# War Field Spy Robot

**Megha N***, **Pratham Shet, Salian Veena Suresh, Shashidhar, Susmitha K.**

Department of Electronics and Comm. Engineering, Sahyadri College of Engineering & Management, Mangaluru-575007
*Email: megha.ec@sahyadri.edu.in

**ABSTRACT**
**This paper presents a design scheme to develop robotic vehicle which provides surveillance in the war field. The spy robot is very useful and capable of performing jobs in situations which are hazardous for humans. The robotic vehicle is attached with a wireless camera which wirelessly transmits real time videos with night vision capabilities. This robot is used in monitoring purpose in the war field by spying the activities taking place in the war field. The android application device used at the transmitting end acts as a remote control to control the motion of the robot. The robot is capable of detecting the bomb underneath and sending a message to android application device.**

*Keywords: Night vision wireless camera, Android application device, PIC microcontroller.*

## 1. INTRODUCTION

Robots help in performing repetitive and dangerous task which humans won't consider to do. This project deals with the control of robotic vehicle using android application. The robot can move in required directions using android application and captures the real time images and videos. The Microcontroller is used to interface with Bluetooth Module, Camera, and Proximity sensor. The Bluetooth Module is used for transmitting the data to Android Application device. The aim of this project is to develop an android controlled robotic vehicle using Bluetooth Module. Robots can do jobs in areas where human cannot go and in situations that pose risk to human life. Small holes make human movement difficult inside it and hence robots prove beneficial under such circumstances [1]. The robotic vehicle moves according to the commands given by android application. The motor drivers act as the wheels for robot which is programmed using Microcontroller. Bluetooth module is used to interfacing the robot with android device. The camera mounted on the robot transmits real time happenings of its surroundings. The path followed by the robot is being seen in the camera by remote user, accordingly the video signals are sent to the PC or laptop. Wired robots were developed in 1940's and were used by expertise trained for the same. A new class of robots controlled by remote can be accessed now on the site: the online robots. These allow users from all over the world to museum, tend gardens, find way undersea, or handle crystals of protein. The first generation of online robots came into existence in 1994. In contrast, research on the second generation of Internet robots has of late focuses on independent mobile robots that steer in a forceful and unsure environment. Remote controlled robot had problem in their range restriction and also they were very high-priced in terms of safety and use [1]. We are exploring how a robot can be controlled using android application. The Secret Robot will be able to replace human. It has camera used to capture the real time videos. The robot vehicle work like military tank, moving forward, turning left direction and turning towards right direction. Wireless camera will send back the existent time videos of surrounding happenings which can be seen on a distant monitor in the PC where the robot is being inhibited and action can be taken accordingly.

The research paper [1], proposed by Darshan Dayma, Bhushan Chavan Authors presents a Bluetooth and cell phone controlled robot. The system uses bluetooth module, four dc motors, microcontroller, temperature sensor and humidity sensor. PIC Microcontroller used is the heart of this structure which is used to organize and process several functions based on coding. The humidity sensor senses the humid environment around the robot. Based on the numerical temperature value the temperature sensor senses the weather changes. In April 2016 [2] Authors have developed a Smart spy robot system using RF technology. The system consists of wireless camera, Bluetooth, 8051 microcontroller, RF technology. It is an RF based spying robot attached with a wireless camera that reduced human victim. Microcontroller is the main controller that decodes all the instructions received from the transmitter unit. The commands to control the motion of the robot is transmitted through the Bluetooth module and the microcontroller decodes to manage the movement of the robot. The wireless camera transmits the real time videos to the android application device at the receiving end. The wireless camera is mounted on the robot. In [3] the Authors have developed a Bluetooth controlled robot. An 8051 series microcontroller is used as control device in the system. The robot design is controlled by the mobile application. The project's purpose is scheming a robot that can be managed using Android cellular phone. The robot is capable of programming again and can be used for multiple

