iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** V **Month of publication:** May 2017

DOI:

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Volume 5 Issue V, May 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

Vigilant Spy Robot used in Warfield

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Abstract: It is well known fact that, most of the tasks in military applications are more dangerous than others. These tasks can be solved by an autonomous robot. So we are using a robot instead of human solider. This robot is used to detect the opponent solider. A metal detector is also used to detect the metal in war fields. To gather the information we design a robot which monitor the every position of enemy and send the feedback to user on real time basis. A camera is placed on the robot with a gun to capture the real time video and to shoot the opponent solider if anybody is present. In this paper robot act as a vehicle that can be operated remotely by using RFID technology.
keywords: rfid tags, rfid reader, wireless camera, robot.

I. INTRODUCTION

In military there are more dangerous tasks to do so there are asked the solider to perform but they cannot do work efficiently.
For example, walking through minefields, deactivating unexploded bombs or clearing out hostile buildings, are some of the most dangerous tasks a person is asked to perform in the line of duty. These tasks can be solved by an autonomous robot. But, complete autonomous robot which can perform varieties of tasks is still under development. Some areas like Kargil for human beings it is difficult for surveillance. So we are using a camera for surveillance.
A robot is an automatic machine that performs various complex tasks. The robot makes efficient Locomotion by means of software in which programming are dump into robot. So that robot sense data from environment with the help of sensors.
The working principle of this paper is divided in to two sections
A. Transmitter
B. Receiver
At the transmitter section commands are sending via PC to control the movement of robot. The movements of robot are
A. Forward
B. Backward
C. Left
D. Right
E. Fire
All this commands are control by PC. So that robot is travel by wirelessly. For remote operation RF module are used which execute at adequate distance up to 200meters.
At receiver section the transmitted data are received by antenna. In this section two motors are interfaced with microcontroller atmega8 where they are used for locomotion of robot. A wireless camera is mounted on the robotic body to keep eye continuously on enemy even in complete dark area; if any problem persists then we can attack the opponent soldiers. So we are using a robot to detect the own solider and opponent solider and also to detect metal.

II. RELATED WORK

We aim to develop a model which will be efficiently used to minimize terrorist causality. Being able to achieve reliable long distance communication with user-friendly robot control is an Important open area of research to robotics. A paper of “Design and Implementation of Accelerometer based Robot Motion and Speed Control with Obstacle Detection”: this paper proposes a model of a robot based on “Human Machine Interfacing Device” utilizing hand gestures to communicate with embedded systems for tracking of enemies.
The 3-axis accelerometer is selected to be the input device of this system, capturing the human arms behaviors. Design a paper on signal and image processing. This paper presents the design, development and validation of vision based autonomous robotic system for military applications. Sum of Absolute Difference (SAD) algorithm is used for the implementation of the proposed image processing algorithm.

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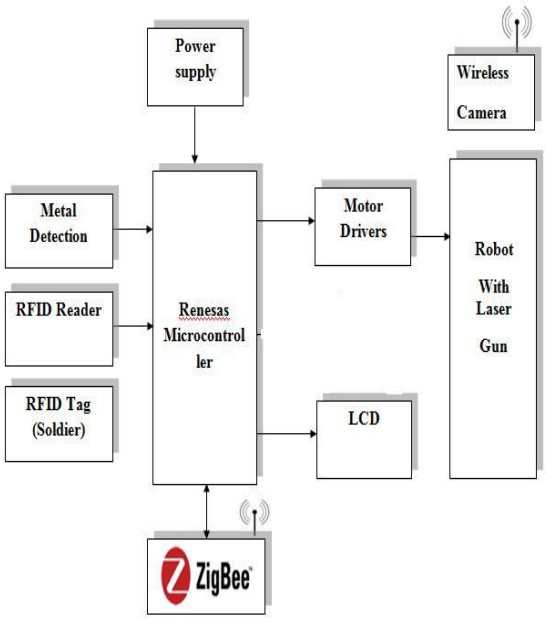
Design a paper to reduce human victims in terrorist attack such as, so this problem can be overcome by designing the spy robot which involves wireless camera. So that from this we can examine rivals when it required. This robot can quietly enter into enemy area and sends the information via wireless camera**.**

