RF Controlled War Field Spy Robot Using Night Vision Wireless Camera

Dilliraj .E[1], Rekha.S[2], Sindu Priya.N.R[3], Vedhavalli.A4

Faculty, Department of Electronic and Communication Engineering, Prathyusha Engineering College, Tiruvallur, Tamil Nadu, India [1],

Student, Department of Electronic and Communication Engineering, Prathyusha Engineering College, Tiruvallur, Tamil Nadu, India [2],

Student, Department of Electronic and Communication Engineering, Prathyusha Engineering College, Tiruvallur, Tamil Nadu, India [3],

Student, Department of Electronic and Communication Engineering, Prathyusha Engineering College, Tiruvallur, Tamil Nadu, India [4]

ABSTRACT: The intension of this paper is to reduce human victims in terrorist attack.The unique feature of this surveillance robot is that it can travel both on land and water. In this paper we are using the raspberry pi to control the entire robotic module and we are using the ultrasonic sensor to sense the obstacles in the path.Survelliance area critical features include the ability to follow a search instruction plan, rigorous terrain mobility, and the capacity to classify and map underwater mines and other potential threats, communication, obstacleavoidance, and sensor payloads remain critical issues to be resolved for successful operation. Robot have been widely used to perform variety of tasks which reduce the manual work specifically in remote areas where human accessibility is unimaginable. The main applications where the robots have exhibited their excellence include surveillances, tracking targets for objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side.

I. INTRODUCTION

In today's world the robotics field is growing exponentially and some of the popular robotic products are used largely by the industries, defence, academic and research communities. At present the surveillance of international border areas is a difficult task. The border guarding forces are patrolling the border seriously, but it is possible to watch the border at each and every moment. An essential requirement of this situation is a robot which automatically detects trespasser in the border and report nearby board security control unit. Robot play vital role in helping humans, someof robots will replace the human in their work and some robots will act as assistive devices. Likewise in our paper the robot will act as a assistive device for soldier's in the field of surveillance. At the time of war where it can be used to collect information from the enemy terrain and monitor that information at a far secure area. Making a surveillance of any disaster affected area for making disaster management like searching and rescuing victims, where humans cannot go places like submarine, mine and dicks.since robot are getting more sophisticated, reliable and miniaturized where human cannot find out easily. In our paper we are using remote monitoring capabilities can also be enhanced by using the wireless network to control the surveillance robot. The surveillance system using spy robot can be customized for various fields like industries, banks and shopping malls.The main technology used here for serial communication with the robot is the Zigbee technology. Zigbee technology can be used to share data between two devices considering the range between two devices. The Zigbee module will be connected with the robot and the commands to the robot will be

given through the . The war field robot consists of Raspberry pi board as a controller board. It has L293D motor driver IC's along with Zigbee module. Two DC motors are also used for the motion of the robot.

Fig 1: spy robot

Objective of the work

The main objective behind developing this robot is for the surveillance's of human activities in the war field. It can also make comfortable for human and it is user friendly. In this paper we are using wireless camera which is mounted on the robot body for spying purpose, even in complete darkness by using infrared lighting. At the transmitting end using buttons, commands, are sent to the receiver to control the movement of the robot either to move forward, backward and left or right, up and down etc. At the receiving end two motors are interfaced to the microcontroller where they are used for the movement of the vehicle. After receiving the command robot will stop. After that the robot will move in the same direction in which previously the robot is moving. At the RF transmitter acts as a RF remote control that has the advantage of adequate range (up to   meters).while the receiver decodes before feeding it to microcontroller to drive DC motors using L293D (device driving circuit).

II. LITERATURE SURVEY

1Towards Amphibious Robots: Asymmetric FlappingFoil Motion Underwater Produces Large ThrustEfficiently Stephen Licht, Martin Wibawa, Franz S. Hover, and Michael S. Trian tafyllou   2011

In this paper we have implemented the observed swimming kinematics of Myrtle , a green sea turtle Chelonia Mydas Residing in the Giant Ocean Tank of the New England Aquarium, on the 1.5-meter long biomimetic vehicle Finnegan the RoboTurtle.

2   Propeller of Amphibious Robot Optimizing Design Xueqiang Zhan, Jiancheng Yu,   Aiqun Zhang   2010

The propeller of amphibious robot is a device facilitating the robot to swim and climb. Platform (ISP) is an optimization tool coupling some commercial design software optimization software iSIGHT. Two types of commercial software are integrated in the ISP for optimizing mass and thrust of propeller.

