Modifying an Uprider for joystick control with no programming

Here are instructions for modifying an Uprider. Really, this would work in most 12 volt vehicles where steering is already controlled thru the motors of the car. I wanted a mod that required only modifying the wiring and not requiring any programming knowledge. How to add a seat will be addressed in later instructions…..

Parts:

Rollplay Uprider- Walmart $110-149 depending on time of year

Dimension Engineering 2x32 Sabertooth motor controller- $84-129

4-6 Servo extension cables 60 cm–Robot shop $.95

2 axis analog joystick- Robot shop $19.99

Rotary potentiometer- $1.69

12v 20 amp switch -$1.99

Wire nuts (x small, small, medium)

Spade wire connectors for 16 gauge wire

Project box –runs about $5

Drill and bits

Soldering iron and solder

Heat shrink

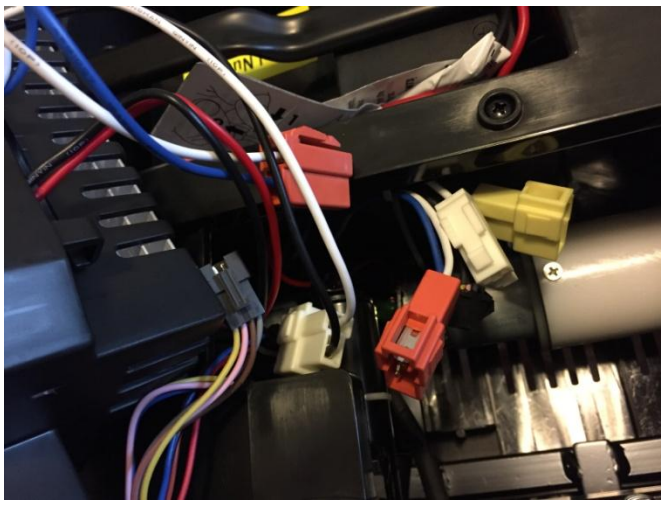
Wire stripper

Glue gun

Good selection screwdrivers

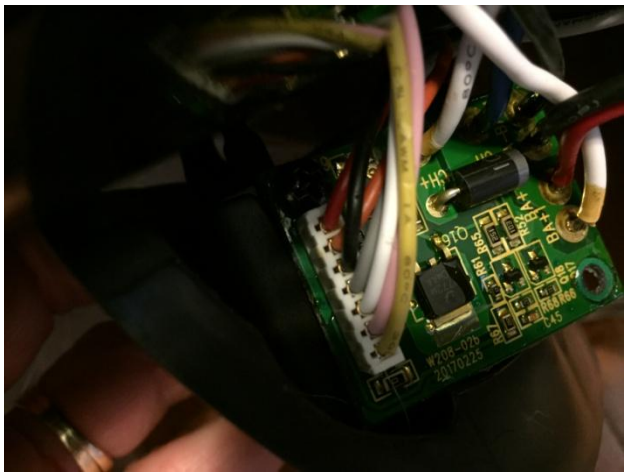
Remove Uprider from packaging. Remove the footboard. Disconnect the orange plug from the battery.

Unscrew the box holding the electronics. You will need to remove the screws holding the top cover to the base first, and then remove the top.

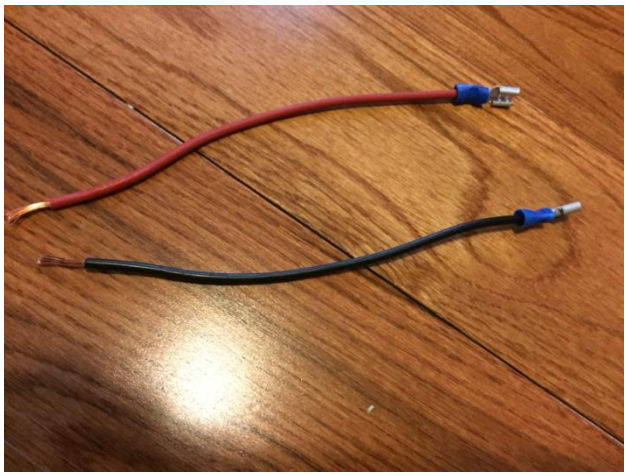


Underneath the box, you find 3 connectors (yellow, white and orange). Disconnect these. Also disconnect the little black connectors so you can remove the electronics box completely. It should look like this once it is removed:

Next, locate the on/off switch and charging port. Remove the 2 screws just below the on/off switch, and gently pull forward to reveal the wiring inside.

