Control Speed of DC Motor

Group: (1)

- احمد محمد احمد فؤاد المنيلاوي
- احمد سعيد محمد امام زايد
- احمد محمد علي محمد
- عزيز عماد عزيز لبيب
- عبد الله محمدي محمدي حفور
- احمد رضا كامل عبد الغني

إشراف: د/ عبد الله محمد

Faculty of Engineering

Helwan National University

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Introduction:

This project demonstrates the control of a DC motor and a servo motor using an Arduino microcontroller. The system integrates Bluetooth communication for remote control, allowing speed adjustments, direction changes for the motor, and oscillation for the servo. The project utilizes a LCD to show the current status of the motor and servo settings, providing a user-friendly interface.

Components And Functionality:

 Arduino Board: The central microcontroller unit.

 LiquidCrystal Display: To display motor speed, direction, and oscillation status.

 Potentiometer: For contrast of LCD.

 Servo Motor: For controlling the angular position.

 DC Motor: For varying speed and direction.

 Motor Driver: For control PWM & Direction.

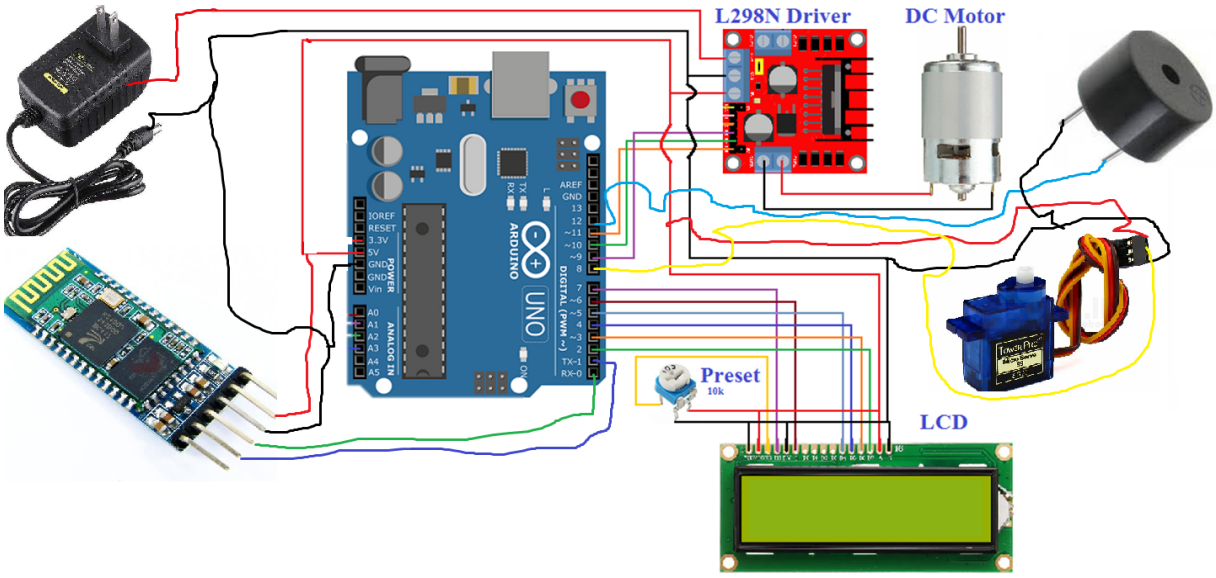
 Buzzer: For sound feedback.

 Bluetooth Module: For receiving remote commands.

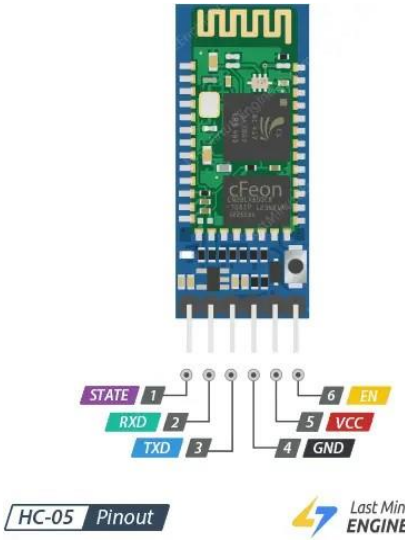
 Adapter: For power.

