**Friday, January 5th, 2024**

Since all the parts have arrived, I started testing/integrating them. I started with the power system and the Omni battery. The Omni battery has the ability to provide direct DC output from its barrel jack. This will allow me to avoid the heavy and cumbersome wall-plug adapter for powering the Nvidia Jetson computer board. I wanted to verify the adapter plugs I ordered were all correct because I don’t want to accidentally fry the Jetson.

First, I tested the AC adapter, which is rated for 19V/2.37 A. I found its true output voltage was 19.28 V, with positive being on the inside of the plug and negative on the outside of the plug.

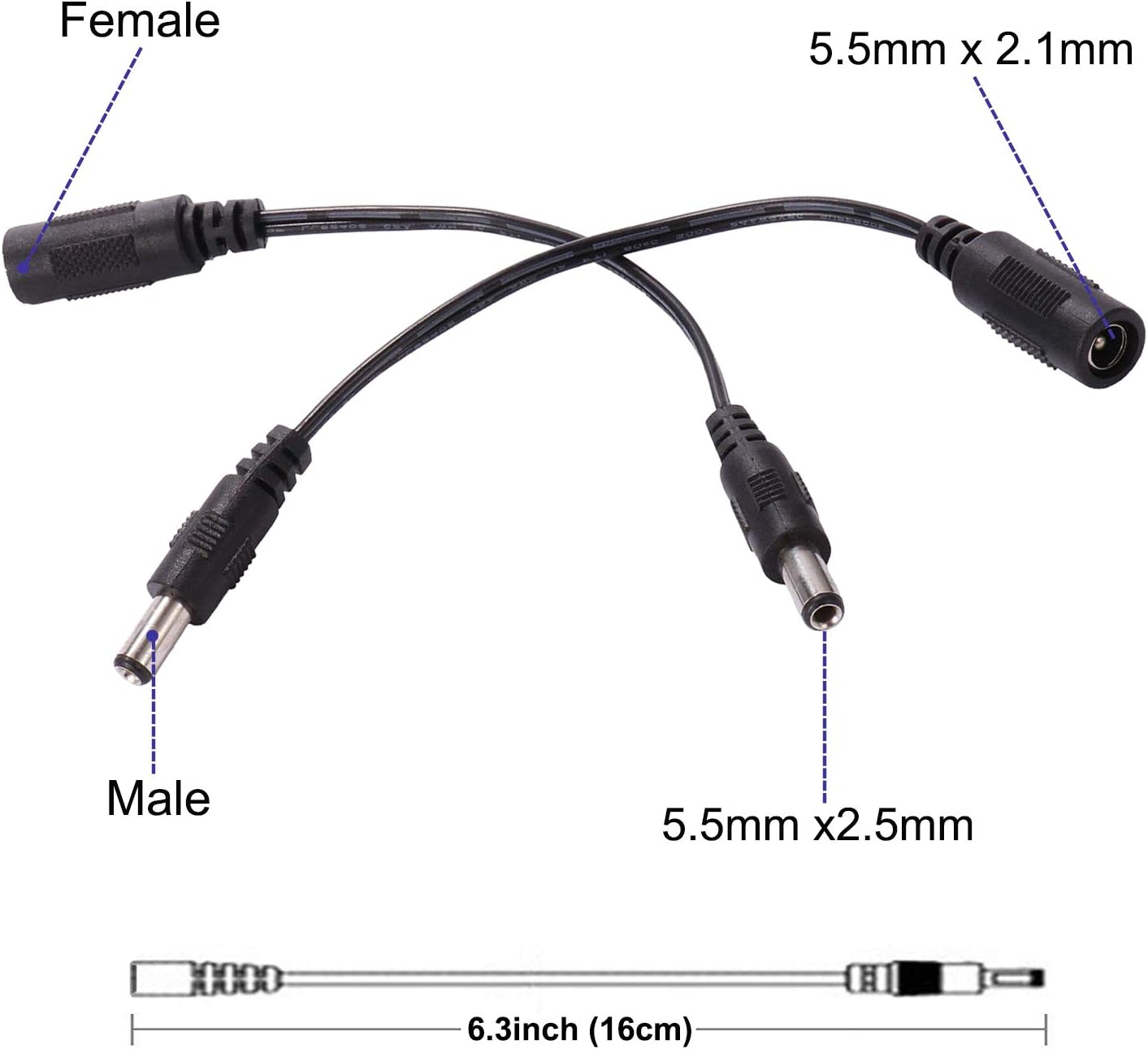
Next, I tried to verify the voltage coming off the battery. As shown in the picture below, I first set the battery to *output* 19.3 V from its 5.5x2.1 mm female barrel jack.



