BUILDING EZBOT

1.1 Hardware Set-up

Components Required:

- Arduino UNO
- Ultrasonic Sensor (HC-SR04)
- Servo Motor
- Bluetooth Module (HC-05)
- L298N H-Bridge Motor Driver
- DC Motors (2x)
- Power Supply (Battery)
- Connecting Wires
- Breadboard (optional)

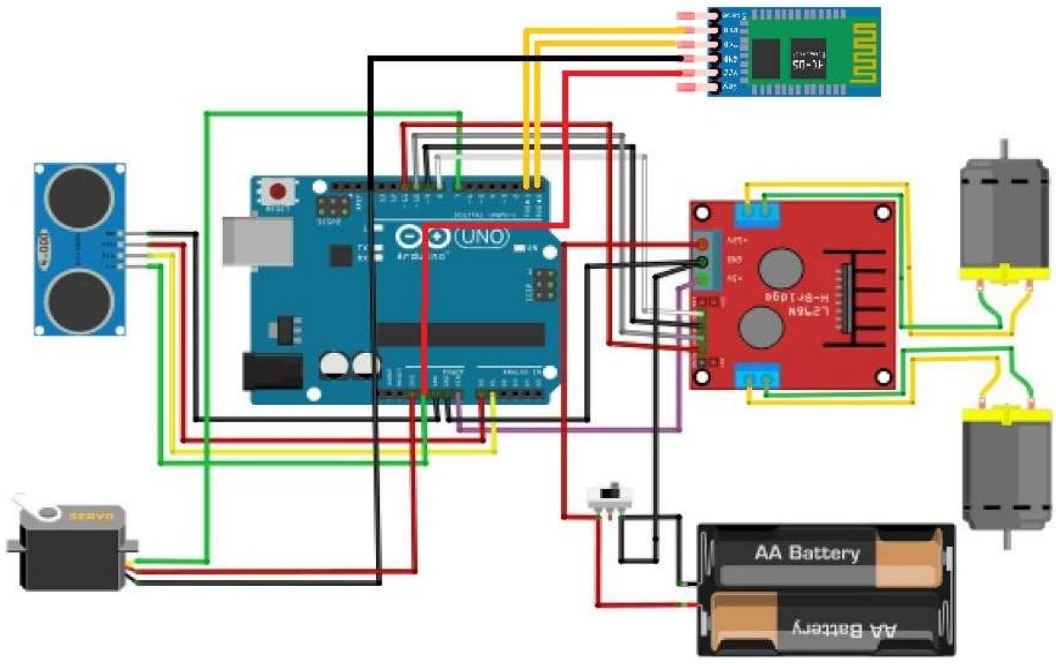

Fig.1.1: Circuit Diagram of Car

To make the obstacle avoiding car, the components are connect as shown in figure 1.1.

Ultrasonic sensor to Arduino connections:

Table 1.1: Ultrasonic sensor to Arduino connections

Ultrasonic Sensor	**Arduino**
VCC	5V
Trig	~6
Echo	~5
GND	GND

Servo Motor to Arduino Connections:

Table 1.2: Servo Motor to Arduino Connections

Servo Motor	**Arduino**
VCC	3.3V
Pulse	7
GND	GND

Arduino to Bluetooth connections:

Table 1.3: Arduino to Bluetooth connections

Arduino	**Bluetooth**
TXD > 1	RXD
RXD < 0	TXD
GND	GND
5V	VCC

L298N H-Bridge Motor Driver to Arduino connections:

Table 1.4: L298N H-Bridge Motor Driver to Arduino connections

L298N H-Bridge Motor Driver	Arduino
5V	Vin
GND	GND
IN1	8
IN2	9
IN3	10
IN4	11

The 12V pin of the motor driver is connected to the positive terminal of the battery and the GND pin of the motor driver is connected to the GND pin of the Arduino and also to the negative terminal of the battery. Also, the output pins (output 1, output 2, output 3, output 4) of the motor driver are connected to the two battery operated dc motors.

2.1 Software Set-up

Step 1: Install Arduino IDE

1. Download the Arduino IDE from the official website.
2. Follow the installation instructions for your operating system (Windows, macOS, or Linux).

Step 2: Set Up the Arduino IDE

1. Open the Arduino IDE.
2. Go to `File > Preferences` and set your sketchbook location.
3. Install any necessary libraries by going to `Sketch > Include Library > Manage Libraries`.
4. In this project, we used the **NewPing** and **Servo** libraries. Additionally, we used a user-defined library called **libbot.h**.

Step 3: Connect the Arduino UNO

1. Connect your Arduino UNO to your computer using a USB cable.
2. Select the correct board and port:
    - Go to `Tools > Board` and select "Arduino/Genuino UNO".
    - Go to `Tools > Port` and select the port that corresponds to your connected Arduino UNO.

Step 4: Upload the Code

1. Open the project code file in the Arduino IDE.
2. Verify the code by clicking the checkmark icon (Verify).
3. Upload the code to the Arduino UNO by clicking the right arrow icon (Upload).

Step 5: Additional Configurations

1. If your project requires additional libraries, install them as needed.
2. Follow any specific instructions included in the code comments or documentation.