III. WORKING PRINCIPLE

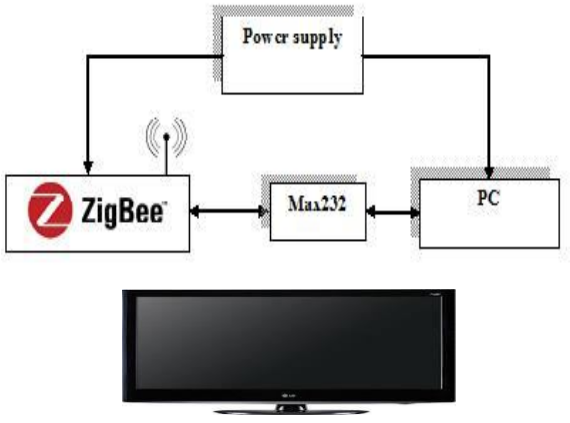
We propose a new tanker robot to detect and attack the intruder in the battle area. We can control the tanker from remote area using Zigbee wireless technology. Wireless CCTV camera is placed on the tanker. The CCTV camera receiver is connected in remote section. We are watching the intruder through the CCTV it is continuously monitored in remote section. RFID tags are given to our own soldiers to detect opposite soldier. RFID reader is used to detect our own soldier. Land mine sensor is used to detect the land mine. The shooting commands are given by control section. As per the Corresponding commands received from control section, the robot will shoot the human being.

In order to control the robot we use relays to run the motor in that.

A. Block diagaram



B. Remote Section



1) *RFID Tag:* RFID Tag is useful to identify the unauthorized soliders. These tags are given to our soliders.
2) *RFID Reader:* This is used to identify our soliders. It is helpful to avoid mistakes while attacking.
3) *Metal Detection***:** It is used to detect the metal.

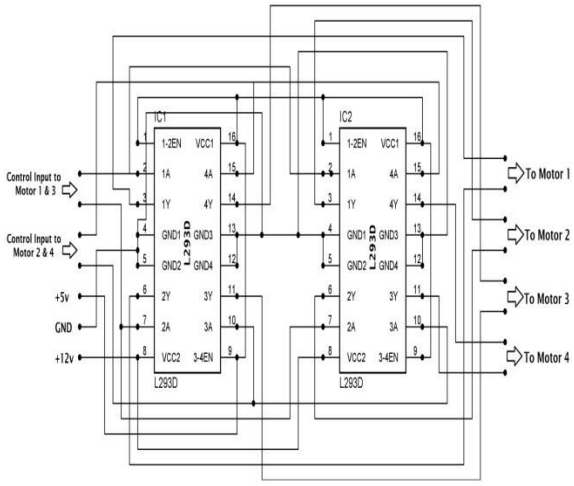
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4) *Wireless Camera:* A wireless camera is placed on top of the robot. It is an effective camera having minimum operating range whatever the target images/videos are captured by the camera and send it to control section as shown in remote section.
5) *Renesas Microcontroller:* The Renesas microcontroller offering low power, high performance. It is a 16-bit new generation microcontroller.
6) *LCD Display:* A liquid crystal display (LCD) is a flat panel display, electronic visual display, based on Liquid Crystal Technology.

A liquid crystal display consists of an array of tiny segments (called pixels) that can be manipulated to present information. Liquid crystals do not emit light directly instead they use light modulating techniques.

7) *Motor Driver:* The Device is a monolithic integrated high voltage, high current four channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads (such as relays solenoids, DC and stepping motors) and switching power transistors. We have used this driver circuit too drive the motors of the robot. Each L293D is used to drive two motors.



Circuit diagram: Motor Driver Circuit

Two L293D's are used to drive four motors. When both the inputs are low the motor will be in the halt state, when the first input is high and the second input is low the motor will move in the forward direction,when first input is low and second input is high the motor will move in the reverse direction and when both the inputs are low the motor will be in the halt state.

8) *Zigbee:* Zigbee is a latest evolved technology with the commonly effort of Zigbee alliance and IEEE 802.5.11 based on the demand of low power, low data transfer rate, low cost, low complexity wireless network technology. Zigbee is ordinarily used in wireless sensor network and control systems which connect and communicate among thousands of tiny sensors, these sensors require very small amount of energy to send data from one sensor to another sensor through radio waves in a relay way, and communication efficiency is very high.
9) *Power Supply:* An AC to DC adaptor as been used to get DC input for the mother board. In mother board, we have developed a 5V regulator circuit, which is needed for microcontroller as supply voltage. IR transmitters are also connected to 5V supply, so that they always transmit high signal. LM7805 is used for 5V regulated supply.

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. The technology requires some extent of cooperation of an RFID reader and an RFID tag.

