ROBUST MAPPING AND PATH PLANNING FOR INDOOR ROBOTIC ELECTRIC COMPASS AND RFID

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Abstract: ***This paper studies the problem about robot path planning, and puts forward an application of electronic compass and RF ID which used for robot navigation and map building. We can make sure the azimuth angle of robot by installing electronic compass on robot's control panel, and then locate the robot through the RF id card on the robot's head. Suppose the mobile environment of robot is indoor, and we can determine the original location, current location of robot and the object's location through combining the data which from electronic compass with the data from RF ID reader.***

Keywords: C-loop, Aurdino, Ultrasonic waves, Xbee

I. INTRODUCTION

The electronic compassing for robot in an indoor environment and Operation of compass (magnetometer) is assumed on a mobile robot that is capable to traverse a complete circular path. The electronic compass is used to estimate a robot absolute heading with respect to the magnetic North. This is only compass approach where an evaluation of quality of calibration and magnetic environment is important as much as calibration itself. In this method, compass is able to detect the external magnetic interference and estimate it numerically. The approach also relates to automatic calibration and requires one full 360-degree rotation and multiple points for further analysis. This enhanced calibration procedure is performed in the magnetic field domain and implemented using a non-iterative algebraic technique. The quality of calibration is a function of input data goodness and how successful is the fitting procedure. The magnetic environment evaluation is performed by the distortion factor that is calculated at the end of calibration and helps to estimate quantitatively local external magnetic distortions and their influence on a heading measurement. The validity of this approach has been verified experimentally by using robot with electronic compass.

A RF-ID based wireless terminal has shortened session set-up and user identification time for conducting transactions with interactive service applications. The wireless terminal includes a terminal identification number and a user identification as a RF-ID tag. A RF-ID reader transmits a RF field for detecting the RF-ID tag in the terminal and provides an output signal when the terminal is within the reader field. The output signal establishes a connectionless communication to an access point or other terminal which initiates a wireless paging operation, in lieu of conducting a terminal discovery process, based upon the content of the RF-ID tag. The terminal initiates a wireless session between the terminal and the access point or terminal for conducting transactions with a service application linked to the access point or terminal.

II. LITRATURE REVIEW

In various areas there is a need of constant surveillance. The current surveillance system in-cludes monitoring by using CCTV cameras and other monitoring system. Mostly these systems are stationary and they can cover a limited area. These systems are mostly control manually or through a computer. They cannot be used to cover a larger area as well as they cannot be controlled using any mobile device. In short we can say that these systems dynamic enough much which gives the need for the development of a surveillance system which is more dynamic and can be controlled remotely. This project is aimed at developing a surveillance system which can be controlled remotely by using an laptop. It includes a robot with a Wireless Camera attach to it. This robot captures the high resolution video feed and transmits it to the connected Android device which is used to control the robot. The word surveillance may be applied to observation from a distance by means of electronic equipment (such as CCTV cameras), or interception of electronically transmitted information. It may also refer to simple, relatively no- or low-technology methods such as human intelligence agents and postal interception. Surveillance is very useful to governments and law enforcement to maintain social control, recognize and monitor threats, and prevent/investigate criminal activity. However, many civil Surveillance Security Robot With Automatic Patrolling Vehicle rights and privacy groups, such as the Electronic Frontier Foundation and American Civil Liber-ties Union, have expressed concern that by allowing continual increases in government surveil-lance of citizens we will end up in a mass surveillance society, with extremely limited, or non-existent political and/or personal freedoms. An automatic patrolling vehicle acts as a security patroller in the security system, which can monitor those dead zones of the traditional fixed surveillance system. The remote monitoring capabilities can also be enhanced by using the wireless network.

III. AURDINO BOARD

We will consider the Arduino UNO board as a result it will be those large portion prominent table in the Arduino board crew. Previously, addition, it will be those best table should get off for hardware Also coding. A percentage sheets gander a spot unique in relation to those particular case provided for below, Anyway the vast majority Arduinos bring greater part of these parts done basic.

Figure 1. Aurdino Board

IV. ARDUNIO ULTRASONIC SENSOR

The HC-SR04 ultranationalistic sensor utilization sonar with figure out those separation for an item simply in the bats do. It offers phenomenal non-contact extent identification with secondary exactness and stable readings done an easy-to-use one bundle from 2 cm on 400 cm alternately 1" should 13 feet.

The operation may be not influenced Toward daylight alternately bootleg material, In spite of acoustically, delicate materials similar to fabric camwood make was troublesome should recognize. It goes complete for ultranationalistic transmitter Also recipient module

