OPEN ACCESS INTERNATIONAL JOURNAL OF SCIENCE & ENGINEERING

WIRELESS ARMY ROBOT CONTROLLED FOR BORDER SECURITY COMPARING

Mayuri Dixit [1], Madhavi Mangwani[2], Mayuri Bankar[3], Mr.Ranjit Sadakale[4]

Dept. of Electronics and Telecommunication AISSMS IOIT Pune Maharashtra ,India [1]
Dept. of Electronics and Telecommunication AISSMS IOIT Pune Maharashtra ,India[2]
Dept. of Electronics and Telecommunication AISSMS IOIT Pune Maharashtra ,India[3]
Asst. Prof Dept. of Electronics and Telecommunication AISSMS IOIT Pune Maharashtra ,India [4]

Abstract: *The project is a wireless robot with the application to detect the motion of enemy at the restricted using the PIR sensor. It has a two level detection technique in which it detects the motion and then it checks for the valid RFID card and if after detection of motion the RFID card is not detected the signal will be sent to the control room using the GSM.*

There are two sides in the project control side and robot side the control side consist of motion senor which will be used to control the robot using the hand gestures. An accelerometer sensor is use to detect the motion of the hand and the controller will read the motion and send the signal through Zigbee module to the robot. The robot side will contain DC motor to drive the robot, a PIR sensor to detect the motion, GPS to send message, GPS to acquire the location of robot, and a RFID reader to detected the RFID Tags and a ultrasonic sensor to detect the obstacle.

Keywords:- -*GSM, GPS, RFID..*

--- ∴∴∴ ---

I INTRODUCTION

A machine is what is used to reduce human efforts, a robot is a machine that is used in many application like industrial and various domestic applications. As today we can see there are very surprising machines and robot that are far better than humans. The robot we are designing is an army robot, now a days we see that there are many robots that are two advanced for better then humans. Today there are being many development made in army technology to increase the strength of once army. Many multifunctional robot are available are available today that can out outperform the humans.

Our multifunctional robot is robot that that has two features and it will be used on terrorist prone areas. It has hand control side that can be used to control the robot using the hand gestures. The robot has a motion sensors that are used to detect motion in prohibited areas not only it detects motions after that it also verifies the human is a terrorist or not. The robot also has a GSM and GPS which will be used to send location whenever a terrorist is found by the robot.
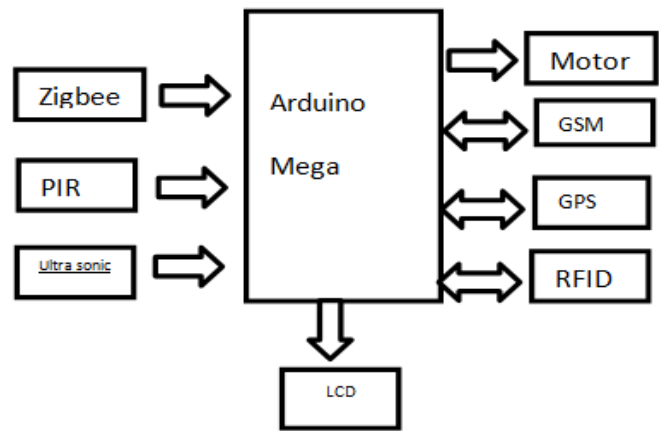
II Block Diagram
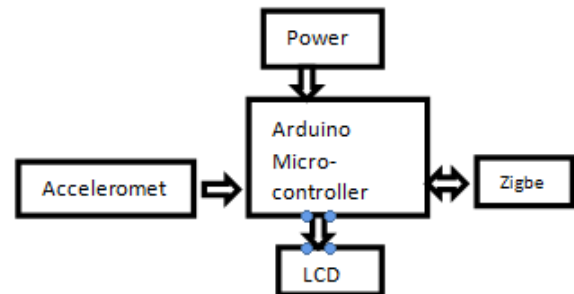