applications. In the research paper [4], proposed by Tushar Maheshwari Upendra Kumar presents operation of wireless spy robots which controls large operating ranges. The camera is based on WiFi technology which helps in appearing of suurounding area live through mobile, laptop, etc.. In paper [5], the Authors have designed a Bluetooth controlled automated vehicle. The controller utilized here is an 8051 arrangement microcontroller used to control the framework. The utilization of Android cellular phone to control a mechanical vehicle is the fundamental reason behind outlining this undertaking. Bluetooth Module is implemented in the android device to operate the wireless Robot. An advanced mobile phone with Android application is utilized to control the mechanical vehicle.
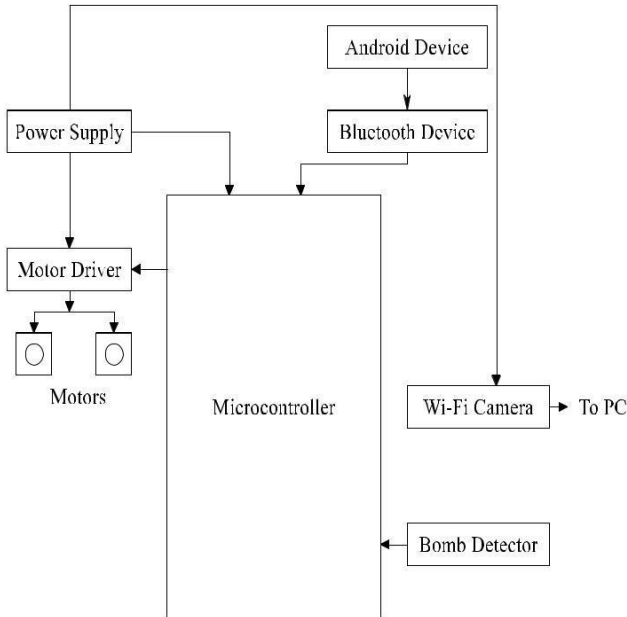
## 2. METHODOLGY

### 2.1 Block Diagram



**Figure 1: Block diagram of proposed system**

As shown in Fig. 1, robot is controlled using android based gadget. The robot moves according to the commands given by Android application i.e. front, back, left and right. The system uses four DC motors which act as the wheels for the robot. The DC motors are controlled using motor driver which is interfaced with Microcontroller.

A supply of 12V DC is given to the regulator and the 5V DC output is applied to each of the modules. The system uses a Proximity sensor to determine the bomb underneath which are interfaced to the Microcontroller and message will be transferred to Android Application Device through Bluetooth Module. The robot is controlled manually.

A Wi-Fi camera is used in this project. The advantage of digital Wi-Fi camera systems is that they do not require a line-of-sight connection between the transmitter and the receiver.

Bluetooth device is used to interface with PC, mobile phone. It acts as a gateway between android device and the microcontroller. The microcontroller used here is PIC16F877a. The system uses HC-05 Bluetooth module. It operates at a frequency of 2.5GHz. It is applied with a 3.3V DC supply. The working temperature is from 20oC to75oC.

Android is user friendly and works effectively with all applications. Android application can be used to control the movement of robotic vehicle. The system uses a Sealed Lead-acid rechargeable battery AP12-1.3 with 12V/1.3Ah supply, the battery is mounted on the robotic chassis and the power is supplied to the whole system through Microcontroller Board. Since the battery is rechargeable, a Switch mode power adapter with input voltage range AC100-240V - 50/60Hz 0.3A and output voltage DC12V - 1A is used to recharge the battery.

### 2.2 Robotic Motion Control

The robot moves according to the commands given by Android application i.e. front, back, left and right. The system uses four DC motors which act as the wheels for the robot.L293D is a motor driver circuit which is used to steer the DC motor in the requisite direction. It has 16 pins which controls two set of DC motor. This single IC can control two DC motors. It works on the notion of H-bridge circuit which allows the voltage to flow in both directions. It has four input pins. Input pins on left will rotate the motor connected on the left side and input pins on right rotate motor on the right side. Based on the inputs given such as logic 0 or logic 1 to the input pins motors will rotate.

### 2.3 Data Transmission

Bluetooth module is used to interface robot with android device. It acts as a gateway between android device and the Microcontroller. The system uses HC-05 Bluetooth module. HC-05 is a 6 pin module out of which only 4 pins are used to interface with Microcontroller. The four pins include VCC (Supply), GND (Ground), RXD (Receiver pin), and TXD (Transmitter pin). The VCC is provided with 5V DC supply, GND is grounded, RXD is connected to TX0 of Microcontroller and TXD is connected to RX0 of the Microcontroller pins R6 and R7 are transmitter and receiver pins.

The receiver pin of Bluetooth is given to the transmitter pin RC6, side transmitting pin of the Bluetooth is connected to the receiver pin RC7, hence we establish a wireless network. The transmitting pin of the Bluetooth is connected to the receiving pin RC7 of the PIC.