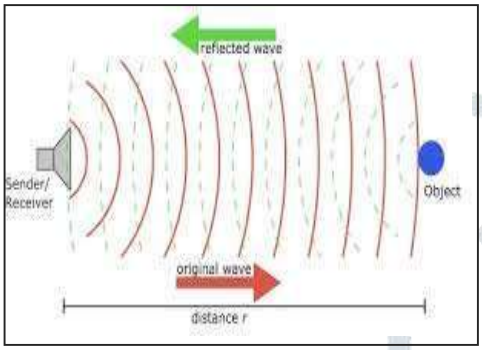


Figure 2.waves representation

Figure 3. ULTRASONIC SENSOR

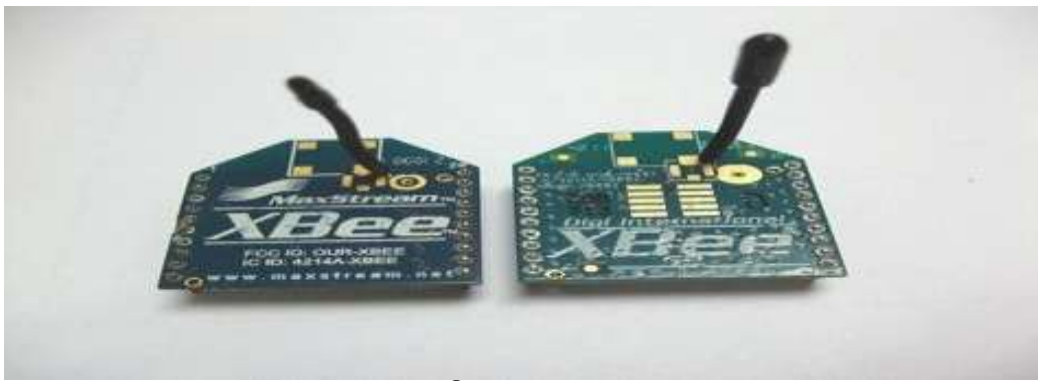
Technical Specifications:

- Power Supply:+5VDC
- Quiescent Current:<2mA
- Working Current:15mA
- Effectual Angle:<15°
- Distance: 2cm – 400 cm/1″ – 13ft

V. XBEE SERIES 2 POINT TO POINT COMMUNICATION

It is An transceiver, it camwood transmits information remotely and it camwood Additionally receives information remotely. There need aid a few sorts of XBee module and it could make befuddling. The precise well known XBee will be arrangement, goes for the firmware will make association to perspective with side of the point or star system. Be that as bear in mind, numerous individuals really thought it may be utilizing ZigBee protocol, in any case it will be not consistence with ZigBee a result it employments the low layer about ZigBee protocol just. In this manner XBee arrangement 1 (S1) can't correspond with ZigBee gadget in the advertise. In any case i wear surmise a number consideration a direct result they just need to convey "around XBee, alternately needed should need basic remote correspondence. The XBee alternately XBee master is essentially those same protocol, only master. Module need exceptional transmit force Also better recipient affectability.

Something like that iwill a chance to be discussing XBee only, not those master XBee arrangement 2 (ZB) doesn't offer; it is continuously running ZigBee network firmware. It is the new XBee module that we would carrying Notwithstanding. XBee S2 need better execution



Left is XBee Series 1, Right is XBee Series 2 Point to point two way communications

You might perused the datasheet In you have any desire to, in any case i am setting off will discuss perspective with purpose just bear On mind, XBee S2 can't impart with XBee S1, it may be not perfect clinched alongside haul from claiming remote correspondence. Cleared out may be XBee arrangement 1, good is XBee arrangement purpose is to perspective two approach correspondence those real question, might XBee S2 perform side of the point on perspective communication? OK, you need to do basic remote control the middle of your control panel, machine or microcontroller to your robot.

Also sending control summon to it, you also need to need reaction for example, such that light, temperature, battery voltage, and so on. Camwood i would that with XBee S2? the individuals that acquainted with XBee S1, i am beyond any doubt you think you will compelling reason will design the end location Furthermore hotspot address effectively in place with do this, right? forXBee S2, it may be comparative procedure, barely that you need should make a standout amongst the XBee S2 as Coordinator, another as switch.

In this way get yourself XBee S2, you will necessity to have two units in place should get correspondence dependent upon. Concerning illustration said earlier, XBee S1 Furthermore S2 can't communicate, with the goal you requirement to bring An one sets from claiming XBee S2. Don't blend them up.

VI. WORKING PRINCIPLE OF A DCMOTOR

The dc engine will be the gadget which changes over those immediate current under the mechanical worth of effort. It meets expectations on the guideline from claiming lorentz Law, which states that "the present carrying conductor put over a attractive What's more electric field background a force". What's more that power is known as those lorentz energy. The Flemming left-hand principle provides for those heading of the energy.

VII. LCD (LIQUID CRYSTAL DISPLAY)

LCD, an acronym for fluid precious stone showcase revolutionized the advanced presentation innovation organization for its conservativeness also flexible. Today it may be seen installed over Different electronic gadgets. What's more gadgets such as t. V. , Computers, Laptops, Watches, and so on. A fluid gem covering is the heart of the presentation which may be sandwiched between two polarized glasses. LCD's would accessible for Different shapes What's more sizes relying upon the configurations. A 16x2 lcd indicated in the picture. The following camwood presentation 32 characters with 16 characters over each column. It is skilled with show any character with ascii qualities extending starting with 0 will 255. In the posterior of LCD, An PCB is joined which holds those obliged meandering on transform the signs. Those enter part from those meandering may be An controller and memory in the type for cob ic.

Figure 5. **LCD**

VIII. CONCLUSION

We have two results i.e. the hardware and the software result. The hardware includes the robot which runs on DC motors. The input to the motors is provided by the L293D motor driver shield. The input to the driver shield is provided by the arduino board.

The navigational inputs are given by the user to the arduino board using the android appli-cation. The arduino board, on receiving the signal, processes it and produces the appropriate output. The communication between the android application and the arduino board takes place using the module which is interfaced with the arduino board. It provides serial communication between the application and the Arduino.

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