# Overview

The AWS Playground4Robotics board will allow roboticists to quickly prototype various differential drive robots using AWS services.

# Priority 0 Reqs996594219 996875655

* Max $12 BOM @ 100 Min Quantity
* ESP32
* Micro-usb connector
* CP210x or CH340 USB-to-UART chip
* PCD dimensions / configuration
  + Width - 48mm
  + Max length - 90mm
* Two 17-row pinouts to expose ESP32 pins to allow dev-board to be breadboard-able (34 pins total)
  + Width between each row - 45mm
* Layout configuration:
  + 
* VIN range (4.5 to 12volts)
  + 3.3v / 1A Vout regulator
* Accelerometer Sensor (the ADXL345 is sufficient)
* Motor Driver (Q: 2 channel) ([L9110](https://www.elecrow.com/download/datasheet-l9110.pdf) single channel motor controller)
  + 2 post mounts for OA and OB L9110 pins - motor wire output (2 channels = 4 mounts total)
  + The IA and IB L9110 pins routed to 2 ESP32 GPIOs (2 channels = 4 GPIO’s)
* Grove connectors to:
  + (Q: 8) ADC pins 32 to 39 (for analog sensors)
  + (Q: 2) I2C pins 21 and 22
  + (Q: 2) Wheel encoders GPIO 22 and 23
* Buttons
  + “Boot” - [bootloader button to flash / erase the ESP32](https://github.com/espressif/esptool/wiki/ESP32-Boot-Mode-Selection) (pulls GPIO0 low)
  + “Reset” - aka EN button to reset the ESP32
* LEDs
  + Red Power LED
  + Blue Status LED

# Priority 1 Reqs

If BOM costs allow:

* OLED (same 128x64 as Playground4IoT)
* 5v / 1A Vout regulator (if Vin >= 6v)
* 4 corner M3 standoff mount holes
* Secure layer

# Priority 2 Considerations

* Buttons - others?
* LEDs - others?