

# WAR FIELD SPYING ROBOT WITH NIGHT VISION WIRELESS CAMERA

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## ABSTRACT

*The main objective for developing the robot is for the surveillance of human activities in the war field or rescue operations in order to reduce attacks from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military men have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. This can also be used in various rescue operations to save the man power and to monitor hazardous situations. The main advantage of this project is that we can easily control the robot using an android mobile by a blue control screen app.*

**Keyword:-** *surveillance, war field, robot, Wireless Night vision Camera.*

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## 1. INTRODUCTION

With the aim of developing a high-tech technology that serves high speed technology, advanced capacity to control the robots and to device new methods of control theory. The realize above standards some technical improvement along with the need of high performance robot is required to create a faster, reliable, accurate and more intelligent robot which can be devised by advanced control algorithm, robot control devices and new drivers. Earlier the robots were controlled through wired networks but now to make robot more users friendly, they are framed to make user commanded work. Therefore to attain the requirements we can use android as a multimedia to control the user friendly robot. The design of our project encourages developing a robotic vehicle based on RF technology for the remote operation connected with the wireless camera mounted on the robot for monitoring purpose. The robot is embedded with 8051 series microcontroller for desired operation and is generally used for spying purposes. The transmitting module consist of the push buttons that send the commands to the receiving module for controlling the movement of robot either to right, left, forward, downward. In the receiving module of the robot two motors are interfaced with the 8051 series of microcontroller to control its movement via motor driver IC. The remote control (RF transmitter) has a range of 200m that transmits the signals to the RF receiver. The receiver collects and decodes the received signals before feeding it to the microcontroller to drive the DC motors via motor drivers. The wireless camera used for spying purpose also serves in complete darkness using IR lightning. The distinct applications of this concept in such robot can be a smart phone controlled robots where the movement of the robot is controlled by a robot on the basis of android platform. Smart phone transmits the AT commands and data to the 8051 controller and controls the motor by motor driver L923D. The robot motions left, right, forward, backward. Interfacing is being

done between device and Bluetooth. Bluetooth device HC-05 module receives the commands from smart phone via 8052 series micro controller (AT89C52). Component technologies used are:

- (a)RF technology.
- (b) C language.
- (c)Embedded systems.

### 1.1 Existing System:

The existing system has used the 8051 micro controller and Arduino board in order to design the robot. Here we use 8052 series micro controller (AT89C52).

### 1.2 Proposed System:

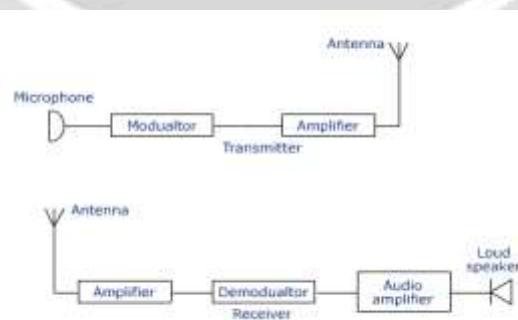
In proposed system user can control the robot by using the blue control screen app from the android mobile. We use a Wireless night vision camera this is connected by an RF module receiver section. The receiver module is connected to a Laptop or a Monitor. The video surveillance will be monitored by a person. 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. The major components required in the construction of the robot are:

1. Microcontroller (AT89C52).
2. L293D Driver IC.
3. Linear DC Motors.
4. Wireless Night vision Camera.
5. Bluetooth Module (HC-05).
6. TV Tuner Card.
7. RF Receiver Module .

### 1.3 RF Section

Let us take a RF transmitter wiggling an electron in one location. This wiggling will electron cause a ripple effect, somewhat same to dropping a pebble in a pond. The effect is an electromagnetic (EM) wave which travels out from the initial location those results in electrons to wiggle in remote locations. An RF receiver can detect the remote electron wiggling. The RF communication system then further utilizes this phenomenon by wiggling electrons in a specific pattern so as to represent information. The receiver can make the same information available at a remote location by establishing a communication with no wires. In most of the wireless systems a designer has two overriding constraints: it must operate over a certain distance (range) and transfer a certain amount of information within a time frame (data rate).