3 Monitoring underwater sensors with an amphibious robot Andrew Speers, Anna Topol, James Zacher, Robert C odd-Downey, Bart Verzijlenberg, Michael Jenkin 2011

The underwater domain provides a wide range of potential applications for autonomous systems. Sessile (in-mobile) sensor platforms can provide a sensing network to monitor a range of different underwater events. Monitoring such networks can be a challenge, however, as the sensor nodes can be difficult to monitor and the nature of the medium limits wireless communication.

III. PROPOSED SYSTEM

In this paper we are using Raspberry pi board is used for the robot. In proposed system user can control the robot by using the automatically. We are use a Wireless night vision camera this is connected by an RF module receiver section. The receiver module is connected to a Laptop or a Monitor. The video surveillance will be monitored by a person and capture the image send through the Mail id.The video can be recorded for future purposes. Through this robot we can easily spy the remote areas as it can be used for military purposes and other rescue operations.
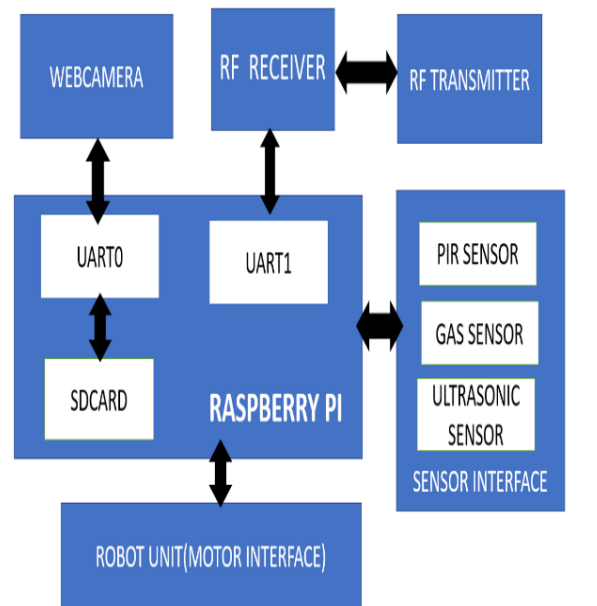
Fig 2: system architecture

The system architecture of robot is shown in given figure below.
It consists of following blocks

- ➢ RF module
- ➢ Raspberry pi
- ➢ Motor interface
- ➢ IR sensor
- ➢ Gas detector sensor

1. RF MODULE

The RF module modules consists of both transmitter and receiver. The transmitter and receiver pair operates at a frequency of 434MHZ.The transmitter occur at a rate of 1kbps-10kbps.The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter. The encoder is used for encoding parallel data for transmission feed while reception is decoded by a decoder.HT12E-HT12D, HT640-HT648 etc. are some commonly used encoder/decoder pair ICs.
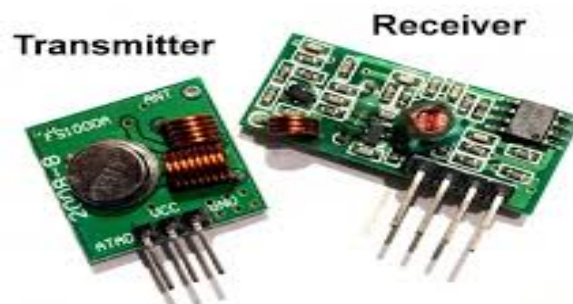

Figure a: RF transmitter and RF receiver

2. RASPBERRY PI

A Raspberry Pi is a credit card-sized computer.it was quickly adopted by tinkerers', makers, and electronics enthusiasts for projects that require more than a basic microcontroller (such as Arduino devices).The Raspberry pi is slower than a modern laptop or desktop but is still a complete Linux computer and can provide all the expected abilities that implies, at a low-power consumption level. The spy robot system comprises the Raspberry pi (small single-board computer), night vision pi camera and sensor. The movement of a robot is also controlled automatically through obstacle detecting sensor to avoiding the collision. Theinformation regarding the detection of living objects by PIR sensor is sent to the user through the web server and pi camera capture the moving object which is posted inside the webpage simultaneously. The user in control room able to access the robot with wheel drive control buttons on the webpage. The surveillance system using spy robot can be customized for various fields like industries, banks and shopping mall.

3. MOTOR INTERFACE

The war field robot consists of Raspberry board as a controller board. It has L293D motor driver IC's along with Zigbee module. Two DC motors are also used for the motion of the robot. The night vision wireless camera is attached with the robot in order to monitor the situation and the camera can be rotated 360 degrees via the android application through motor.

