



RF CONTROLLED CAR USING ARDUINO

Atharwa Deshmukh, Abhay Chaudhary, Nachane Hrishikesh Sudhir, Shreepad Gangadhar Labshetwar, Farchara Prahant Govibdbhai, Arbinndo Sinha | Prof. Balu Laxman Parne | Dept. Of Computer Science and Engineering

Motivation/ Introduction

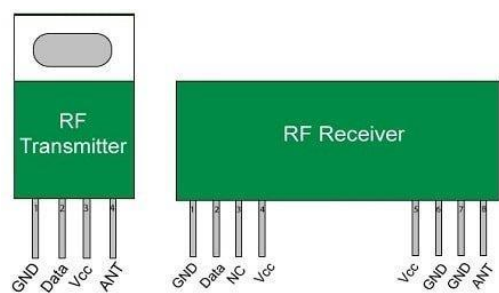
The Project is motivated by various application of Robotic Car in wars and extreme places where human presence is not possible like outer space, deep undersea or near volcanoes. This project will make a prototype of a less advanced form of a WIFI robot car which in advanced form can suitably serve human purpose. Robots called Non-autonomous robots have the programming logic to do the desired task but decision power lies in the hand of the controller (human). The RF controlled car uses transmission of signals wireless in air by transmitter which is captured by the receiver and sent to the microcontroller on robot to carry out the task.

SCOPE of the Project

The objective of this project is to design and develop a car that can be controlled over RF to navigate the regions where it is physically impossible to go and helps in detecting the nearby objects to decrease the expenditure on such kind of projects. Our project can be used in the military or by journalists. **Future scope** of this project is to establish the same connection but make the bot intelligent and autonomous. In the present day, technology has so improved that an Unmanned Aerial **Vehicle** (UAV) also called as Drone can be **controlled** from a distance ranging from 2km to 20,000km.

Methodology

Here we will use a couple of ICs and a motor fixed to a chassis to make a remote control car. The brief idea is to transmit control signals through radio frequency and receive it through a receiver module in the car. We will have two switches in our remote control to power each motor of the car. The state of the switches (ON/OFF) is the control data. This data from the remote control is encoded before transmission, received back, and decoded again to be sent to the motor drivers. This is achieved using an RF module and an encoder (HT12E) decoder (HT12D) pair.



Using the combination of different states of the two switches, we can control the direction of motion of the car. If both switches are off, both motors will be off, and the car will not move. If both are on, the car will move straight ahead. And to turn the car, switch on only the motor on the side you want the car to turn to. First, we will start with the power supply circuits. Both the RF transmitter and receiver circuits need separate power supplies. The receiver circuit needs to be powered with a 12V supply and transmitter circuit with a 9V battery.

IC 7805 regulates the 12V supply to 5V (you can also use a 9V supply here). You can also add an LED via a 1K resistor to indicate the state of the power supply.

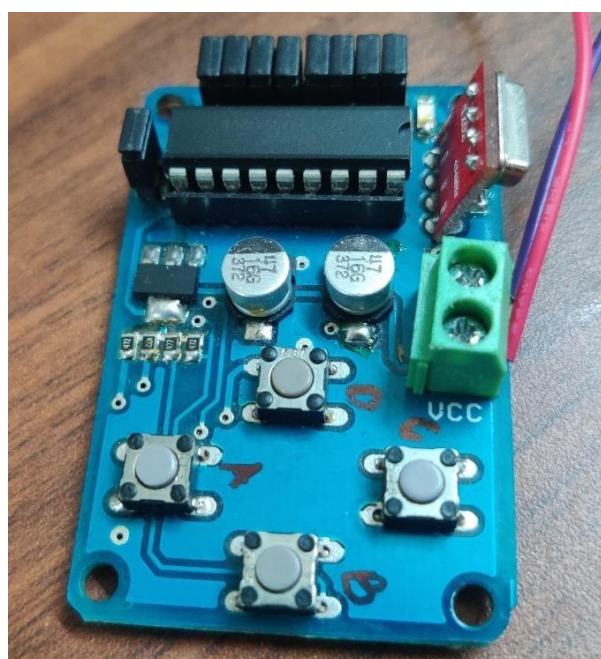
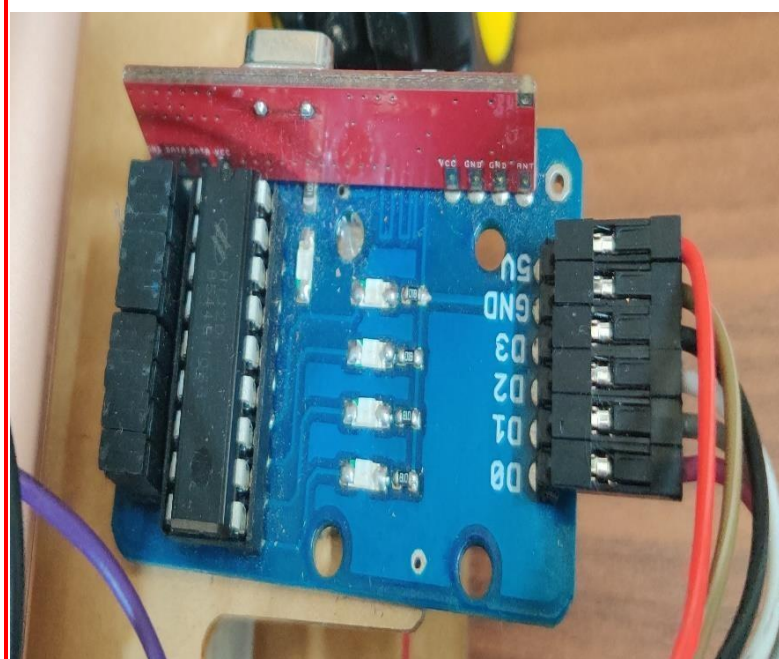
- You can also use 0.1uF and 470uF capacitors in the circuit and 1K resistor for status LED.