10) *RFID Applications:*
   a) Automatic Vehicle identification
   b) Inventory Management
   c) Work-in-Process
   d) Container/ Yard Management
   e) Document/ Jewellery tracking
   f) Patient Monitoring

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IV. PROPOSED METHODOLOGY

We have propose methodology of the paper which can be divided in two ways

Hardware implementation consist design and development of the sensor like gas sensor, metal detector, temperature and LDR, RF module, LCD Display and also used intelligent soldier robot while at another end ,in Software Implementation we focuses on program of the microcontroller using MATLAB and C language.

A. Hardware Implementation

Microcontroller is a heart of this wireless robot. It is a programmable device. It has a CPU in addition to a fixed amount of RAM, Z stable 5V supply to the MAX232. As shown in figure the pin no.11 and 12 Of MAX IC are connected to the receiver and transmitter of microcontroller.

1) *Transmitter:* At the transmitter section commands are send to the receiver by wirelessly. The microcontroller at the receiver section act as a slave following figure shows the transmitter section. At transmitter section RF module is used for remote operation. IC max 232 is used for serial programming. The max232 is the IC which in one package contains the necessary driver and receivers. It just need +5V supply voltage and generates the necessary RS-232 voltage level (approx - 10V to +10V) internally. Because of this feature it greatly simplified the design of circuitry. AC supply is connected to the transmitter circuit which is in 230V and IC MAX232 needs only +5V supply so that we are using here voltage regulator i.e. IC 7805 to provide stable 5V supply to the MAX232. As shown in figure the pin no.11 and 12 Of MAX IC are connected to the receiver and transmitter of microcontroller.

While pin no 14 and 13 are connected to the PC COM Port. Because of this connectivity PC and transmitter section are interfaced with each other. So that whatever commands we are giving from PC this are transmitted through this COM port to the microcontroller and this master microcontroller send signal wirelessly to the receiver.

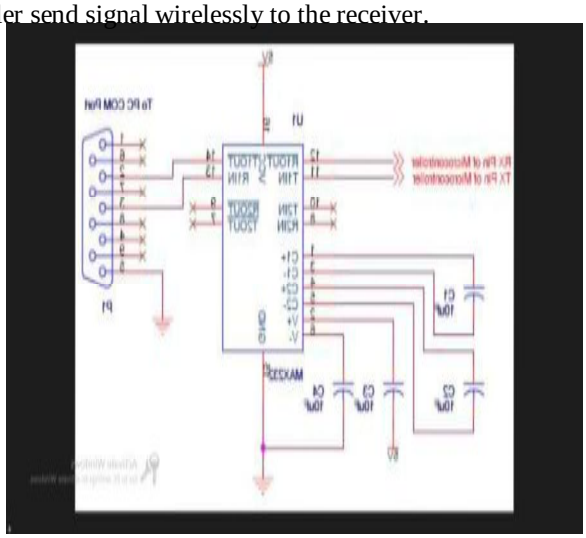


Figure1: circuit diagram of MAX232 IC

2) *Receiver:* At the receiver section each two motors are interfaced with microcontroller where they are used for movements' of robot. A wireless camera is placed on the robotic body for spying purpose. Here we are using four motors for locomotion of robot. It needs more current, but our microcontroller is not capable to provide that much current. So that we are using here motor L293D driver. In which it takes small amount of current from microcontroller and supply large amount of current to the motors for its movement. By using Zigbee technology we can send the signal and transmit the signal to PC.

Here the driver circuits are used to control the operations of firing unit, laser unit & audio reception unit present on the robotic module. Here three types of driver circuits are used they are ground driver, laser driver and motor driver circuit.

We provide a design in which control of robotic unit is from remote end and also we are able to get the videos from the robot end for the purpose of spying. At the user PC, we will have videos and also we are able to control the robotic movement. For remote operation we are using here RF technology that has adequate range up to 200 meters. The images captured by the camera should be processed very fast to provide real time visualization of environment to the user. This wireless camera is visualized in total dark area so provide night vision.

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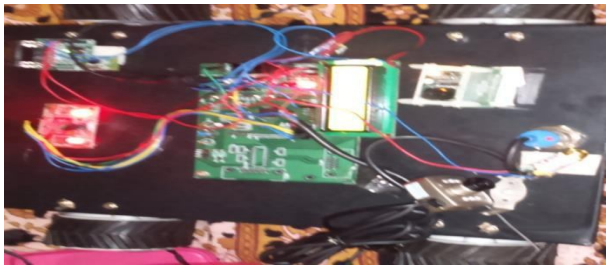


Figure 2: Hardware circuit.

