from the remote station located on the shore.*

Keywords- RSSI, Arduino Mega, APR voice playback, GSM

I. INTRODUCTION

Wireless Integrated Network Sensors (WINS) combine sensing, signal processing, decision capability, and wireless networking capability called Zigbee which is a compact, low power system. On a local, wide-area scale, battlefield situational awareness will provide personnel health

monitoring and enhance security and efficiency. Also, on a metropolitan scale, new traffic, security, emergency, and disaster recovery services will be enabled by WINS. Here first it identifies the node where the harmonic signals are produced by the strange objects and the intensity of the signal will be collected .The signal will be sent to the main node. The processing of the regular interval data from the nodes will be analyzed and based on the intensity of the signals and the direction of the detecting nodes gets changing will be observed and the results will be sent to the satellite communication system. The Indian Coastguard was formally inaugurated on 18 August 1978. It is set as an independent armed force of the Indian Union, through an act of parliament. It is the fourth armed force under the Ministry of Defense- the first three being the Army, the Navy and the Air Force. It has a specific character for nonmilitary security but addresses to National Defense. It normally deals with marine safety, maritime security, lifesaving, law enforcement, maritime environmental security and fisheries. These call for monitoring, control, surveillance and response. The Coastguard has multiple responsibilities and strengthening the safety of fisher. The Indian coastguard cannot assist fishers exclusively but concern for fishers is central to its aims. The strategic role of the Coastguard is to protect the maritime zones from illegal activities including infiltration through maritime routes and environmental damage and provide humanitarian and scientific assistance within the maritime domain.

The Indian Coastguard too has its exclusive duties and functions as spelled out in the Coastguard Act 1978 include:

- 1) Safety and protection of islands and offshore structure.
- 2) Protection and preservation of maritime environment.
- 3) Prevention and control of pollution in maritime zone.
- 4) Assistance to the customs in anti-smuggling operations.
- 5) Assistance to fisherman in distress at sea.
- 6) Safeguarding life and property at sea.
- 7) Preventing poaching in Indian water.
- 8) Assisting in ocean research.
- 9) Enforcing maritime law.

Even though we have this much of coastguard security, all things happening opposite to our thinking. Indian

Coastguard has openly admitted its failure in failure in preventing. Mumbai attack even after getting a warning from intelligence sources prior to the attack. This clearly shows that our sea defense is weaker than we believe. The foreign trawler easily overcoming our coastguard security force. Every day we hearing news about fishermen killed or imprisoned when they cross the national sea border inadvertently. The most outstanding problem is being going on for trans-border fishing i.e., on the Indo-Srilankan border. Here two distinct issues are arising. Historically there is no border problem which is being raised and fixed in 1974 and having no conflicts till civil war in 1983. After this both country authorities restricted due to security concern. After that restriction also, smaller scale fisherman undergo for fishing and get attacked. In India, they have always been at loggerheads with the trawls fleet.

The remaining sections of the essay provide details on the following chapters: Chapter I, Introduction; Chapter II, Literature Review; Chapter III, Proposed Methodology; Chapter IV, Results and Discussion; and Chapter V, Conclusion.

II. REVIEW OF LITERATURE

GPS Based System for Detection and Control of Maritime Boundary Intruding Boats

Maritime boundary violation and intrusion by fishing boats has been a huge concern not only for the errant fishermen and their families but also a massive burden on governments and public alike, due to the complexity of the issue and the naivety of the people involved. The chief solution is to safe guard these fishermen from the danger which they are encountering in everyday life for their livelihood. Hence, keeping the above problems in mind, this paper proposes a GPS based boat detection and tracking system which would safe guard the fishermen from the potential dangers they might face by giving them pre-warning in case of trespassing. In particular, we are proposing to control the navigation so that the fishermen are directed to safe region. This system was designed and demonstrated already. In the proposed system, the maritime boundary is detected using GPS in real time but for our demonstration purposes, RFID (Radio Frequency Identification) readers and tags were used in which the location detection and retrieval was followed by the vital information being sent to the Peripheral Interface Controller (PIC) for taking corresponding actions.

