



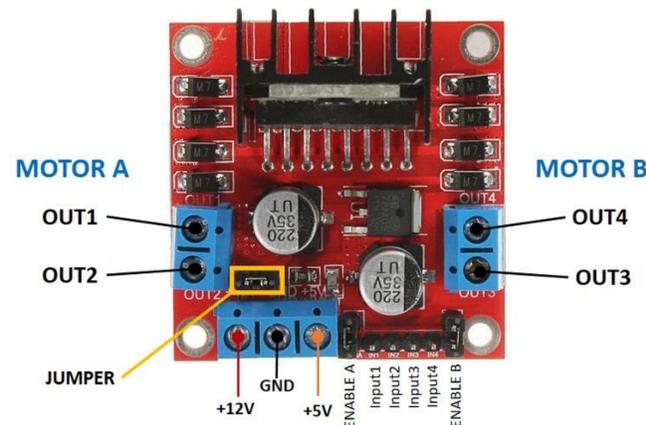
## Introduction

Our goal for this project was to make a remote-controlled Battle-Robot like the ones seen on the popular show Battle Bots. There are many aspects of a Battle Bot for it to be ready to battle, such as being able to be controlled remotely, take damage and continue to function, and be maneuverable. This project is our attempt at making a well-rounded bot that has the potential to win a battle against an opponent.

## Components

- **SZDoit Smart Shock Robot Tank Chassis**
  - LxWxH: 275x190x90mm
  - Weight: 2.46lbs
- **Raspberry Pi 4 Model B**
  - Bluetooth Range of 20-30ft
- **12V Brushed DC Motors**
  - 1000RPM
  - Diameter: 25mm/1in
  - Weight: 3.4oz
- **L298N Motor drivers (2)**
- **Xbox Controller w/Bluetooth**
  - Range of 20-30ft
- **3D Printed Shell**
  - LxWxH: 7.06x5.31x4.5in
- **7.2 V Battery 2400 mAh**
- **Power Bank**
  - Capacity: 10000mAh
  - Output: 5V 3A
- **3D Printed Brackets**
  - LxWxH: 7x3.5x 0.2in
- **12 V Battery 2000mAh**
- **LEDs and 100 ohms resistor**
- **3D Printed Blade**
  - LxWxH: 7.78x6x 0.2 inches

## L298N Motor Driver



The L298N chip can take inputs from the Raspberry Pi to control the motors while powering them with an external battery, since the Pi would not be able to power all the motors. This lightens the load of the Pi.

## Raspberry Pi 4

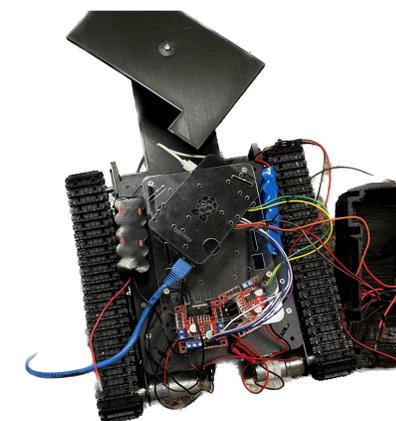


We chose to use the Raspberry Pi due to the Pi having Bluetooth Capability. It takes the inputs from the controller runs through Python code to control the bot. The picture above shows how we use the GPIO pins to send the signals to the parts of the Bot. The Blue, Grey, White, and Purple cables control the movement of the Bot, connecting to Motor Driver 1. The Green controls the Blade and connects to Driver 2. The Red controls brake lights, Orange headlights, and Brown reverse lights. Black is ground for the LEDs.

## Challenges

During the process of building the battle bot, we ran into some challenges. One being the motors. The two we had which controlled the battle bot were too slow, so we replaced them with ones that had a faster rpm. The motor we had for the blade was a 5v dc motor from a small desk fan which had a slow start up speed, so we swapped it out which ran us into another challenge. That challenge being finding a bracket that would hold the motor. Our solution to that was to design and 3D print one. Another challenge we had was finding a way to hide all the components while also making sure they were secure. We solved that by designing and 3D printing this shell that fits over all the components and keeps them secure.

## Setup



This shows the complete setup of how each component is wired together and ready for operation. The final step is to put on the shell to hide and secure the components and then the battle bot is complete.