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Survey on Safer Zone Identification in Tri-zonal Area Using RSSI with Alert System

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Abstract

Wireless sensor networks (WSN), sometimes called (WSAN).arespatiallydistributed autonomous sensors to *monitor* physical or environmental conditions, such as temperature, Sound, pressure, etc. and to cooperatively pass their data through the network to a main location. The more modern networks are bi-directional, also enabling *control* of sensor activity. The development of wireless sensor networks was motivated by military applications such as battlefield surveillance; today such networks are used in many industrial and consumer applications, such as industrial process monitoring and control, machine health monitoring, and so on.

Index Terms- *eLOT, RFID, SPL, least mean square algorithm, Zigbee,RSSI*

1. INTRODUCTION

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, 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, which is the case in the Lynceus2Market project.

2. RELATED WORK

2.1 Energy-Proficient Limitation and Following Cell phones in Remote Sensor Systems

Remote sensor systems (WSNs) are viable for finding and following individuals and protests in different mechanical situations. Since vitality utilization is basic to dragging out the life expectancy of WSNs, we propose a vitality productive Localization and Following (helot) framework, utilizing ease and convenient equipment to empower profoundly exact following of targets.

2.2 RFID-Based Indoor Situating Innovation

Radio recurrence recognizable proof (RFID) innovation was initially imagined for military employments. From 1980s, commercial RFID items began to be accessible and they were mostly connected in regions of supply chains, transport, manufacturing, personnel get to, creature labeling, toll accumulation and so forth. Christo Ananth et al. [3] discussed about a project, in this project an automatic meter reading system is designed using GSM Technology. The embedded micro controller is interfaced with the GSM Module. This setup is fitted in home. The energy meter is attached to the micro controller. This controller reads the data from the meter output and transfers that data to GSM Module through the serial port. The embedded micro controller has the knowledge of sending message to the system through the GSM module. Another system is placed in EB office, which is the authority office. When they send "unit request" to the microcontroller which is placed in home. Then the unit value is sent to the EB office PC through GSM module. According to the readings, the authority officer will send the information about the bill to the customer. If the customer doesn't pay bill on-time, the power supply to the corresponding home power unit is cut, by sending the command through to the microcontroller. Once the payment of bill is done the power supply is given to the customer. Power management concept is introduced, in which during the restriction mode only limited amount of power supply can be used by the customer.

2.3 Advanced cell Localization System with High Accuracy for Visually impaired People

In this paper we introduce our advanced cell indoor-restriction framework (SPLS) for visually impaired individuals. The SPLS uses sound signals which are outside of the capable of being heard range for localization. Furthermore, it is easy to understand as the client needs only his cell phone and no extra equipment. The innovative distinctive element of the proposed limitation framework is based on the high exactness because of the acoustic run-time measurements. Therefore this approach is more exact than frameworks based on Wi-Fi or Bluetooth. With its high exactness SPLS permits for entirely new applications in indoor restriction.

2.4 .Submerged Vehicle Hindrance Shirking and Path Arranging Utilizing a Multi-Bar Forward-looking Sonar

This paper portrays another structure for division of sonar pictures, following of submerged protests and movement estimation. This structure is connected to the outline of a hindrance shirking and way arranging framework for submerged vehicles based on a multi-shaft forward looking sonar sensor. The constant dataflow (acoustic pictures) at the contribution of the framework is first segmented and significant elements are extricated. We additionally exploit the continuous information stream to track the impediments in taking after casings to acquire their dynamic attributes. This permits us to enhance the preprocessing phases in segmenting just the pertinent part of the pictures. Once the static (size and shape) and additionally dynamic qualities (speed, increasing speed) of the snags have been processed, we make are presentation of the vehicle's workspace in light of these elements. This representation utilizes useful strong geometry (CSG) to make a curved arrangement of snags characterizing the workspace.