NOTE: Use heat sink for 7805 because we are dropping 7V (12-5), so a lot of heat will be produced to burn the regulator.

There are two LEDs in the receiver board. One lights up when power supply is given to the receiver. The other one near the IC

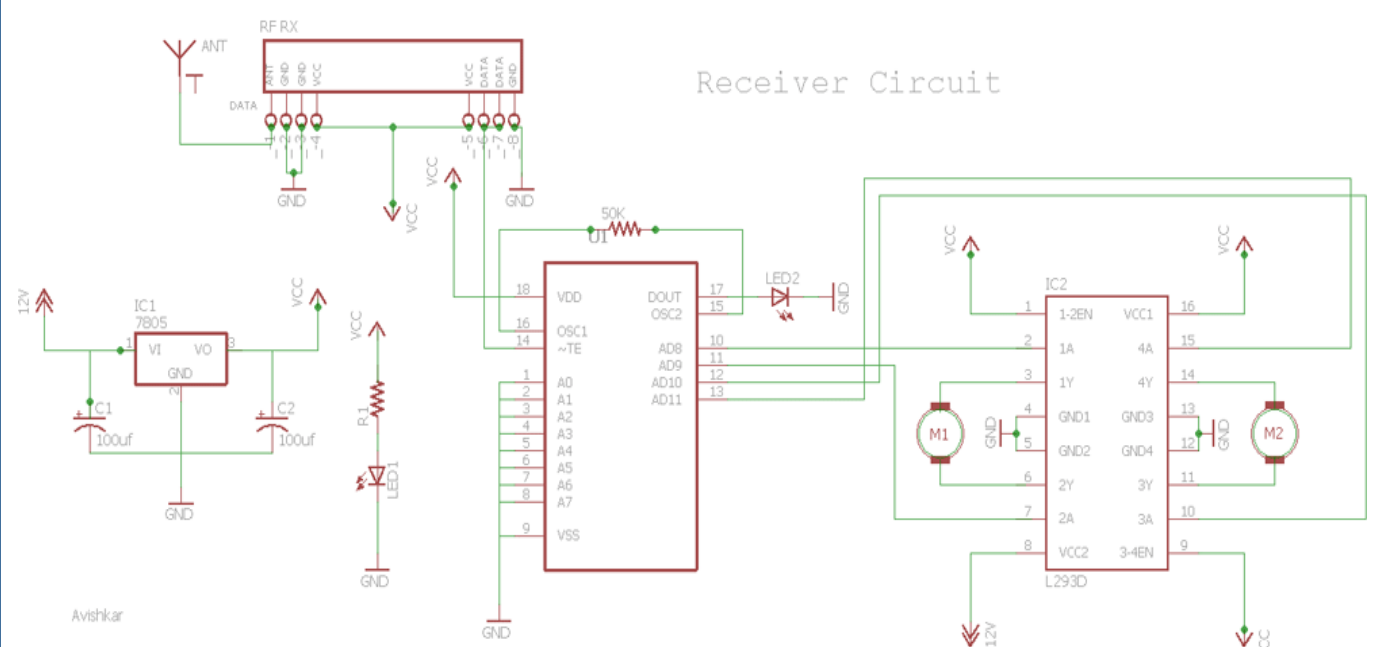
HT12D should light up when power supply is given to transmitter circuit. This provides you with a valid transmission (VT) when power is given at the transmitter. If not, there is something wrong with your connection or your RF module.