Figure 1: Block Diagram of Robot

Figure 2: Block Diagram of Control module

Working Of The System

The Robot has two sides, receiver side and the transmitter side. The transmitter side consists of microcontroller Accelerometer sensor which will sense the hand motion and pass it on the ZigBee transmitter. The receiver also has a microcontroller the inputs to the microcontroller are PIR sensor, and an Obstacle sensor. It also has RFID reader, GSM and GPS. Motor are used for the movement of the robot which are driven by l293d motor driver IC. The commands sent from the transmitter are received by the Receiver and the robot moves accordingly. The PIR sensor is used for detection of motion and the RFID is used to check whether the human detected is our solider or enemy. The GPS module sends the location through GSM whenever the enemy is detected. Ultrasonic sensor is used for obstacle detection whenever an obstacle will be detected the robot will changes its paths.

System Functional Requirnments

Arduino Uno

Arduino Uno is an ATMEGA-328 based development board it has fourteen GPIOS, six ADC, six Pulse Width Modulation pins, it also has a 16 MHz clock. The Arduino UNO is a widely used open source microcontroller board based on the ATmega328 microcontroller and developed by Arduino.cc. It is an analog and digital inputs/outputs (I/O) pins that may interfaced to various expansion boards and other circuits..

Figure 3: Arduino Uno

GSM

GSM is a cellular technology which is widely used over the world. It is the most famous and successful technology user the world till today. The GSM system is the most widely used cellular technology in use in the world today. It works on 2 band mainly 900 MHz and 1800 MHz 900 for 2g and 1800 for 3G. it was first developed in Europe. As it is the most famous technology after it gives support all over the world.
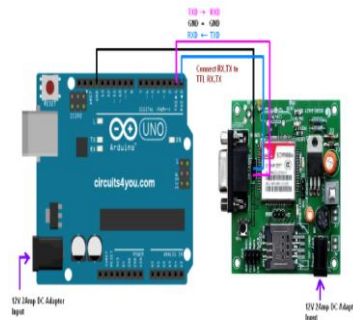

Fig 2: GSM module

LCD (Liquid Crystal Display)

LCD display is a 16*2 graphical LCD display which has 16 Coolum and 2 rows. They do not emit light directly. It has total 16pins out of which 8 pins are data pin and 4 pins are control pin and 2 are supply pins.
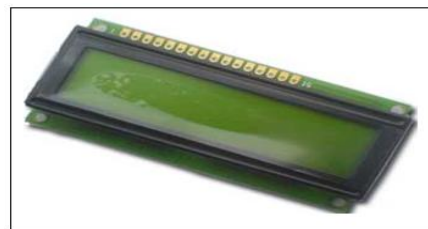

Figure 4: Liquid Crystal Display (16x2 LCD)

D.GPS

Technology became a reality through the efforts of the American military, which established a satellite-based navigation system consisting of a network of 24 satellites orbiting the earth. GPS is also known as the NAVSTAR (Navigation System for Timing and Ranging).

First the time signal is forwarded to the receiver using the GPS satellite to the receiver at that point and the difference between the time of GPS and the receiver clock is calculated using which the distance is calculated. .The same procedure is repeated for all the three satellites .It is ok to calculate the distance by using tree satellites. The location generated by using the above method is not exact however. It is due to the clock used on the GPS receiver which causes the error in distance. To reduce this error the fourth satellite is used which compares the results and gives the exact result. GPS technology is used in large application this days and has become very popular with time.
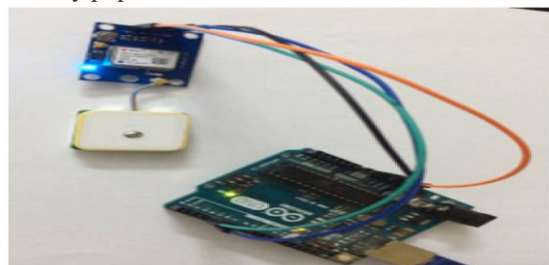

Figure 5: GPS module

RFID

RFID is technology which comes under Automatic data capture and identification system. This work on electromagnetic Waves which has a frequency a frequency of 125 kHz. It has two parts a RFID tag and A RFID reader.

