Self-Balancing Robot

Components and Wiring Connections

🧰 List of Components

◆ **Microcontroller**

- **Arduino Uno** (or any compatible Arduino board)

◆ **Motion Sensor**

- **MPU6050** (3-axis Gyroscope + Accelerometer)

◆ **Motor Driver**

- **L298N Dual H-Bridge Motor Driver**

◆ **DC Motors**

- **2 × 12V DC Geared Motors**

  o Typically with 300–500 RPM

◆ **Wheels**

- **2 × Robot Wheels** (compatible with the motor shaft)

◆ **Power Supply**

- **12V Battery Pack** (Li-ion or Lead Acid)

- **Optional 5V Regulator** (to safely power Arduino)

◆ **Structure**

- **Chassis Frame** (to mount all components)

- **Screws, Nuts, Spacers** (for mounting)

- **Wires & Jumper Cables**

◆ **Optional (Recommended for Testing)**

- **Bluetooth Module (e.g., HC-05)**

- **USB Cable for Arduino**

- **LED or Buzzer** (for debug/alerts)

🔌 **Wiring Connections**

Component	Pin	Arduino Pin
MPU6050	VCC	5V
MPU6050	GND	GND
MPU6050	SDA	A4
MPU6050	SCL	A5
MPU6050	INT	Pin 2
L298N - Left Motor	ENA	Pin 10
L298N - Left Motor	IN1	Pin 6
L298N - Left Motor	IN2	Pin 7
L298N - Right Motor	ENB	Pin 11
L298N - Right Motor	IN3	Pin 8
L298N - Right Motor	IN4	Pin 9