I then plugged in the adapter I ordered into the barrel jack and measured the voltage. It was zero volts, because I had ordered the wrong adapter:



This is a screenshot from the Amazon page of the adapter. As you can see, the end going in the battery is 5.5x2.5 mm, not 5.5x2.1. Therefore, the adapter and battery aren’t even making electrical contact with each other. The other adapter I ordered also has the 5.5x2.1mm and 5.5x2.5mm ends switched compared to what I need:

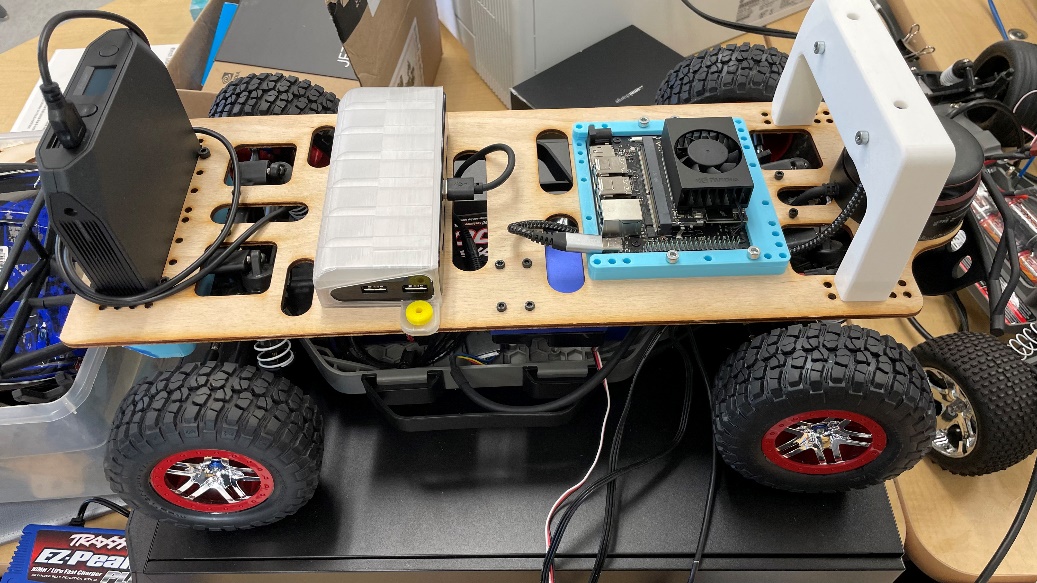


I will find and send a purchase order for the correct plugs now that I know that I got it precisely backwards this time around.

I also opened up the other parts that arrived, such as the USB cables, screw/washer set, and solid-state drive just to make sure they were intact/the correct part. I started mapping out how the wiring is going to be laid out on the car (e.g USB hub/Jetson/peripheral connections). The key consideration is making sure you aren’t using wires that are too long, because they can dangle outside of the car’s frame and get tangled in the wheels, obstruct the camera or LiDAR, and other generally unwanted things.

After class I talked with Dr. Torbert to check on the status of the VESC motor controller. He said he wasn’t sure when it would arrive.

During 8th period, my club members mostly finished assembling the car:



They attached the battery holder, LiDAR, and motor controller to the laser cut platform and started wiring everything together.

**Monday, January 8th, 2024**

I created my presentation.

**Wednesday, January 10th, 2024**

I started by doing some more wiring on the car. I then began setting up the router. To reiterate, the router is necessary to remotely access the Nvidia Jetson board since I cannot see the Jetson over the FCPS Wi-Fi network.

I am able to see the Wi-Fi network and connect to it from my computer and phone. However, the Ethernet port I connected to does not seem to have access to the Internet.

Luckily, Krishan, a sysadmin, happened to be in the room. He said that devices that want to connect to Ethernet have to be put on a whitelist in order to access the Internet. The whitelist requires the MAC address and hostname of the router. Krishnan says he will add the router to the whitelist by Thursday.

Despite the fact that Internet access wasn’t working with the router, I was still able to test the signal strength. I mostly wanted to figure out if I would need to relocate the router to the commons if I was to test the car there. It turns out I was able to get a signal all the way to the stairwell on the opposite side of the building as the Syslab, although the signal was quite weak there. I did get a medium strength signal while in the commons (during the test, the router was in room 200C).

**Thursday, January 11th, 2024**

I went into Room 200C during lunch to dry-run my presentation. Dr. Torbert helped me find the HDMI cable for the projector (it was tangled up with other wires in a cardboard box on the ground). I plugged it into my laptop and rolled down the projector, but then my battery died so I wasn’t able to make sure it was working. I will try again tomorrow before class.