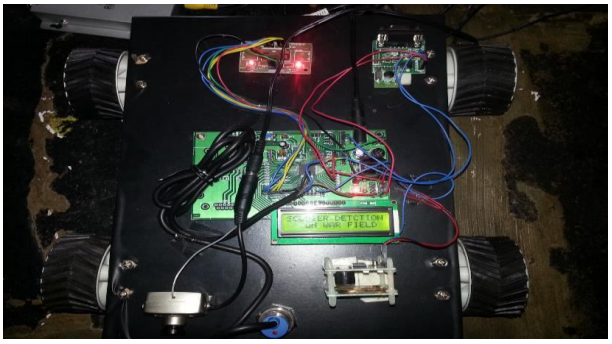


Figure 3: Hardware circuit with LCD Display.

B. Software implementation

For coding purpose we are using MATLAB software. The software is used to operate robot in different directions i.e. forward, backward, right, left, trigger. When we run the program then GUI file window is opened that is used for direction of robot.

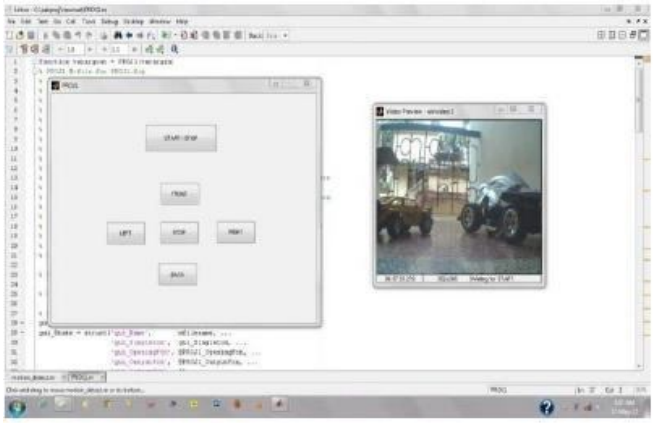


Figure 4: MATLAB Simulation Result.

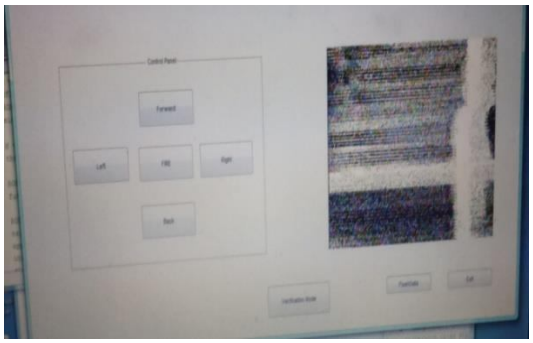


Figure 5: GUI Window Output.

