Arduino Military Spying and Bomb Detecting Robot

Sonali R. More[1], Priyanka P. Togarge[1], Amruta P. Shetkar[1], Prof.A.R.Dumne[2]

BE Student, Dept. of Electronics Engg, STME'S Latur, Maharashtra, India[1]

Assistant Professor, Dept. of Electronics Engg, STME'S Latur, Maharashtra, India[2]

ABSTRACT*:* In this project we are going to merge two applications that is spying and bomb detection.The Mini Spy Robot is small robot with a camera attached to it. The motors will be run by the relays which will be then controlled through Remote via RF module. The work is designed to develop a War field robot which is capable of detecting bombs land mines in its path and which is wirelessly controlled through RF module. It is used to monitor the Warfield. The robot can be moved in all the directions using the remote wirelessly. The robot system is also used for bomb detection .The controlling device of the whole system is a Arduino. Due to that circuit complexity is reduced and performance speed is increased.Whenever, land mines or bombs are detected, it alerts through blinking LED's of system. The Arduino used in the project are programmed using Embedded C language. Just by using a RF module enabled, the user can control the ARDUINO MILITARY SPYING AND BOMB DETECTING ROBOT from anywhere area.

KEYWORDS*:* Bomb detecting sensor, RF module and intelligent robot.

I. INTRODUCTION

The technical improvement together with the need for high performance robots created faster, more accurate and more intelligent robots using new robots control devices, new drives and advanced control algorithms. The presented robot control system can be used for different sophisticated robot applications. This spy and bomb detecting robot was fully controlled by the remote and the commands from the remote via RF transmitter were received by the Arduino. So this spyand bomb detecting robot can be used in military applications. Most of the military organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These spy robots used in military are usually employed with the integrated system including gripper and cameras, video screens, sensors. The military robots also have different shapes according to the purposes of each robot. Thus the proposed system, an Intelligent Robot using RF module saves human lives and reduces manualerror in defense side. This is specially designed spy and bomb detecting robot system to save human life and protect the country from enemies. One of the most important things about these robots is that they have the capability to perform missions remotely in the field, without any actual danger to human lives.

II. LITERATURE SURVEY

A wide variety of spy and bomb detecting robot has been proposed in the literature:

1. **Dr. B. Subrahmanyeswara Rao, C.Soumya, G. Shamala Siresha, M. Sushma, N. Sai Priyanka** [1] presented paper on "PC Controlled Bomb Detection and Diffusion Robot". Paper describes the detail study ofWar field robot which is capable of detecting bombs land mines in its path and which is wirelessly controlled through PC using Zigbee technology.

2. **Saurabh Nalwade** [2] Presented paper on "Robots for surveillance in military applications". In this paper, provide a possible solution or example of such unique use of robots in military surveillance and espionage. With the help of technologies like zigbee it is possible to develop long range robots which can be controlled from remote locations. In this way we can reduce the human interference and also save some lives.

3. **Ankita Patel, Kinjal Chaudhari, Dattukumar Patel** [3] presented paper on "Touch screen controlled multipurpose spy robot using zigbee".In this paper, spy robot was fully controlled by the TOUCH SCREEN and the commands from the TOUCH SCREEN via Zigbee transmitter were received by the microcontroller. So this spy robot can be used in military applications.

4. **Sagar Randive, Neha Lokhande, Apoorva Kamat , Shubhrojit Chakraborty, Vishal Pande** [4] presented paper on "Hand Gesture Recognition Bomb Diffusing Surveillance Robot".In this paper,This is an interesting robot that can be controlled by hand gestures and by a RF remote. The hand gesture recognition technology uses potentiometers fitted inside a glove and uses the phenomena of change in resistance for the corresponding motion of the robot.

5. **Prof. Y. M. Naik, Chiranjivi, M. Deshpande, Ravija.R. Shah, Rashmi. R. Kulkarni** [5] presented paper on "ANDROID CONTROLLED SPY-ROBOT". In this paper,Android programming is done in java which makes it very attractive to program because of familiarity to java. They have built in GPS compasses and cameras, Bluetooth and high end processors running at an average of 500Mhz.Hence the project establishes a bridge between the processor Android in the Smartphone and the microcontroller in the robot. The external inter face is totally controlled by means of the mobile phone.