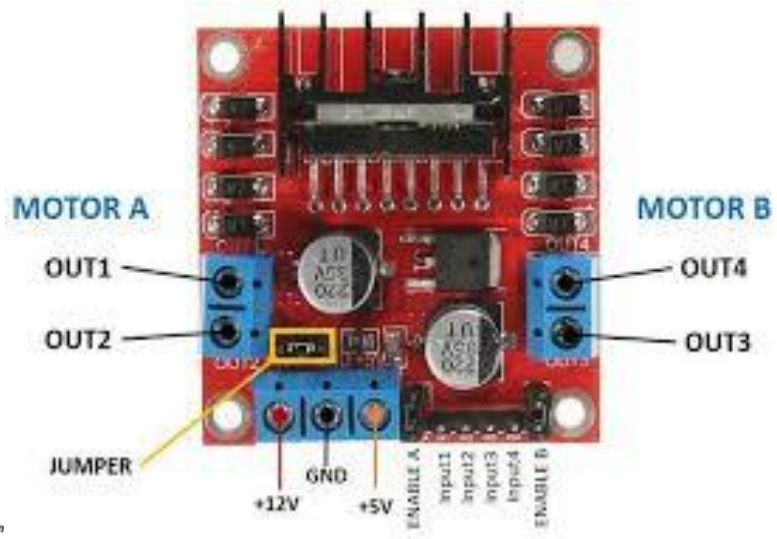
 Pins Used:

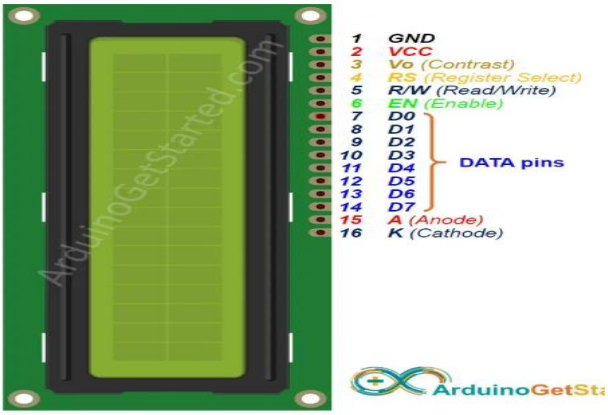
- **Motor control pins:** ENB 11, IN4 10, IN3 9
- **Servo pin:** 8
- **Buzzer pin:** 12
- **LCD:** 7, 6, 5, 4, 3, 2