This paper presents how the protection of innocent fishermen's from the shooting and arresting by the other country navy is possible. An Embedded technology which uses GSM (Global System for Mobile), and LPC2148 Arm

microcontroller and RFID (Radio Frequency Identification) can avoid this. There are three boundaries of borders taken. Final state boundary will be the border between the two countries and other two borders before that comes under the parental country circumstances. First two border crossing will be monitored by Indian government. The fishermen's are warned by the warning devices such as speaker (a buzzer) and an LCD display while they crossing the first two borders. If warning system fails there is another option. While crossing third border, the motor in the boat turns off automatically. Now Information about the fishermen's will be acknowledged to both the government.

Augmenting strains over the ocean fringes brought on much devastation between two nations. Anglers from any nation are being snatched by the naval force for intersection the fringe which is accidental the majority of the circumstances. The viable generation of this framework manages following the area of the watercraft using RSSI, it gives solid arranging route and timing facilities to overall clients on a consistent substructure in all climates, day and night on or proximate to earth and trigger an exhortation message, when the outskirt is drawn nearer or crossed. Withal, in additional organize, the RSSI data is sent to costal sentinel and the celerity of the watercraft motor gets off by the control of fuel supply to motor. Subsequently sentinels in the shore can profit and give supplemental benefit to the anglers and profit them not to move past the outskirt.

III. PROPOSED METHODOLOGY

Localization and safe evacuation of passengers in large ships during emergency is a growing and important need recently in the maritime industry. Through the Lynceus2Market project [1], it is aimed to develop an overboard localization system that can determine the position of passengers in case they fell overboard the ship into the sea. Through active reflector tags, which will be integrated within the passengers life jackets, passengers' positions can be determined by an unmanned aerial vehicle (UAV) equipped with global positioning system (GPS) surveying the area around the ship.

The active reflector tags will use 24 GHz switched injection locked oscillator (SILO) for high resolution localization and it will also incorporate 868 MHz Zigbee transceivers for long-distance communications, which is up to 8 km in an outdoor line of sight scenario with an output transmit power of 14 dBm. The 868 MHz Zigbee will also provide RSSI which can be used to implement a less-accurate localization system for far away passengers which are not in the range of the SILO radar. The advantage of RSSI

localization is that it is nearly implemented in all receivers, so it does not require dedicated hardware. Despite its low accuracy as it can suffer greatly from multipath interferences and noise, it will still have fair accuracy if it is deployed outdoors where no strong multipath interference is present. The automated detection and classification of maritime traffic is a challenging problem and is of great importance to many organizations. For marine protected areas (MPAs), an automated boat detection system could alert authorities of vessel traffic. However, in some MPAs commercial snorkeling and diving boats are authorized while fishing vessels are not. For this reason, a classification system is needed to discriminate these different types of boats. The need for similar systems arises in the monitoring of harbor traffic for national security. There are many different methods for boat detection, examples including radar, electro-optic (EO) and infrared (IR) cameras, and both active and passive sonar. Active sonar and radar provide little additional information beyond detection. Radar and optical methods are limited by line of sight for detection, and optical systems can be obscured by rain, fog, or may require daylight. Active sonar can be used for detection of quiet targets, but the high level of reverberation in shallow water environments.

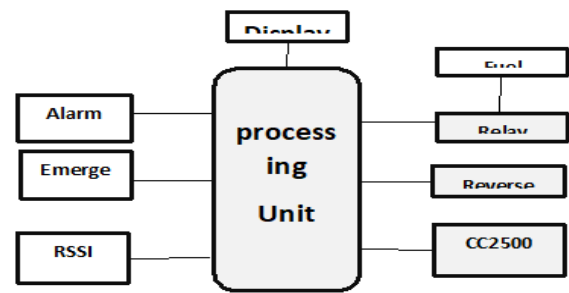
- In our project, we are using RSSI technology to alert the fisherman in which distance they are from the border.
- Communication between fisherman boat and Navy control will be done by wireless communication.
- Boundary identification through RSSI technology.
- Display system for identifying boundary.