Choosing a motor is very important, and totally depends on the type of robot (car) you are making. If you are making a smaller one, use 6V Bo motor. If you are making a larger one, which will need to carry heavy load, then use a 12V DC motor.



Results

BASIC CIRCUIT DIAGRAM

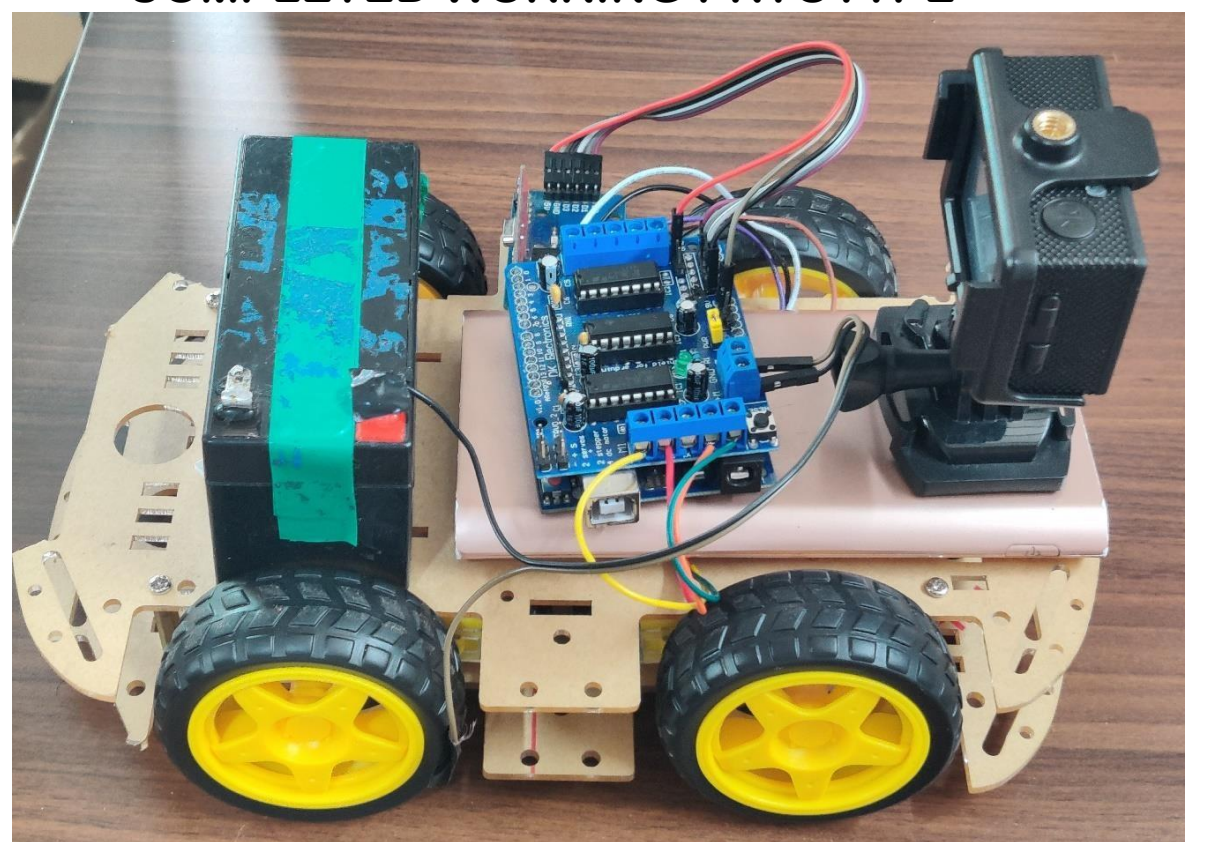


The project thus formed can be used for various purposes and the car can be controlled. On the basis of RF Transmission with 433.93MHz

The prototype is able to receive and send signals.

It can move up and down and change its direction accordingly. It is also able to record video properly

COMPLETED WORKING PRTOTYPE



CONCLUSION

- For now, working prototype can send the transmission signal and receive the signal and based on that it can be maneuvered.
- Now it records the video later it may send the live feed to the user.
- The accuracy of the model can be improvised from a small region to a big region
- The same concept can be used for special operations by the armed forces for scanning the horizon.

Contact Details

abhay.19bce7290@vitap.ac.in

References

- <https://www.arduino.cc/en/Guide/ArduinoMega2560>
- <http://playground.arduino.cc>
- <https://learn.adafruit.com/category/learn-arduino>
- www.c-shrpgcorner.com

— ()