III.   BLOCK DIAGRAM OF TRANSMITTER

In this chapter we are going to know about 'ARDUINO MILITERY SPYING AND BOMB DETECTINGROBOT'block diagram and description of block diagram.
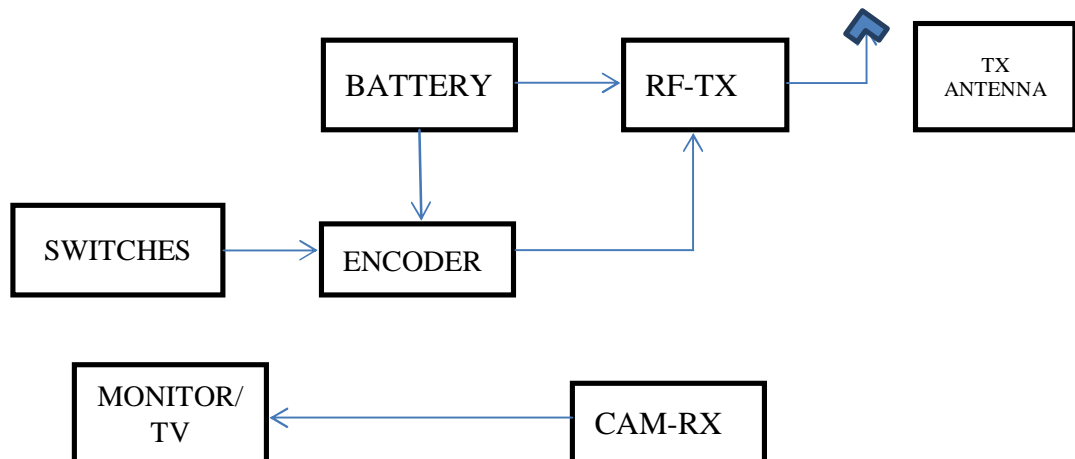

Fig- Block Diagram of Transmitter

1. POWER SUPPLY: Transmitter circuit requires 9V for radio frequency transmitter and serial to parallel decoder Also,priority encoder. This power supply can be provided 9V battery can be chargeable or use and throw.

2. CONTROL PANEL: The circuit required total four movement or controls hence 4 switches connected to the keyboard of transmitter. Four switches for controlling movement forward, backward, left turn and right turn, depending upon our   programming conditions we can manage particular switch for particular operation.

3. PARALLEL TO SERIAL ENCODER: Input is 4-bit parallel BCD number (connected with switches). It cannot transmit over long distance directly, hence converted in to serial using parallel to serial encoder circuit. The serially

converted 4-bit BCD is transmitted by using radio frequency module. It can transmit data up to 250 meter in open space.

4. RF FREQUENCY MODULES: There are various types of RF modules available in market like 315MHz, 433MHz; 668MHz from free frequency band, having maximum communication distance is 250mtrs. We can use any of them.

5. CAMERA RX: We used here camera receiver to receive transmitted video by camera on robot. The receiver required 9V DC and canbe connected to TV directly. For monitor TV tuner card required to convert the video signals in to monitor.

6. POWER SUPPLY: Here Arduino Uno board, battery, motor driver required 12V power supply connected with BATTERY, RF RECEIVER, LED indicators, sensors and control circuit operates with DC 5V. AC ripples reducer circuit provides to obtain pure DC from pulsating DC.

IV.   BLOCK DIAGRAM OF RECEIVER

1. RF RECEIVER: We required using same frequency receiver module as used in transmitter remote(it can be 433MHz/ 315MHz/ 668MHz). The received signal is decoded by RF module itself and gives serial output for the serial to parallel decoder circuit. This circuit can decode serial data in to parallel format (original format as in transmitter). Now that output is given to the Arduino, depends upon programming conditions, Arduino board drives motor driverand motor driver to the motors.

2. MOTOR DRIVER: Arduino board/ Microcontroller has very low current output it cannot drive current consuming sources, such like motor hence separate motor driver circuit requires. We can implement this   circuit using related motor driver module or IC. Notification LED can directly drive with current limiting resistor.LED indicators connected to which operation is working now, as like LED 1 for forward, LED 2 for reverse and so on. As our programming conditions system requiresproviding data by transmitter circuit and received at receiver end can operate the robot.