### 1.4 RF Section Block diagram



**Fig 1-** RF Section Block diagram

## 2. HARDWARE DESCRIPTION

### 2.1 Power Supply

Power supply is the source of electricity. This power supply unit provides power to the systems in the required amounts to the required stages. We use 3 batteries each of 4V in series in order to provide +12V power supply. But the circuit needs only 5V so we use a 7805 voltage regulator. In addition with this we use Capacitors, Resistors, Diodes, Transistors and Crystal Oscillators in this circuit.

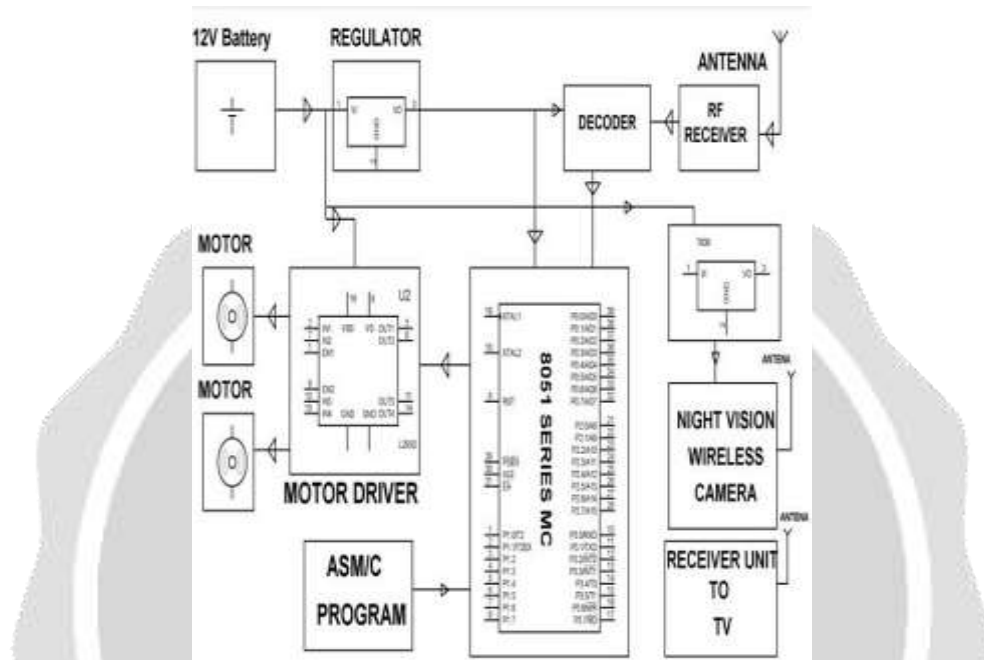
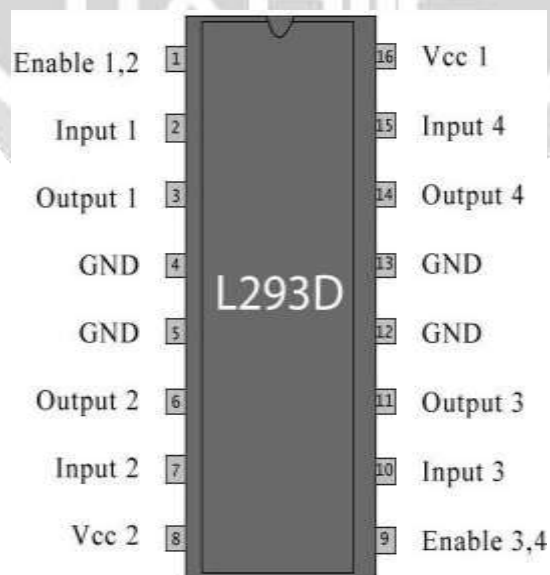


