EXPERIMENT 3: WIRELESS CONTROLLED

Objective

The objective of this experiment is to wirelessly control the Chelonia Bot using the "MR Remote" mobile app. By executing this code and using the app, you can make the Chelonia Bot move forward, backward, turn left, turn right, and stop.

Setup

Before running the experiment, ensure that you have assembled the Chelonia Bot hardware as per the assembly instructions in Section 2.1. Additionally, make sure you have connected the Chelonia Bot to the Arduino IDE, as explained in Section 2.3.

Hardware Setup:

- Connect the motor control pins as follows:
  - Motor A Pin 1 (motA_pin1) (IN1): Connect to pin 8
  - Motor A Pin 2 (motA_pin2) (IN2): Connect to pin 9
  - Motor B Pin 1 (motB_pin1) (IN3): Connect to pin 10
  - Motor B Pin 2 (motB_pin2) (IN4): Connect to pin 11

For this experiment, it is important to note that the ENA (Enable Motor A) and ENB (Enable Motor B) pins on the L298N motor driver should be shorted or connected. This means you should physically connect or make a short circuit between the ENA and ENB pins. This configuration is applied to ensure that both motors receive the same control signals, as the code primarily controls the individual input pins (IN1, IN2, IN3, IN4) for directional control rather than using separate enable pins for each motor.

- Bluetooth Module (HC-05):
  - Connect the RX pin of HC-05 to the TX pin of Arduino.
  - Connect the TX pin of HC-05 to the RX pin of Arduino.
  - **Note:** Connect the RX and TX pins of HC-05 after uploading the code.

To facilitate the hardware connection process, the hardware connection diagram is available at the following link, providing users with visual guidance for a seamless connection: Hardware connection diagram

Code Example: Wireless controlled through mobile app

Mobile App Setup

- Download the "MR Remote" app from the provided link: MR Remote application (since it is not available on the Play Store).
- Open the app and connect to the Arduino device through Bluetooth.

Usage Instructions

- Open the "MR Remote" app on your mobile device.
- Connect to the Arduino device via Bluetooth.
- Use the on-screen controls to send commands to the Chelonia Bot:
  - **F:** Move forward
  - **B:** Move backward

- **L:** Turn left
- **R:** Turn right
- Any other character: Stops both motors.

Expected Results
The Chelonia should respond to the commands sent from the "MR Remote" app, resulting in various movements, as specified by the controls.

Frequently Asked Questions (FAQs)

Q: What should I do if the app is unable to connect to the Arduino device?

A: Ensure that Bluetooth is enabled on both your mobile device and the Arduino and restart the app for a fresh connection.

Q: Can I modify the code for different motor speeds?

A: Yes, you can adjust the delay values in the code for different motor speeds.