3. SENSOR: Here we are using metal detector operates with metal detection from maximum 3-4 inch   distance, connected with analog input pins of Arduino Uno board, according to programming   Arduino peeps the buzzer. For RF received signal robot operate forward, reverse, left turn, right turn movements according to programming conditions.
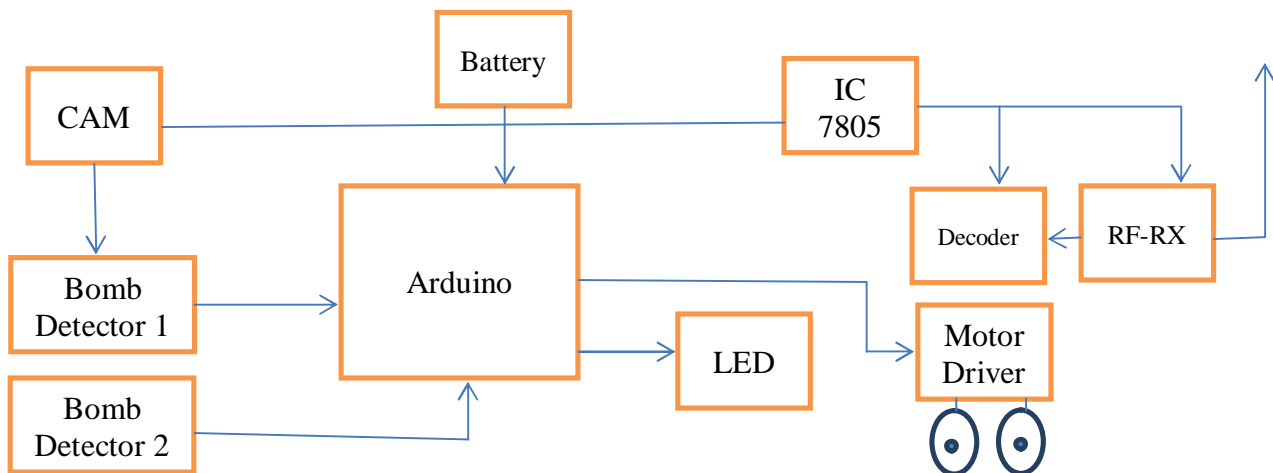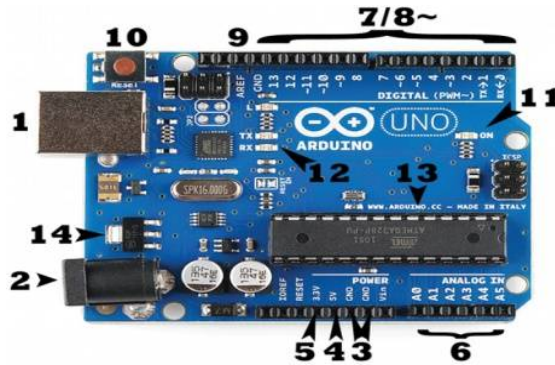

Fig-Block dia. Of Receiver

V. SOFTWARE

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board – you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.

VI.   CONCLUSION

It detects the RF data send by transmitter andaccording to that control robot in Forward, backward, left turn, right turn movements. Metal/Bomb detector can detect the metals and alert with LED to notify the Metal/Bomb .Because, we can't detect the actual bomb we don't have thatmuch authority .The camera detects the exact location of the robot. In this manner our project plays a crucial role in Military as well as in ourpolice department.

In this project, we have introduces a new application using two techniques i.e. spying and bomb detection implemented by using Arduino kit.In future, we can also implement bomb diffusion technique in this project. It can be used in radar detection systems to detect objects by implementing other hardware.

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BIOGRAPHY

Sonali Rajkumar More is Final Year student in the Electronics & Telecommunication, Sandipani Technical Campus, Latur. Currently, she is doing his BE Project in "Military Spying and Bomb Detecting Robot". Her areasof interests are Robotics, communication field and Mathematics. She has participated in Zonal Robotics Championship held by IIT MADRAS.She got sponsorship to her project by "Robocart".

Priyanka Parmeshwar Togarge is Final Year student in the Electronics & Telecommunication, Sandipani Technical Campus, Latur. Currently, she is doing his BE Project in "Military Spying and Bomb Detecting Robot". She got sponsorship to her project by "Robocart".

Amruta Prakash Shetkar is Final Year student in the Electronics & Telecommunication, Sandipani Technical Campus, Latur. Currently, she is doing his BE Project in "Military Spying and Bomb Detecting Robot". She got sponsorship to her project by "Robocart".

Prof. A.R. Dumaneis an Assistant Professor in the Electronics & Telecommunication Department, Sandipani Technical Campus, Latur. He is an expert in VHDL. She has more than 2 years of experience in these fields.