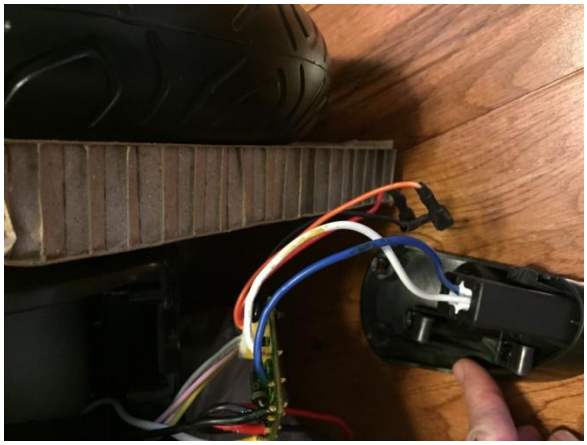


On the underside, you will find another circuit board. Remove the screws holding this to the cover. Remove the bundle of wires attached to the long white connector by unclipping the connector.



Take 2 pieces of 16 gauge stranded wire, about 6-8” long. Strip the ends, and then connect a wire connector to one end .

Use a spade screwdriver to push the on/off switch out of the cover, by pushing from the inside of the cover on the clips of the on/off switch. It should come out of the front of the cover.

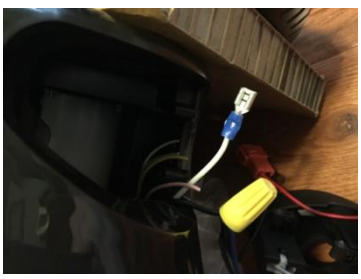


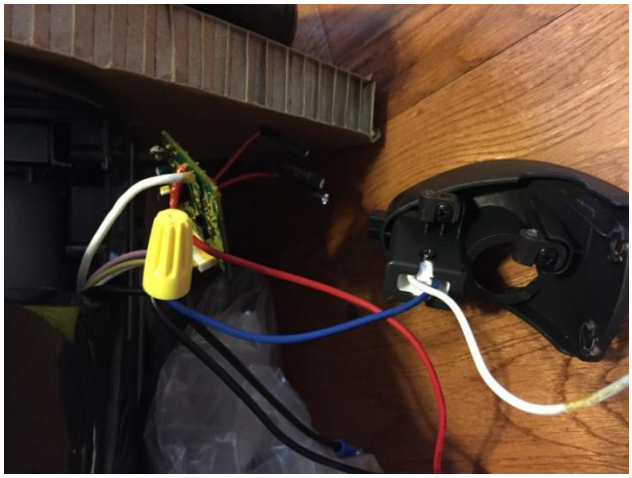
Once you have removed the switch, disconnect the 3 wires attached to the switch. The only 2 wires still attached to the cover should be the blue and white wires which go to the charging port. Clip and strip the end of the white wire where it attached to the circuit board.

Next, clip and strip the ends of the blue wire and the two black wires where they connect to the circuit board. (refer to wiring diagram)

Next, get the single piece of black wire that you added the connector to, and with a large wire nut, attach the 3 black wires and one blue wire.

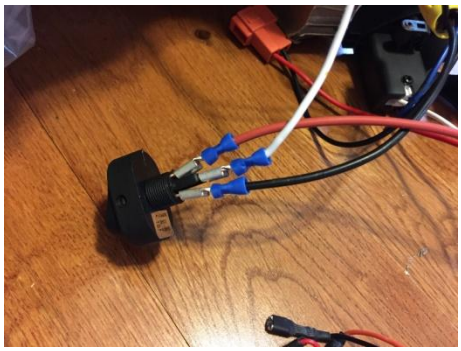
Next, clip the white wire attached to the circuit board. This is the (+) wire that sends power to the motors. Strip the end, and add a wire connector like below:





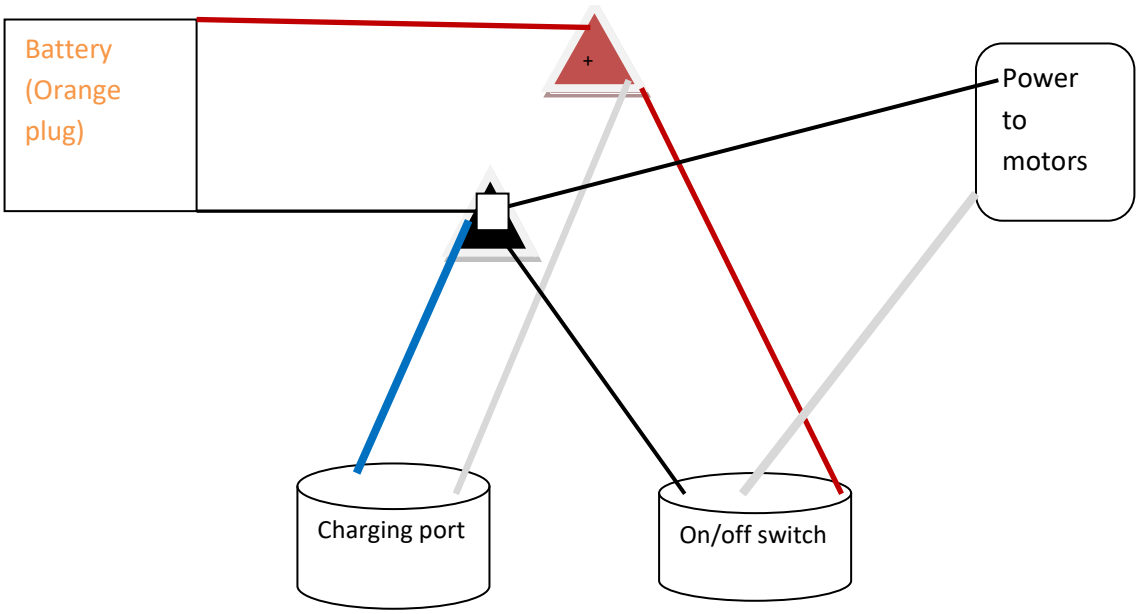
Clip the remaining red wire that is attached to the circuit board (this goes to the battery). Strip the end. With a wire nut, attach the extra piece of red wire you cut, the red wire you just cut from the battery, and the white wire from the charging port. If done correctly, you now have no wires connected to the circuit board by the cover.

Next, take your new on/off switch and place it in the hole where the other one was. I use hot glue to set it in place.



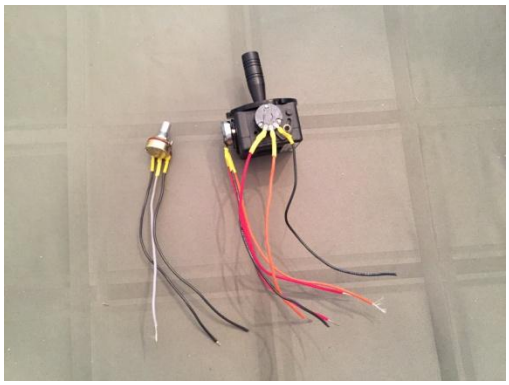
Once the glue is cool and the on/off switch is secure, take the 3 wires with wire connectors and attach: red to supply, black to earth, and white to load. (This picture shows the wiring- but do this AFTER you mount the switch to the cover)

Check you wiring by plugging the connector back into the battery. If this works, then you can disconnect it, and feed the connector back thru the device like it was before.


Battery
(Orange
plug)
+
Power
to
motors
Charging port
On/off switch

Replace the back cover using the 2 screws.

Affix the front caster per the instructions, using the screw provided in the blue bag.



For the joystick and speed control, solder 18-22 gauge wires to the 3 pots (2 on the joystick and one on a potentiometer). I like using unused wire salvaged from the Uprider. Cover connections with heat shrink and strip the ends 1/4 “.