2.5 Programmed Limit Determination in OS-CFAR Radar Location Utilizing Data Theoritic Critic

This paper proposes another approach for efficiently deciding the undesirable meddling examples in the reference window for the requested insights consistent false caution rate indicator, in view of the use of the data theory criteria rule. The proposed processor named as Determination Requested Measurements Indicator (FAOSOSD) does not require any earlier data about the quantity of meddling targets.

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3. ARCHITECTURE DIAGRAM

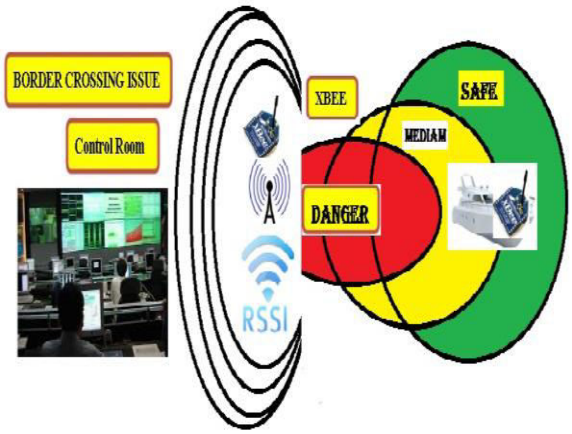

Fig.3.1 Architecture Diagram for IDENTIFICATION of safety zone for fishermen in trizonal area

4. IMPLEMENTATION

In this implementation process, it comprises of six modules 1) RSSI based embedded hardware fabrication 2) Trizonal implementation 3) Security to the fishermen 4) Server 4) Control System 5) Obstacle detection using ultrasonic sensor.It describes that in the proposed work the mobile node is fitted in the vehicle then the sensor nodes are deployed in the life jacket of the fishermen.Only these two nodes are used for tracking and localization of the fishermen around the sea

4.1. RSSI based embedded hardware fabrication:

RSSI (Receiver signal strength indicator) is mainly used for having good accuracy and in the same time it is also used for checking the power management to achieve good battery life time.It is actually the measurement of power level in the client received device.The representation of the RSSI signal is in decibels.The power can be either positive or negative.

4.2. Trizonal Implementation:

In this module the implementation of trizonal area is done by using RSSI methodology.since the sea is divided into three zones as safety,intermediate and the danger zone.Ultrasonic sensors are used mainly for the detection of icebergs ,attenuation of sound waves and the target .The boat is allowed to roam anywhere within the safety zone.

4.3. Security to the Fishermen:

Here the boat is allowed to sail around the sea within the safety zone.A buzzer alert will be given to the fishermen if the boat crosses the intermediate zone and danger zone.If the boat crosses the danger zone, the boat will

be returned to the safety zone or intermediate zone within 30 minutes.A buzzer alert will be in form of beep sound in which if in case of any danger the boat will be stopped by giving an alert to the fishermen.The signaling device which used For giving the buzzer alert are may be mechanical electrical,piezo-electric.

4.4. Server:

It is primarily used for verifying the tri zonal area .server not only verifies and it also detect the Danger zone in the sea .For the safety travelling for the passengers it also keep on maintaining and observing the zone information for the safe evacuation.

4.5. Control system:

Using this control technique, we can enquire if any illegal transportation is carried out. This technique helps fishermen to sail in safe zone without getting into trouble.. If in case of any problem, the fisherman can also send an emergency message to the control room and so that the coast guard can reach out for them.If they didn't respond to alert and move their boats back to the safe zone, the boat's control comes under control room of foreign port through Zig-Bee and fishermen's manual control is disabled.

4.6. Obstacle detection using ultrasonic sensor:

By using the ultrasonic sensors we can detect the natural disaster around the sea .Since it is a vision based sensors it does not posses any physical contact with the target. It also acts as a sensitive device for measuring the temperature so that it can detect obstacles and provides safety to the fisherman's

5. EXPERIMENTAL RESULT

In the experimental result we are about to describe the safety for the fisher rnan in the unmanned aerial vehicle .As the mobile nodes are fiited in the vechicle are always awake and it acts as a System coordinator and it has the synchronized communication in between the other nodes in the network. The communication is done through Zigbee .there will be a Zigbee device which is in both the sensor node and the mobile node.The Zigbee will be at sleep mode in the sensor node .The nodes will wake and sleep in the programming time slots or intervals. When the nodes are in sleep mode they cannot receive the RF message.The battery life time is also increase by using the power management techniques. The main purpose of using the RSSI is to have the distant measurement between the sensor nodes and the mobile node. Since the transmission of the signals taken place by the two nodes through via Zigbee communication. The control room can detect which fisherman is in danger using the RSSI methodology.