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V. CONCLUSION

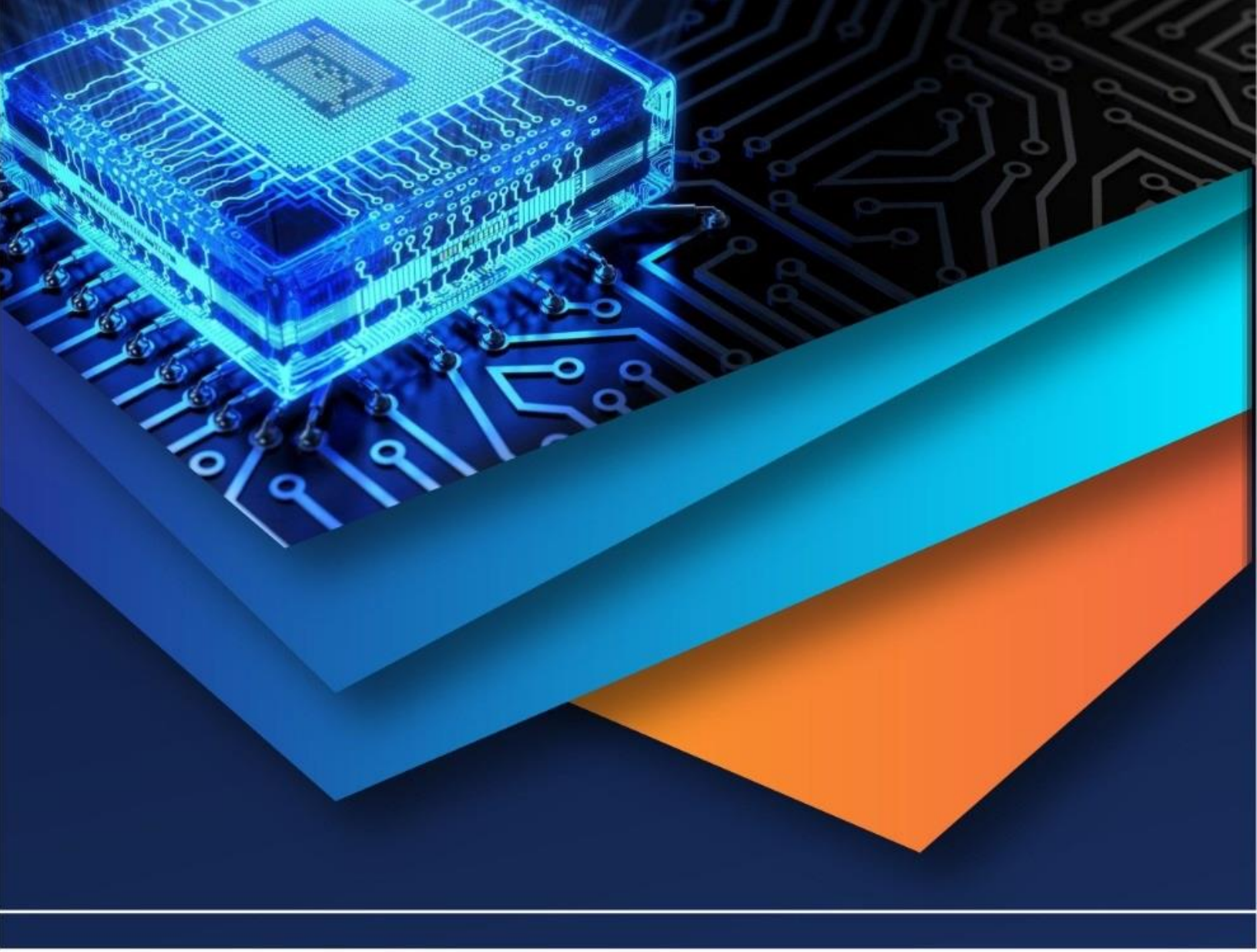
The military has recognized that automatic devices can do work more fast than that of human soldiers to reduce the risk of human life's. Robots can do dangerous work that was previously under taken by humans. The use of robots can make soliders work more secure and it can even save the soldiers life.

The design and real time validation of vision based obstacle avoidance for military robot is presented. The results are validated in both offline and real time basis using MATLAB simulation techniques and using experimental set ups. Both Micro controller based and vision based systems are built and real time results are validated.

REFERENCES

[1] Dr. S. Bhargavi "Design of an Intelligent Combat Robot for War Field" : International Journal of Advance Computer Science and Application, volume 2, no.8, 2011
[2] I.E.M.D. Goonethileke, "Wireless RF Based Surveillance Robot Controlled via Computer":volume 7, Jan 2012.
[3] Dhiraj Sing Patel, "Mobile Operated Spy Robot":International Journal of Emerging Technology and Advance Engineering, volume 3, special Issue 2, Jan 2013
[4] Pratush G. "GSM Controlled Topple Resistant SpyRobot" IEEE Transaction 2013 no-978-0-7695_5146-3/13.
[5] Aishwarya Patil, "Haptic Robotic Arm Using Voice and , Gesture Recognition": International Journal of Advanced Research in Computer and Communication Engineering, volume 2, issue 3, march 2013.
[6] Sweta N, "Design and Implementation of Accelerometer Based Robot Motion and Speed Control with Obstacle Detection": International Journal of Science Engineering and Technology Research, volume 2, issue 3, march 2013.
[7] Ankita Patel, "Touch Screen Controlled Multipurpose Spy Robot Using Zigbee": International Journal of Advanced Research in Computer Engineering and Technology (IJARCET), volume 3, issue 4, march 2014.
[8] Dr. Meenakshi ,"Vision Based Robotics System for Military Application-Design Real Time Validation" :Fifth International Conference on Signal and Image Processing -2014.
[9] Kalyanee N. Kapadnis ," RF Based Spy Robot":volume4,issue 4, April 2014.
[10] Dr. Shantanu K. Dixit, "Design and Implementation of e-surveillance Robot for Vide Monitoring and Living Body Detection": International Journal of Scientific and Research Publication, volume 4, issue 4, April 2014, ISSN 2250-3153.
[11] IEEE explore http://ieeexplore.ieee.org/search/searchresult.

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