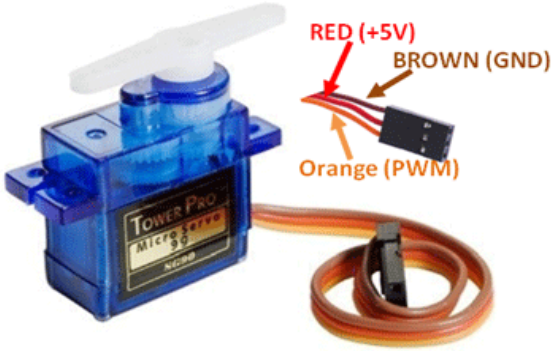

L298N Driver
DC Motor
Preset
10k
LCD

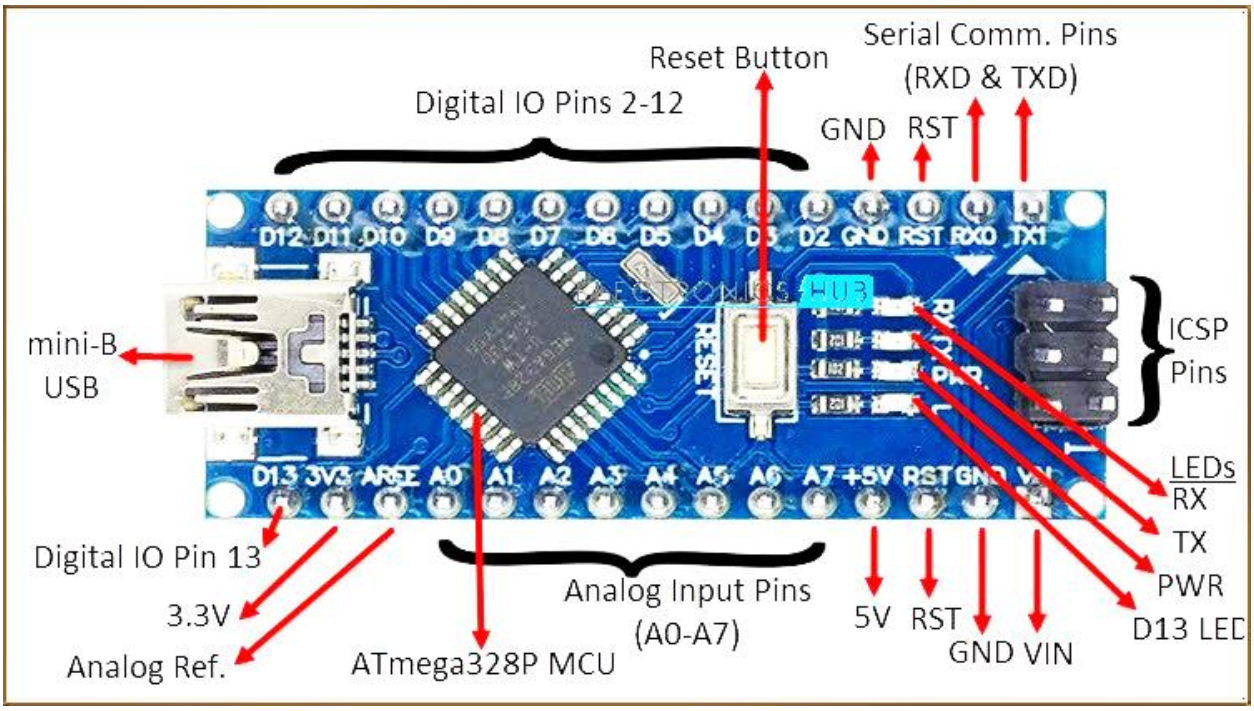
Datasheets:


STATE 1
RXD 2
TXD 3
6 EN
5 VCC
4 GND
HC-05 Pinout
Last Minute ENGINEERS.com


MOTOR A
MOTOR B
OUT1
OUT2
OUT3
OUT4
JUMPER
GND
+12V
+5V


1 GND
2 VCC
3 Vo (Contrast)
4 RS (Register Select)
5 R/W (Read/Write)
6 EN (Enable)
7 D0
8 D1
9 D2
10 D3
11 D4
12 D5
13 D6
14 D7
DATA pins
15 A (Anode)
16 K (Cathode)
ArduinoGetStarted.com