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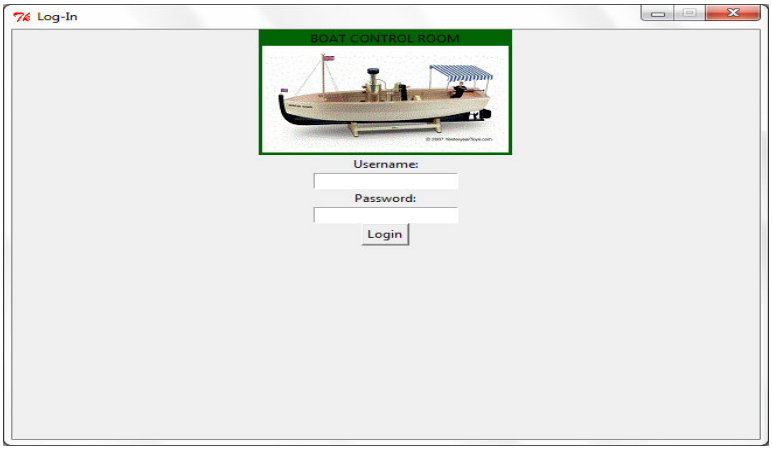

Fig 5.1 login process

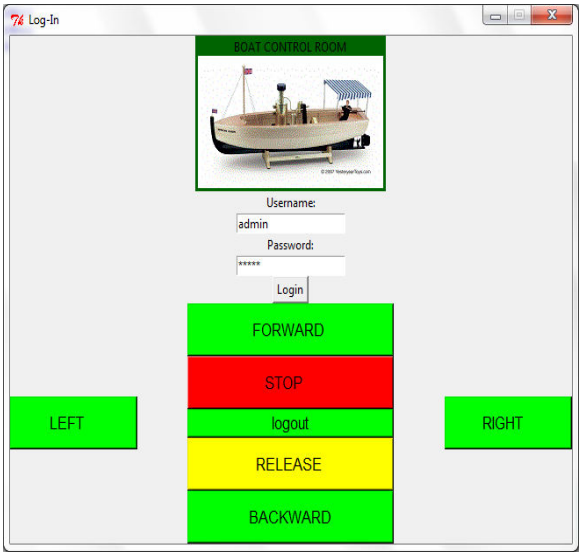

Fig 5.2 implementation of control system

6. CONCLUSION

This paper finally conclude that the wireless sensor network plays a major role in implementation.most of

the wireless sensor network are invisible to the user.The nodes in the network are mainly used to synchronization is to enable communication with the competing nodes in the network.This paper proposes implementation of energy efficient localization and also to track the position of the ships.

7. FUTURE ENHANCEMENT

Future improvement will first concern the integration of additional features in the target state vector, e.g., the object size and the wake orientation. Indeed, in the proposed method, wake detection was mainly used to improve the CFAR detector Performance and to reduce the false-alarm rate due to the removal from the Future measurement list

of unwanted detection inside the wakes. In addition, in the operational system, the data are stabilized from the sensor yaw, pitch, and roll; hence, target trajectories will appear straighter than the tracks presented here, and the wake orientations will be consistent with target trajectories. For such case, wake orientation could be used as an additional target feature, which may improve target tracking. However, adding wake orientation to the target state vector will lead to a highly nonlinear measurement system, and the CMKF-D will no longer be suitable; for example, an should be used. The proposed method has been carried out extended Kalman filter or a JPDAF particle filter on images without any preprocessing, and image denoising may also improve the detection performances**.**

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