Fig 2.1-Block diagram

### 2.2 L293D Driver IC



**Fig 2.2-** 293D Driver IC

- The L293 and L293D are quadruple high-current half-H drivers.
- The L293 is designed to provide bidirectional drive currents of up to 1A at voltage from 4.5V to 36V.
- The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5V to 36V.
- The L293D IC has sixteen pins. There are four input pins and four ground pins. Two motors are connected between the four output pins.
- The L293D IC can drive two linear DC motors or one Stepper motor at a time.

### 2.3 BLUETOOTH MODULE

**Fig 2.3-**Bluetooth module

The bluetooth module HC-05 consists of six pins. The six pins are Key, 5V, GND, Tx, Rx, Status. The bluetooth module has two devices:

i) master device ii) slave device.

One device connects to the master while the other device connects to the slave. The connection between the devices takes place as follows:

One of the pin Tx is connected to pin Rx of the Microcontroller while the pin Rx of bluetooth module is connected to the Tx pin of MC. Thus, in a way cross-connection is required for the operation of bluetooth module. The GND pin is given to the GND pin of MC and power supply pin of MC is given to the pin of power. In order to have proper communication, the master device must be connected to the slave. Once the pairing is done between two devices, the device will ask to enter the password. The password will be either 0000 or 1234. Enter the password and both the devices will be connected to each other.