RED (+5V)
BROWN (GND)
Orange (PWM)
TOWER PRO

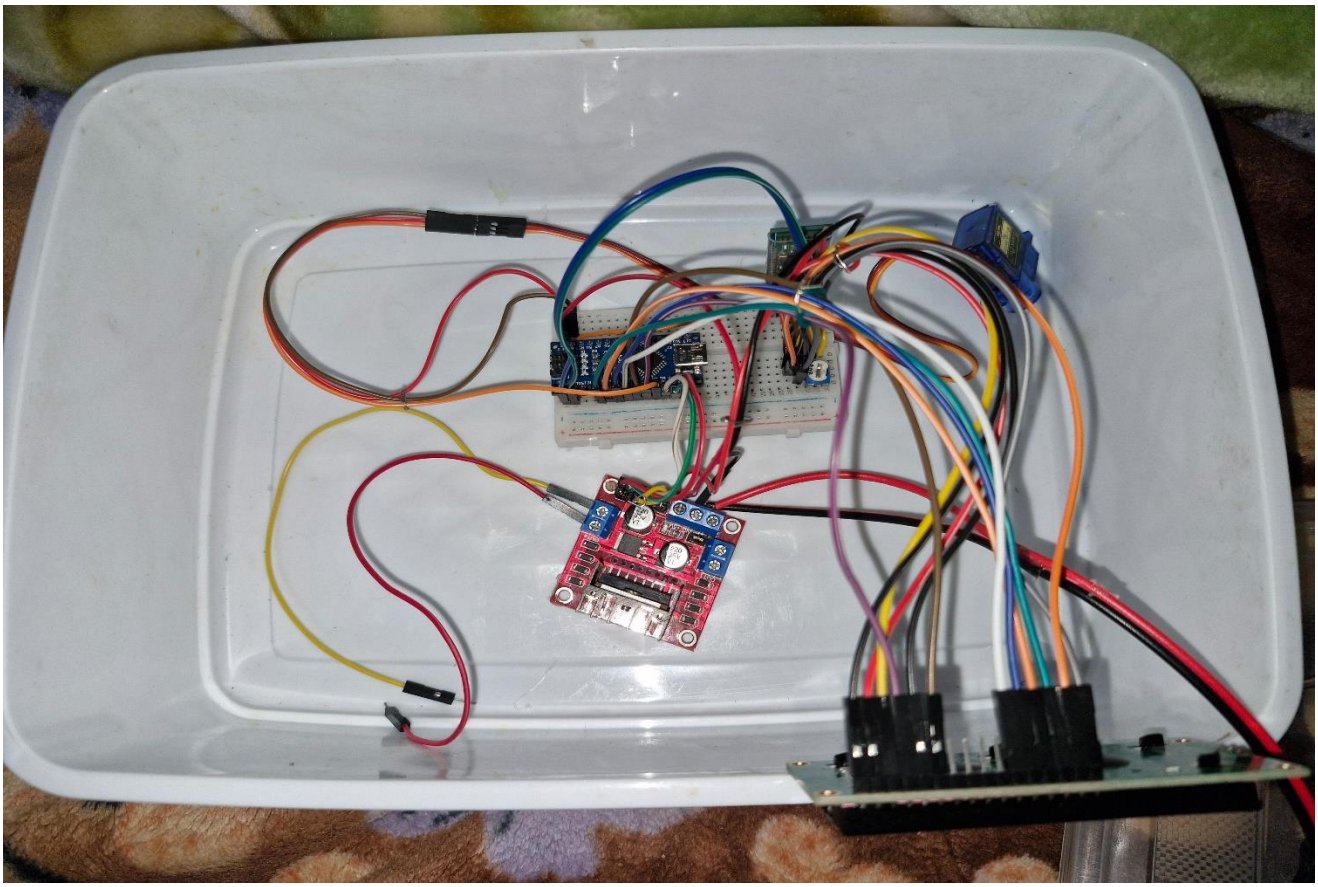


Operation

- **Bluetooth Commands:**
  - '**1**', '**2**', '**3**' adjust motor speed to low, medium, and high respectively.
  - '**F**' and '**B**' change motor direction clockwise and anticlockwise.
  - '**N**' and '**H**' start the motor in specified directions with speed 1.
  - '**S**' stops the motor.
  - '**O**' starts oscillation for the servo.
  - '**T**' stops the oscillation.
- **Display Updates:**
  - The LiquidCrystal shows current speed, direction, and oscillation status.
- **Sound Feedback:**
  - Each command triggers a short buzzer sound for user confirmation.

Conclusion:

This project demonstrates the effective use of Arduino, sensors, and actuators to control mechanical devices via Bluetooth. The integration of hardware components like DC motors and servos, along with a user-friendly display, provides a practical application of embedded systems engineering. The system's modularity allows for easy expansion, such as adding more sensors or actuators, enhancing its functionality for various applications.



THANK YOU