



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Fighting Robot (JCB)

(MEGA RF ROBOT)

RIJWAN ALI, SHABEENA BANO

UG Student Department of ECE

Rameshwaram Institute of Technology & Management

Abstract: The fighting robot made by me is based on very advanced technology, weapons have been used in it so that it can defeat the other robot. I have divided this robot into two sections number 1 transmitter section number two receiver. The transmitter section transmits the signal at a frequency of 2.4 GHz, and the receiver section receives the principal at 2.4 GHz. The transmitter is designed with 10 channels, and the receiver only has decoding and execution processes. Four powerful gear motors have been used in this robot, three servo motors have been used, and one powerful motor has been used for the weapon, whose RPM is very high, this high speed motor has been used for cutting. . I have made the body of this robot with an iron seat, and the wheels are made of plastic, on which rubber is mounted. Inside this fighting robot, I have used a 12 volt 6 amp lithium ion battery, which provides internal energy to this robot. This robot is based on arduino, programming C is used inside it, arduino software is used to program arduino. l293d IC is used to drive the motors. And RN nrf24l01 module has been used to transmit and receive the signal.

Introduction

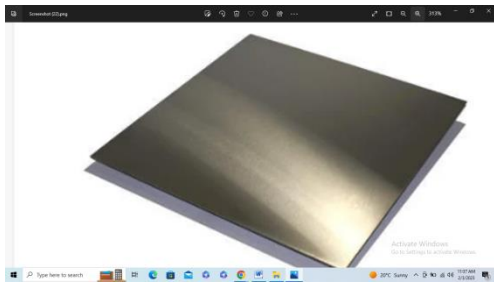
This is a fighting robot, which can fight with another robot and defeat it, and advanced level robots can be made in the future, the purpose of making this is a demo which shows how the robot can come. We will be able to use it in future. In the future, robots will be an important part of our daily life, this is a small demo, so that we get to know that in the coming future, robots will make our daily life easier and it will automatically operate many tasks. This robot is based on radio-frequency, which has a range of 1 km. We can control our robot from anywhere by sitting within the range of 1 km, this 1 km will work only in the open area. In open space, there is no barrier to traveling the signal. And can work in close area or up to 100 meters. The transmitter section is always in our hand and the receiver section is installed inside the robot. Which maintains a link between the transmitter and the receiver, the transmission of the signal will be at the speed of light so that there is no communication barrier between the two. There are 10 channels in the transmitter section, all of them will always be on and when any movement occurs inside the transmitter, the effect of this moment will be visible on the receiver. So that according to that our robot will do the functioning work. The battery life of our robot is 1 hour. it can work for 1 hour. This robot can be made more advanced in the future by updating it more and more. This is the first demonstration of the robot, in which its JCB bucket bucket will also be shown and how its functioning has been done, how its programming has been done, its design will also be shown.

PROJECR PLANNING

First of all I took the thin sheet of iron and I cut it according to the size of my robot body. Cut the top layer and bottom layer of this robot in the same way and cut holes to mount the motor in it, so that the motor of the robot can be easily installed. And the required space has been left such as installing the battery, installing the controlling circuit of the robot, installing the weapons. Space has been left for all these things.

After cutting the seat of the robot, it was polished with white paint and Along with black paint has also been used, the color of my robot is white and black which is very beautiful to see.

Tools and components needed for the robot



Iron sheet for the body of the robot



Iron Sheet Cutting and Printing Proce



Installing the Motor and battery on the Robot



Top view of robot

TRANSMITTER SECTION

I assembled all the components needed for the transmitter section. Such as arduino uno, six pin push switch, potentiometer, oled 0.96, power supply lithium ion battery, connector, led, transmitter nrf24l01, arduino software for programming, and circuit diagram etc.

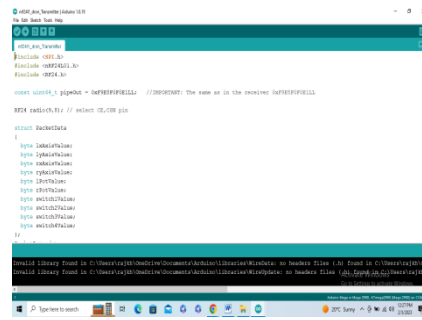


Push switch for one channel

By turning this switch on or off, we can transmit a channel so that any one function can be done at the receiver end.

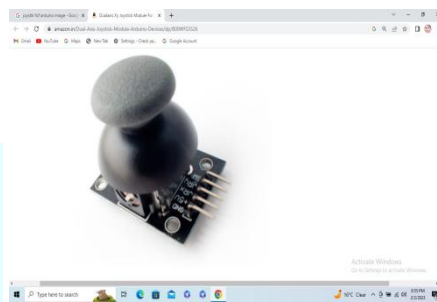


Arduino uno



Arduino software

We can program Arduino Uno with the help of Arduino software and this program will be for transmitter. It only supports c programming.