Advantage:

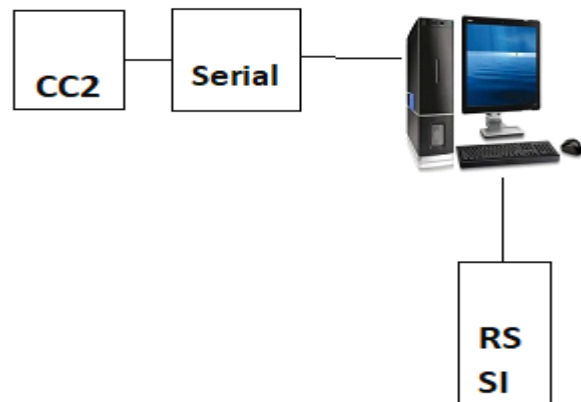
- Human life is saved.
- Android app will be used for the wireless communication for the Navy.
- Easy to find the distance from the border.
- Time requirement is low.

Block Diagram:

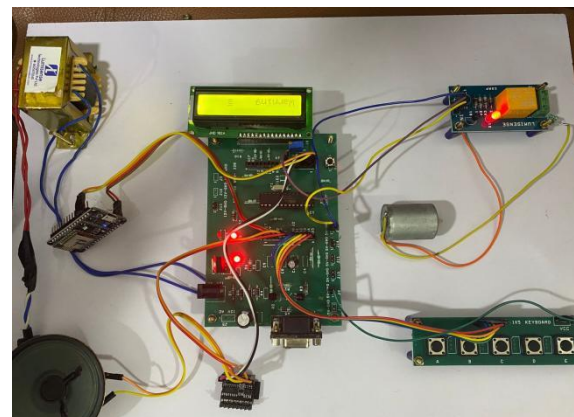
Boat Section:

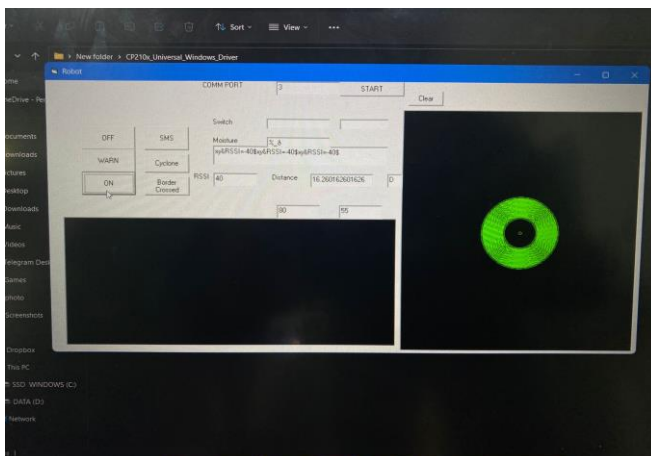
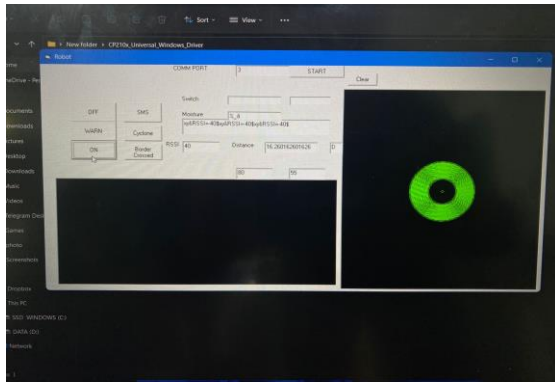


Navy Section:



IV. RESULTS AND DISCUSSION





In this rssi based fishermen border alert system the boat distance can be measured using the received signal strength received from the slave RSSI Zigbee (boat). By using this RSSI we can find the location of the boat in the sea. Whenever the boat reaches the border the APR voice alert the concern person in the boat and at the same time boat will automatically turn OFF

V. CONCLUSION

In the conventional, the fishermen have to keep watch the maritime border, which cannot be easily separated as land region. If they crossed certain limit on the sea. They have to pay the penalty or got arrested by the naval guards of the neighbour country. The project generates alarm if they cross the border by mistake. With the simple circuitry and the use of sensors (low cost sensors) makes the project a low cost product, which can be purchased even by a poor fisherman. This project is best suited for places where the fishermen continuously monitor the boundary limit. This paper will be used for advancement of coastal border averment. This also will give sufficient process to both ship and coastal guardians, if anyone crossing the border. The process of routing the fishermen will make more efficient. The process of increasing the accuracy will be achieved greater in future.

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