SPECTULATION DOCUMENT

Hand Gesture-Controlled Smart Car

AIM:

The purpose of this document is to outline the concept and potential implementation of a hand gesture-controlled car using various components, including the NRF24L01 wireless module, motor driver module, Arduino Nano, accelerometer, four DC motors, and a car chassis. The project aims to provide a hands-free and intuitive control mechanism for a small robotic car.

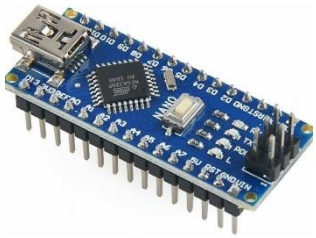
Setting Up Arduino IDE:

Arduino IDE Setup:

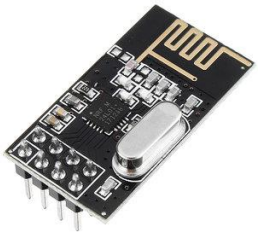
1. Go to this link https://www.arduino.cc/en/Main/Software and download Arduino IDE according to your system.
2. Extract the zip file.
3. Open the extracted folder and run Arduino.exe.
4. Your Arduino IDE is ready to use.

COMPONENTS REQUIRED:

1)Arduino Nano



2) nRF24L01

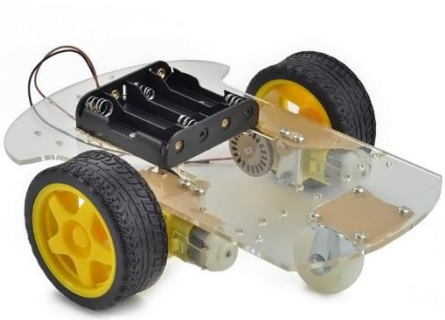


3)L298N Motor driver module

4) DC motor

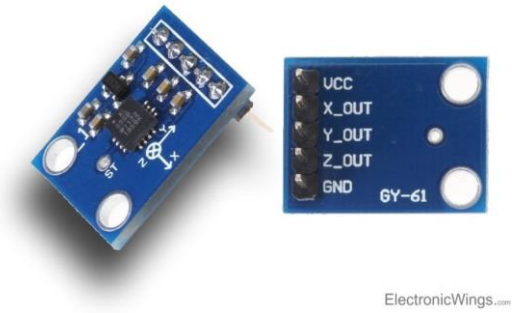
5) Wheels

6) Car chassis



7)Rf Nano

8) Accelerometer



THEORY:

The hand gesture-controlled car will leverage the Arduino Nano as the main control unit. The NRF24L01 wireless module will enable wireless

communication between the hand gesture controller and the car. The motor driver module will be responsible for controlling the speed and direction of the four DC motors attached to the car's wheels. The accelerometer will detect the hand gestures and send corresponding signals to the Arduino Nano for interpretation and control.

The accelerometer will measure the hand gestures made by the user, such as tilting the controller up, down, left, or right. The Arduino Nano will process the accelerometer data and interpret the gestures into specific commands for the car's movement.

- Forward Gesture: Tilting the controller forward will instruct the car to move forward.
- Backward Gesture: Tilting the controller backward will instruct the car to move backward.
- Left Gesture: Tilting the controller to the left will instruct the car to turn left.
- Right Gesture: Tilting the controller to the right will instruct the car to turn right.

The hand gesture-controlled car project utilizing the NRF24L01 wireless module, Arduino Nano, motor driver module, accelerometer, and four DC motors offers an exciting opportunity for intuitive and interactive control. By interpreting hand gestures captured by the accelerometer, users can control the car's movement effortlessly. This project has the potential to enhance the user experience and showcase the possibilities of gesture-based control in the field of robotics and automation.