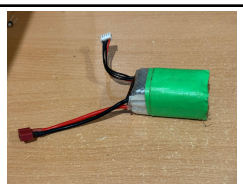
Power Management

Component	Task	Photo
• Arduino Uno	Controls the robot.	
• L293D Motor Driver Shield for Arduino Uno	Powers and controls the motors.	
• DC Motor	Powers the robot's back wheels.	
• 9G Servo Motor (SG90)	Steers the robot.	
• Ultrasonic Sensor	Detects distances from walls.	
• 3s 11.4v Lipo high-discharge 1500 milliamp battery pack	Supplies power to the robot.	
• Power switch	Gates the power from the battery to the robot.	

The robot is powered by a triple-cell battery, which is connected directly to the Arduino. All other components receive power through the Arduino and its motor driver shield.

The motor driver shield sits on top of the Arduino. It provides connections for the driving motor and the steering servo. The DC motor and servo motor receive power and control signals from the motor driver shield.

The DC driving motor and the steering servo motor connect to the shield using screw terminals and pin headers (respectively). This arrangement simplifies the setup by keeping the wiring less messy.

The servo has 3 cables: Power, ground, and a PWM signal wire. It connects to specific pins on the motor driver shield to receive its power and signal for steering control.

The ultrasonic distance sensor has 4 pins for its power (VCC), ground (GND), and signal wires (Trigger and Echo). These wires are connected using jumper cables to the power and digital pins on the Arduino board, allowing the robot to send pulses of sound to and from the ultrasonic sensor to retrieve distance on that sensor.

The main power switch is connected in series between the battery and the shield's power terminals. A basic button is connected using 2 wires, which has the purpose of starting the actual program.

Most of the power that every component receives is mostly routed by the shield, but the battery supplies ~11 volts to the shield and the Arduino, as well as the ultrasonic sensors consume 5 volts.