### 2.4 WIRELESS CAMERA

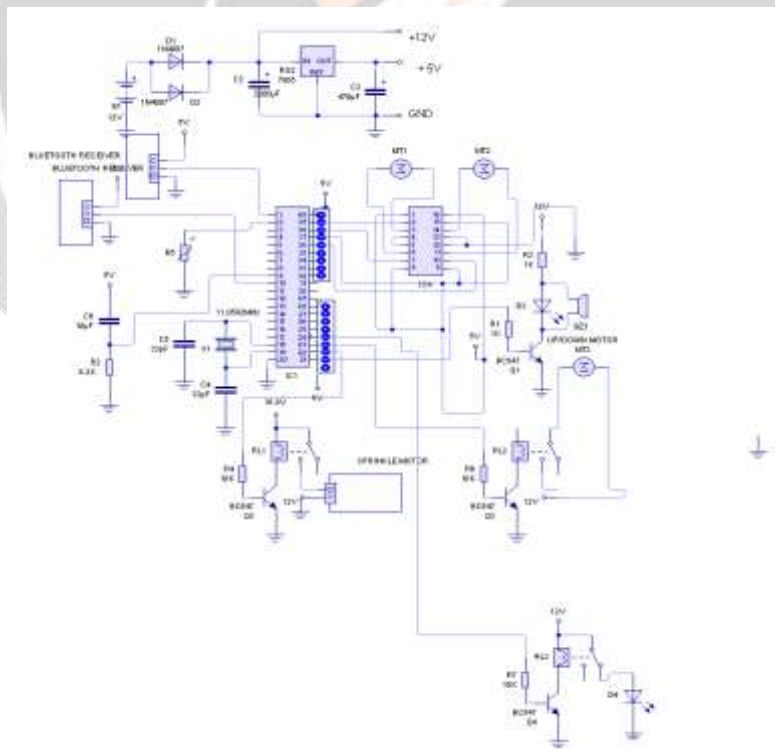
**Fig 2.4-**Wireless camera

**Features of Wireless Camera:**

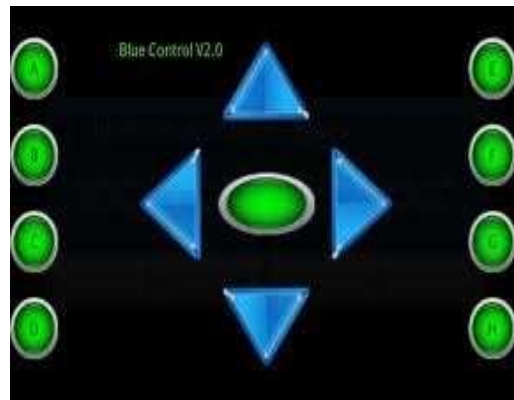
- Automatic Motion detection features.
- Minimum 100 meters transmission distance without block.
- Imaging Sensor 1/3 Inch-CMOS.
- CMOS Total Pixels:628\*582(PAL)
- Minimum Illumination:1.5 lux
- View angle:62 Degree
- Camera Head weight: 15 gm.

**2.5 MICROCONTROLLER 89C52****FEATURES:**

- Compatible with MCS-51 Products.
- 8K Bytes of In-System Reprogrammable Flash Memory.
- Endurance: 1,000 Write/Erase Cycles.
- Fully Static Operation: 0 Hz to 24 MHz.
- Three-level Program Memory Lock.
- 256 x 8-Bit Internal RAM.
- 32 Programmable I/O Lines.
- Three 16-bit Timer/Counters.
- Eight Interrupt Sources.
- Programmable Serial Channel.
- Low Power Idle and Power Down Modes.

**Fig 2.5-** Schematic diagram



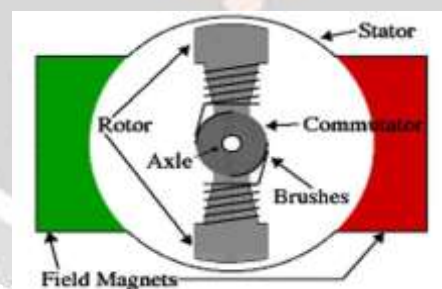


**Fig 2.6-** Blue-control screen app

## 2.6 .MOTORS

### Linear motor:

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion. Let's start by looking at a simple 2-pole DC electric motor (here red represents a magnet or winding with a "North" polarization, while green represents a magnet or winding with a "South" polarization).



**Fig 2.7-**Motor

Every DC motor has six basic parts — axle, rotor (a.k.a., armature), stator, commutator, field magnet(s), and brushes. In most common DC motors (and all that Beamers will see), the external magnetic field is produced by high-strength permanent magnets. The stator is the stationary part of the motor i.e., this includes the motor casing, as well as two or more permanent magnet pole pieces. The rotor (together with the axle and attached commutator) rotates with respect to the stator. The rotor consists of windings (generally on a core), the windings being electrically connected to the commutator. The above diagram shows a common motor layout with the rotor inside the stator (field) magnets.

## 3.SOFTWARE REQUIREMENTS

- 1.Assembly level programming language
- 2.Keil compiler
- 3.Blue-control screen application
- 4.TV Home media software

### 4.PROGRAMMING PROCEDURE

```
C:\Mp>link -c DIGRADAR -dh
2500 A.O. Linker Copyright (C) 1985 - Version 4.05a

Linker Output Filename : DIGRADAR.hex
Disk Listing Filename : DIGRADAR.map
Symbol Table Filename : (None Specified)

Link Errors : 0          Output Format : Intel Hex
```

Fig 4.1-Programming



Fig 4.2-Programming

## 5.RESULTS



**Fig 5.1-Hardware**

## 6.CONCLUSION

We have presented architecture, an implementation, and a demonstration of the INTELLIGENCE SPY ROBOT WITH WIRELESS NIGHT VISION CAMERA USING ANDROID APPLICATION, based on embedded systems and some applicable software programs that can monitor the surroundings. We can install the receiver section at any place and can navigate the robot in all directions easily. This will be help to use the human resources more effectively and efficiently. As the system is developed by using Bluetooth it can be used only upto a distance of 50m. Further it can be developed more effectively by the usage of Zigbee and Wifi to increase the operation range. Sensors can be added as a scope for betterment.

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