4. IR SENSOR

The IR sensor itself is housed in a hermetically sealed metal can to improve noise/temperature/humidity immunity. There is a window made of IR-trans missive material (typically coated silicon since that is very easy to come by) that protects the sensing element. Behind the window are the two balanced sensors.
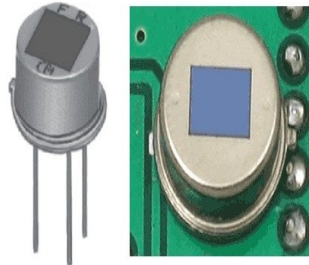

Fig b:IR Sensor

PIR sensors are rather generic and for the most part vary only in price and sensitivity. Most of the real magic happens with the optics. This is a pretty good idea for manufacturing: the PIR sensor and circuitry is fixed and costs a few dollars. The lens costs only a few cents and can change the breadth, range, sensing pattern, very easily. In the diagram up top, the lens is just a piece of plastic, but that means that the detection area is just two rectangles. Usually we'd like to have a detection area that is much larger. For the reasons that will be apparent soon, we would like to make the PIR lenses small and thin and mouldable from cheap plastic, even though it may add distortion.
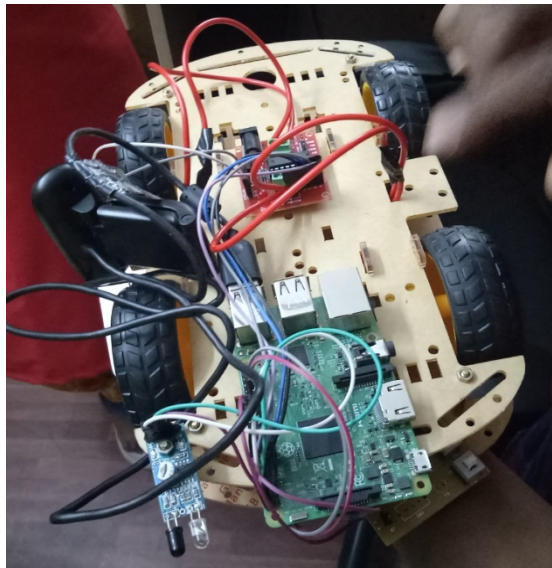
IV. RESULT

Fig c: war field spy robot using night vision camera

APPLICATIONS
- ➤ Military field.
- ➤ Surveillance along border.
- ➤ Search and Rescue Operation.
- ➤ Shopping mall.

V. CONCLUSION

In this paper, the model of robot can be described to build a robot using night vision wireless camera run by raspberry pi module. In order to control the robot through wireless application using the platform of Raspbian OS.The robot can be made more enhanced by adding features like face detection and bomb defuse kit.

FUTURE ENHANCEMENT

In future, the robot may also consist of a bomb disposal kit in order to diffuse bombs in the war field. We can also include face recognition technology in future.

ACKNOWLEDGMENT

REFERENCES

[1] Selvam, M. "Smart phone based robotic control for surveillance applications."Dept. of ECE, Karpagam University, Coimbatore, Tamil Nadu, International Journal of Research in Engineering and Technology (2014).
[2] Jenifer, T. Maria, et al. "Mobile Robot Temperature Monitoring System Controlled by Android Application via Bluetooth." International Journal on Advanced Computer Theory and Engineering (IJACTE) 2.3 (2013).

[3] Pahuja, Ritika, and Narender Kumar. "Android Mobile Phone Controlled Bluetooth Robot Using 8051 Microcontroller." Electronics & Communication Engineering, Department, BRCM College of Engineering & Technology, Bahal, India, International Journal of Scientific Engineering and Research (IJSER) www. ijser. in ISSN (Online) (2014): 2347-3878.

[4] Mehta, Mr Lokesh, and Mr Pawan Sharma. "SPY Night Vision Robot with Moving Wireless Video Camera & Ultrasonic Sensor."

[5] Yeole, Aniket R., et al. "Smart Phone Controlled Robot Using ATMEGA328 Microcontroller."

[6] Borker, Kunal,Rohan Gaikwad, and Ajaysingh Rajput. "Wireless Controlled Surveillance Robot." International Journal 2.2 (2014).

[7] MacMillan, Neil, et al. "Range-based navigation system for a mobile robot."Computer and Robot Vision (CRV), 2011 Canadian.