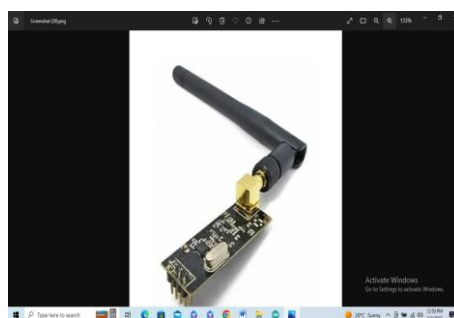
Two axis joystick

The two axis joystick have -X axis and X axis give Y axis and - Y axis angles. It operates on 5 volts. And it changes 5 volt to 0 volt 1023 value. It also has a deadline which ranges from 500 to 523. It's map between 0 to 1023.



Potentiometer

A 5 V supply is input to the potentiometer. It gives analog log value in output. Its map ranges from zero to 1023 in the Arduino software. We can stabilize it at any value. But this work cannot be done in joystick, so we use potentiometer. Potentiometer is a variable resistor which has different - different resistance at different different point, and it supports voltage according to that resistance these different come in different watt and ohm.



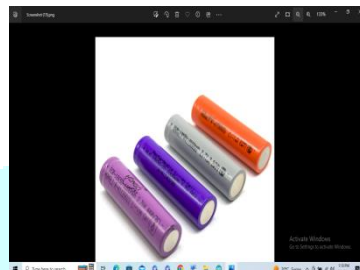
nrf24101 frequency transceiver module

nrf24101 is a frequency module. Which transmits the frequency 2.4 GHz and can also receive. It operates on a single 3.3 V supply. It has 6 pins out of which 2 are for power supply and two are for MISO and MOSI, and one is for SCK and the other is CE. It comes in the market in the range of 100 meters and 1 kilometer. In the model of 1 kilometer range, a Rf amplifier is used in front of the transmitter IC which qualifies the frequency.



OLED 0.96 inch display display

The 0.96 inch display displays whatever transmission is happening between the transmitter and receiver section of the robot. It shows all the functions of the transmitter and receiver of the robot. This is an I Square C communication display with SCL, SDA, VCC and GND pins.

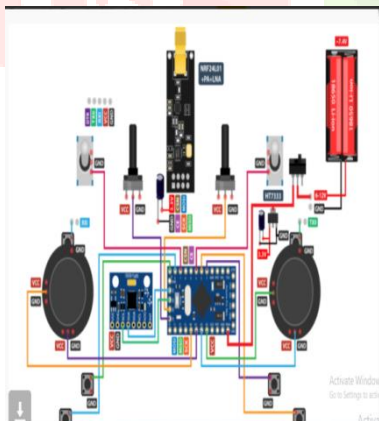


Lithium ion battery

In transmitter and receiver section, I have used 12 volt lithium ion chargeable battery, which can be recharged after power down, and this will allow our robot to continue working and transmitter and receiver section will always be on.

- **TRANSMITTER CIRCUIT**

I arranged all the components according to the circuit diagram on the zero PCB and soldered them. After the circuit is complete, I programmed the arduino and observed its frequency response on the CRO.



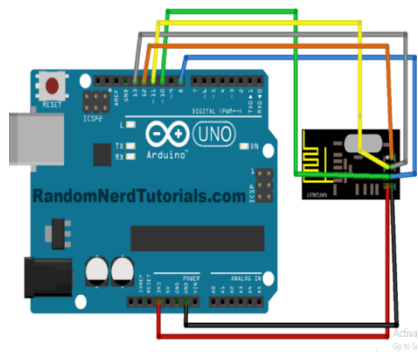
Transmitter circuit diagram



Transmitter circuit

RECEIVER SECTION

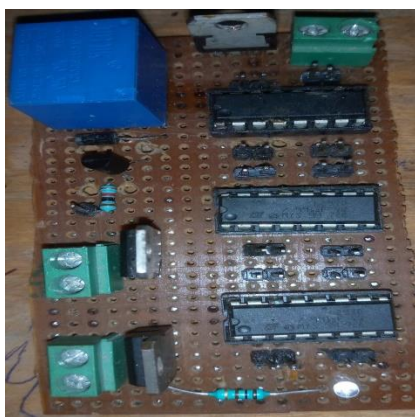
In receiver section I connected nrf24 l01 medal with arduino uno and connected l293d IC. This IC operates on 12 volts. And can reverse the motor forward. I have also programmed the receiver section according to the transmitter. Whatever program the transmitter sends, it will be decoded and executed on the receiver section, and our robot will act according to that command.