## 3. FLOW CONTROL OF THE ROBOT

As shown in the fig.2, the motion control of the robot is shown. Based on the commands received by the android application device the motion of the robot is controlled. When L, R, F, B are received the robot is moved left, right, front and backward direction respectively. When S is received the robot is stopped.

In the figure.2, the motion control of the robot is shown. Based on the commands received by the android application device the motion of the robot is controlled. When L, R, F, B are received the robot is moved left, right, front and backward direction respectively. When S is received the robot is stopped.
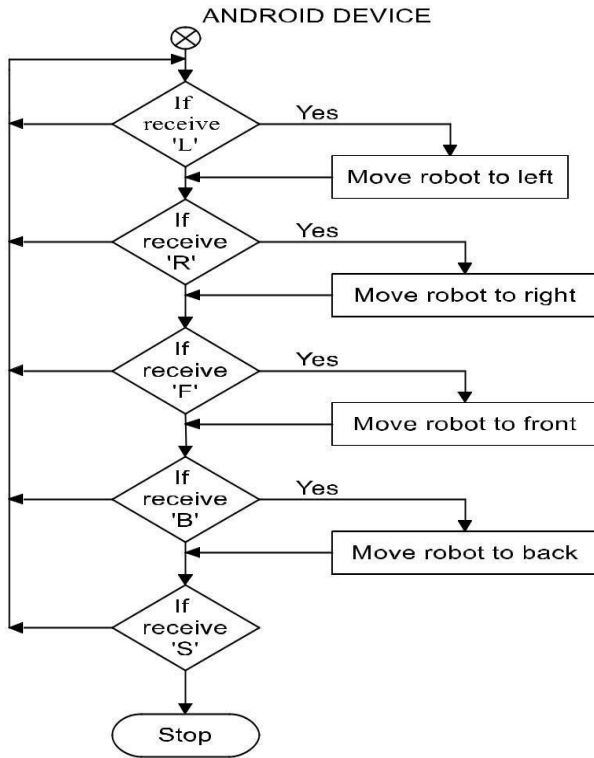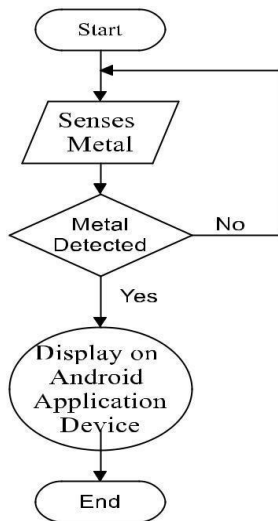
**Figure 2: Flow of control of the robot.**



**Figure 3. Flowchart of bomb detection**

Figure 3 shows the proximity sensor sensing the bomb underneath. Whenever a bomb is detected proximity sensor provides a logic high signal to the RC0 pin of the PIC16F877a and the controller sends message to the android application device "Bomb is detected" through the Bluetooth module.

## 4. CONCLUSION

The primary need of our project would be accuracy. The robot is able to move in required directions with help of the commands given by the android application. The things happening currently in the area can be clearly and accurately seen to locate the spy robot as to where it is situated. The robot is able to detect the bombs that are placed underneath in the war field and notify the detection of bombs. By keeping the circuit uncomplicated and effortless many users will be able to use it without difficulty.

## REFERENCES

[1] Darshan Dayma, Bhushan Chavan, Suraj Kale, Assoc. Prof. B. S. Tarle "SMART SPY ROBOT" International Journal of Science, Technology and Management, (IJSTM) Volume 4, Issue 02, February-2015.

[2] Ankit Yadav, Anshul Tiwari, Divya Sharma RatneshSrivatsava, Sachin Kumar, O.P. Yadav "SMART SPY ROBOT" International Journal of Science, Engineering and Technology Research (IJSETR) volume 5, Issue 4, April-2016..

[3] Arvind Kumar Saini,Garima Sharma, Kamal KishorChoure, "BluBO: Bluetooth Controlled Robot" International Journal of Science and Research (IJSR), April 2015

[4] Rowjatul Zannat Esita, Tanwy Barua, Arzon Barua, Anik Mahammod Dip "Bluetooth Based Android Controlled Robot" American Journal of Engineering Research (AJER), Volume 5, Issue 3, 2016.

[5] Rahul Kumar, Ushapreethi P, Pravin R. Kubade, Hrushikesh B. Kulkarni "Android Phone Controlled Bluetooth Robot" IRJET Volume 3, Issue 04, April- 2016.