Every RFID tags consist of a unique code and an antenna integrated in it. Which is used to transmit the data to the reader. After receiving the Data the Tag converts in to data which then we can read using a microcontroller or a computer through serial interface after which we can use the data as we want
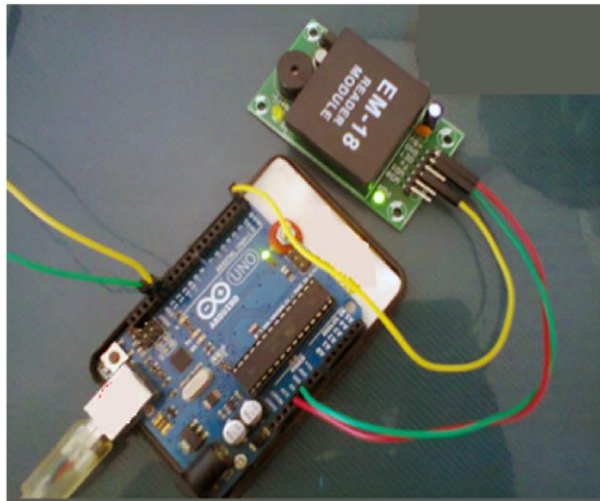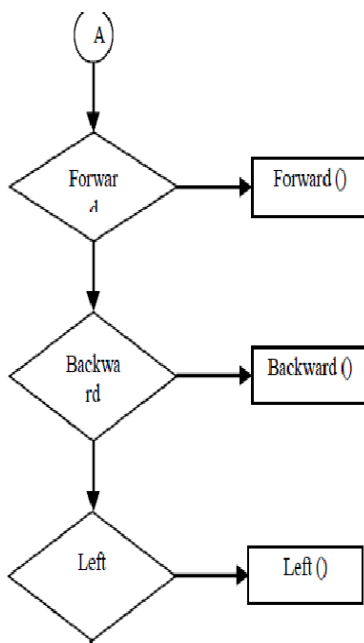

Figure 6 RFID

Figure 7 Flow Chart

III APPLICATION

The proposed robot has scope of widespread industrial, defense and the home application. It can be used to analyze the environment of a coal mine without any human intervention. It can also be employed in a hostage situation to pin point the exact location of terrorists with the help of ultrasonic and PIR sensor, saving many lives during rescue mission. Another application home security system to sense movement of intruder PIR sensor. It can be used in military, dangerous tasks can be carried out by the robot without worrying about loss of human life.

IV RESULTS

Remote controllers are designed to direct the orientation of robot. Robot keeps on moving in two modes i.e., manual mode and self mode. Its brought under user's control in the case of manual mode. In self mode, robot starts moving over surface and takes action according to scenario. To detect the obstacles, we have deployed PIR sensors (left and right sensor) in the front portion of the module. While moving on the surface, if the left sensor is detected, robot takes back the position for a moment and moves right. If the right sensor is detected, robot get back and moves left.
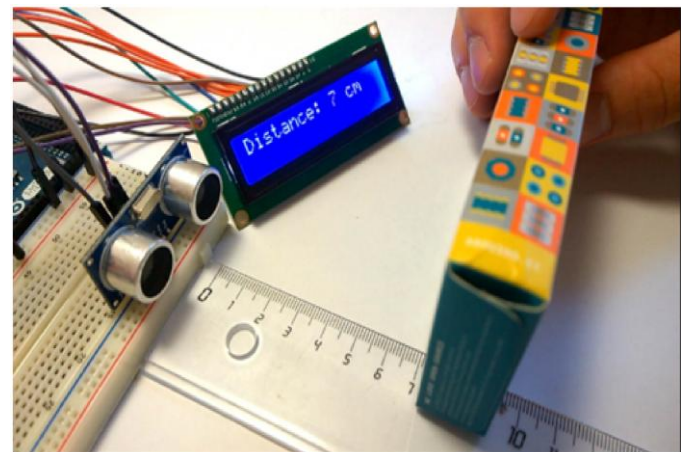