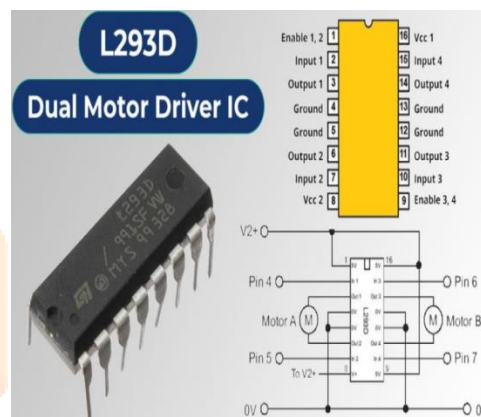
Receiver circuit diagram



L293d IC structure

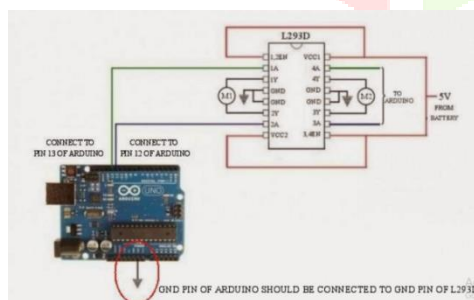


Data receiver circuit

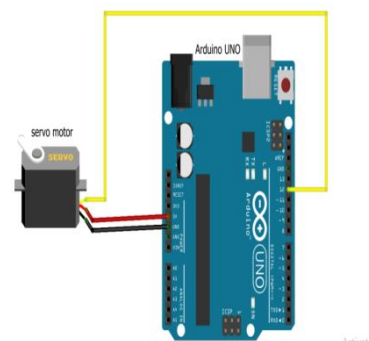


L293d motor driver board

The L293d ic module is a motor driver module, Which makes the motor move in forward reverse direction according to the command received from Arduino. It is a 16 pin IC, which operates on a single supply of 5 V and 12 V to drive the motor.



Connection of arduino and l293d with motor



connection of Servo motor with arduino



Gear motor 300rpm



servo motor

Fixed all the motors according to the circuit diagram, after fixing, connected the arduino and l293d IC, thus the circuit is complete.



4000rpm 12v motor

I have connected a grinder with 12v 4000rpm motor as arms in the robot. so that this robot can attack and bite another robot.



Grinder (cutting weapon)

• Conclusion-

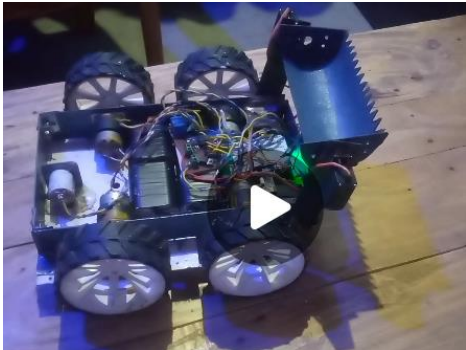
It took me 3 months to complete the fighting robot, I faced a lot of problems in completing this robot but finally I completed it after 3 months. Now it is fully ready for fighting. Now we can put it in the field to fight with other robots. Its transmitter and receiver section transmit and receive data at the speed of light because the transmission of frequency is done at the speed of light itself so that there is no obstruction in the transmission. Its JCB bucket can easily lift up to 10 kgs and move 10 kg from one place to another, and it can be stable at as many angles as you want. I have used three servo motors in its box, Which is a very powerful servo motor.

• Reference-

1. This is a very dangerous robot, the JCB bucket and weapon installed in it make it more dangerous. It can chop, flip and win the fight with any robot or self auto rotated or can rotate 360-degree anywhere and attack the robot.
2. Fighting Robot is a command based robot, which uses the frequency of 2.4 GHz, on this frequency it can transmit and receive commands. We can use this robot in other places also like auto guiding, self parking, gun firing, gun shooting etc.
3. The fighting robot made by me is a fighting robot it is not for any entertainment it is only for fighting with the robot it only carry out the fighting operation. It can fight on high and low places and also on the floor. Its height from the ground is 5 cm and its total height is 15 cm, its length is 300 Cm and width is 20 Cm.

• **Result-**

It has taken me 3 months to make this robot and its result is better than my expectation, it can work continuously for 1 hour without any interruption. This robot is made only for fighting, from this we cannot take any entertainment work because a little mistake can cause a lot of damage. So it has to be operated with great security. And the functioning of all its parts is very good and it has given very good results like fast commanding, fast response, no break connection, continuous connection speed, better communication etc.



Hold on up side



Hold on down side