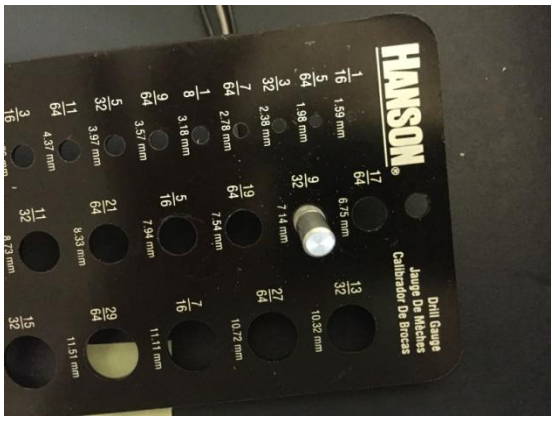
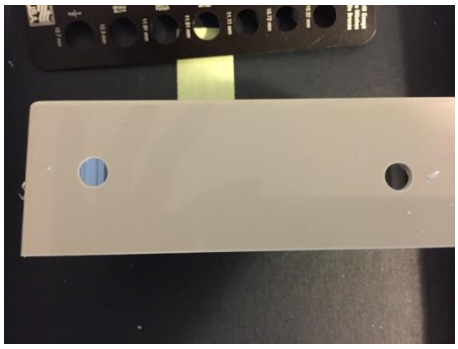
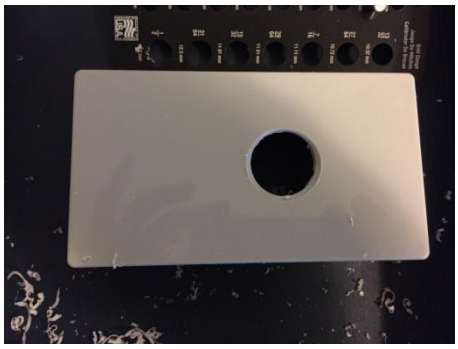
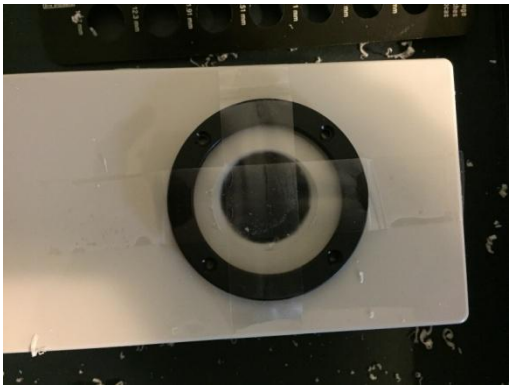


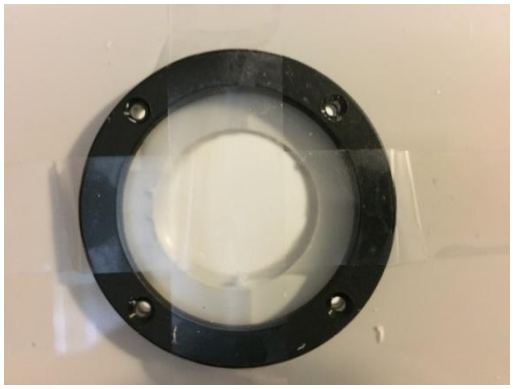
Figure out what size hole you will need to drill in your control box for the potentiometer. Here it would need a 9/32 hole to pass easily thru the hole to be mounted.



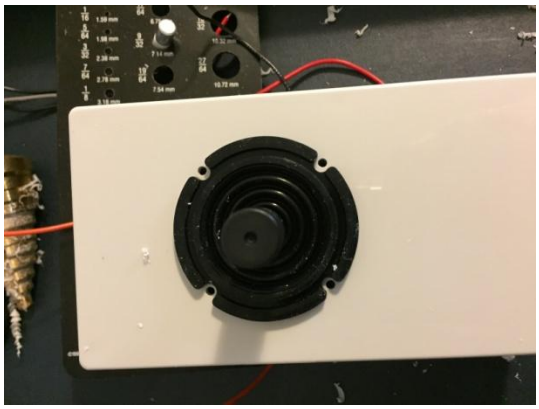


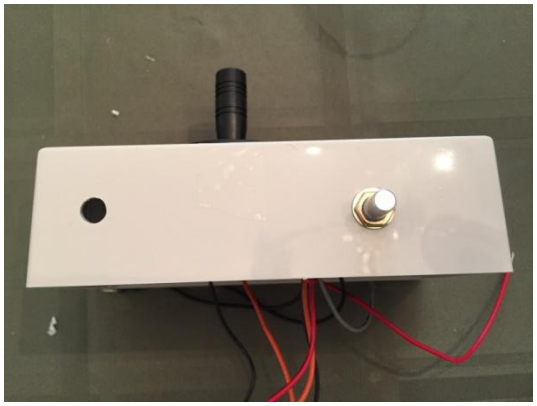
Drill two 9/32” holes in the side of a project box. (one hole will be for the pot, and one will be for your wires.) Drill a 1” hole in the base of the project box. (this is for your joystick)



