MSW ESP32 assembly guide

🧰 Components You Need

- 1x ESP32 development board
- 1x L298N Motor Driver
- 2x TT DC gear motors
- Custom motor mounts
- Jumper wires (male-to-female and male-to-male)
- Power source (e.g., 2x 18650 batteries or 6V–12V battery pack)
- Breadboard or soldered connections (optional)
- Chassis or frame for mounting (can be 3D-printed or DIY)

⚙️ Wiring Instructions

🔌 Power

L298N Pin	Connect To
`12V`	Positive terminal of battery
`GND`	Battery ground **AND** ESP32 GND
`5V`	**Do NOT connect to ESP32 5V** if using external battery
`ENB` (Right)	Connect to +5V (or jumper to enable)
`ENA` (Left)	Connect to +5V (or jumper to enable)

🎮 Motor Control Pins (match your code)

L298N Pin	ESP32 GPIO Pin	Function
IN1	GPIO 26	Right motor forward
IN2	GPIO 27	Right motor backward
IN3	GPIO 14	Left motor forward
IN4	GPIO 12	Left motor backward

🔩 Motors

- Connect **right motor** to **OUT1 and OUT2**
- Connect **left motor** to **OUT3 and OUT4**

Make sure your motor polarity matches the desired direction—swap wires if it's reversed.

🛠️ Assembly Steps

1. **Mount Motors** using your custom 3D-printed mounts or brackets onto the chassis.
2. **Attach Wheels** to the motors.
3. **Secure the L298N** motor driver and **ESP32** to the chassis.
4. **Wire everything** as per the wiring diagram above.
5. **Connect power**:
   - If using a battery pack, connect + to `12V` and - to `GND`.

🌐 Uploading the Code

1. Open Arduino IDE.
2. Install **ESP32 board support** (via Board Manager).
3. Select your ESP32 board and COM port.
4. Paste your code into the IDE.
5. Click **Upload**.

📶 Wi-Fi Control (WASD keys)

1. Connect your computer to the same Wi-Fi network (`magne`, `12345678`).
2. After uploading, open the Serial Monitor to get the **ESP32's IP address**.
3. Open a browser and navigate to `http://<your-ESP32-IP>` (e.g., `http://192.168.1.42`)
4. Use your keyboard **W/A/S/D** to control the robot.

🧪 Troubleshooting Tips

- If motors don’t spin, check if `ENA` and `ENB` are enabled (jumpered or connected to 5V).
- Use a **separate power supply** for motors if the ESP32 resets when they start.
- Double-check that **grounds are all connected**.
- If the ESP32 won’t connect to Wi-Fi, ensure SSID/password are correct.

Let me know if you want a **diagram**, **3D printable chassis file**, or **diagonal movement support** added to the code.