Figure 8:Project result

V COMPARISION

SR. NO.	YEAR	TITLE AND AUTHOR OF THE PAPER	WORKING
1	2013	"Robot controlled car using W i-Fi module " S R Madkar (Assistant Professor), Vipul Mehta,Nitin Bhuwania, Maitri Parida	Using a android application the robot will be controlled. Need of phone and a android app to control the robot.
2	2014	"Accelerometer Based Hand Gesture Controlled Robot" Mr.Pravin Vaishnav1 , Mrs.Shalini Tiwari2	A Robot which is controlled using hand gesture, and it used accelerometer for motion detection. Uses sensor for detecting the motion and controlling the robot.
3	2017	"A Multi-function Robot for Military Application" Nihar Ranjan1 , Zubair Ghouse2 .	A Robot which is controlled using hand gesture, and it used accelerometer for motion.

VI CONCLUSION

The defence is always has been quite sensitive task and it includes so many risks. So it's better to use robot for these job instead of people.We have improved the interaction technique with the machine and we have also added two level security and detection using PIR and RFID and we have also used Zigbee for improving transmission range of our device. Human life and time are priceless.

Motor driver L293D

L293D is a typical motor driver or motor driver IC which allows DC motor to drive on either direction. L293D is a 16 pin IC which can control a set of two DC motors

simultaneously in any direction. It means that you can control two DC motor with a single L293D IC. Dual H-Bridge Motor Driver integrated. The behavior of motor for various input is shown in Table 1.

OPERATION	A	B
Stop	Low	Low
Clockwise	Low	High
Anti clockwise	High	Low
Stop	High	High

TABLE1.1 Behavior of motor

VII ACKNOWLEDGMENT

REFERENCES

1. FANUC Robotics Deutschland GmBH, 73765 Neuhausen a.d. F., Germany, "Military robots of the present and the future,"Vol. 9, No. 1 (2010) 125–137. (references)
2. Yadnika Warang1 , Tejali Mahadik2 , Supriya Ojha3 , Asha Rawat4 "Camouflage Robot-A Color Changing Spy Robot ",IJARIIE-ISSN(O)-2395-4396,Vol-3 Issue-2 2017.
3. 1Ankit Yadav, 2Anshul Tiwari , 3Divya Sharma, 4Ratnesh Srivastava, 5Sachin Kumar, *O. P. Yadav, "SMART SPY ROBOT," International Journal of Science, Engineering and Technology Research (IJSETR) Volume 5, Issue 4, April 2016
4. 1Ankita Patel, 2Kinjal Chaudhari, 3Dattukumar Patel, "Touch screen controlled multipurpose spy robot using zigbee," International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 3 Issue 4, March 2014
5. Ujwala G. Meshram, Shubhangi Borkar, "Soldier Robot with Dark Eye," International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization) Vol. 3, Issue 6, June 2015.
6. Nihar Ranjan1 , Zubair Ghouse2 & Nishika Hiwrale3, "A Multi-function Robot for Military Application," Imperial Journal of Interdisciplinary Research (IJIR) Vol-3, Issue-3, 2017 ISSN: 2454-1362, http://www.onlinejournal.in.
7. WIRELESS FUNCATIONAL DEFENSE ROBOT Dhirajkajari,akshada Yewale,Inderjeet

singh,Harshwardhankavle 4 Department of Electronices and telecommunication KCCEMSR,Thane,India.

8. I.E.M.D.Goonethileke,"wireless RF Based survelliance Robot controller via computer":volume 7,jan2012.

9. H.Vijaya Laxmi and m.Narender;"communication between Mobile-Robots and pc controller based on zigbee network";International journal of Engineering Trends and technology(IJETT)-Volume 4 Issue 6