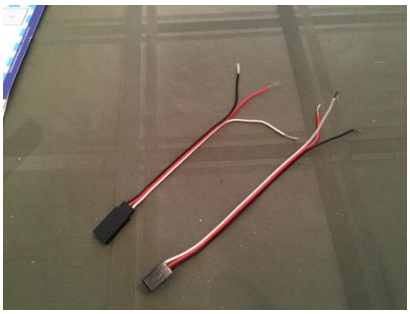


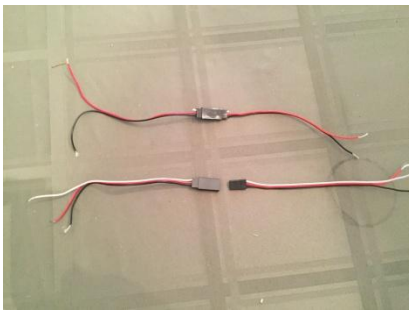
Take the mounting ring for the joystick and tape it to the top of the project box, centered on the 1” hole. Then drill the 4 holes of the mounting ring thru the box.



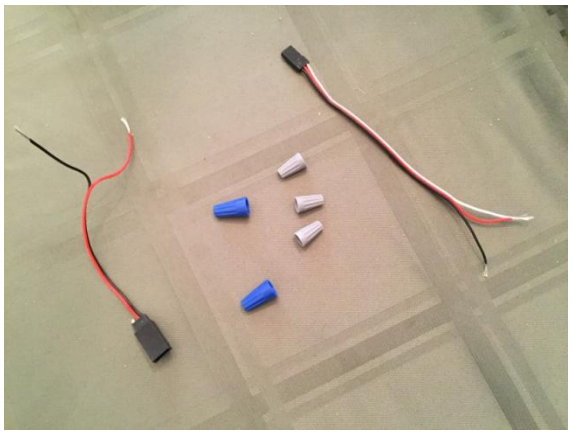


Take the joystick and feed thru the 1” hole. Then attach to the box with the mounting rings and screws that came with the joystick. On the side, feed the pot thru one of the holes, and attach the mounting washer and nut.

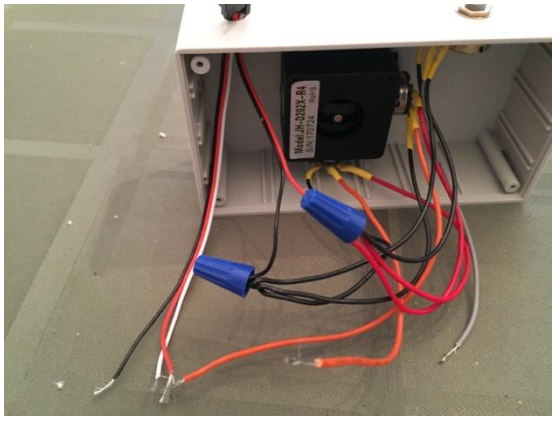




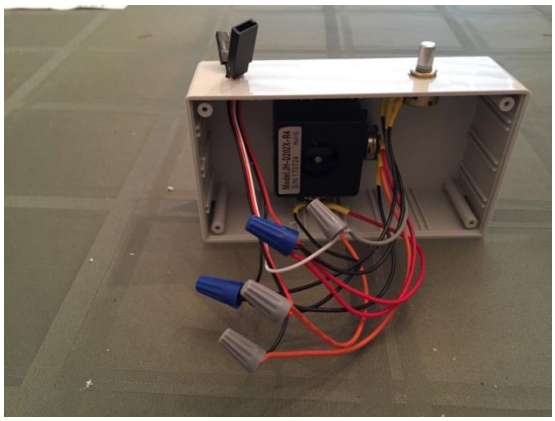
Take 2 servo extension wires (I prefer the 60 cm ones). Cut them in half, and then strip the ends. On one set of wires, cut the white wire at the connector.



Take the female end of the servo extension wire (the one missing the white wire) and the male end of the other extension wire. You will now need 2 medium sized wire nuts and 2 small wire nuts.

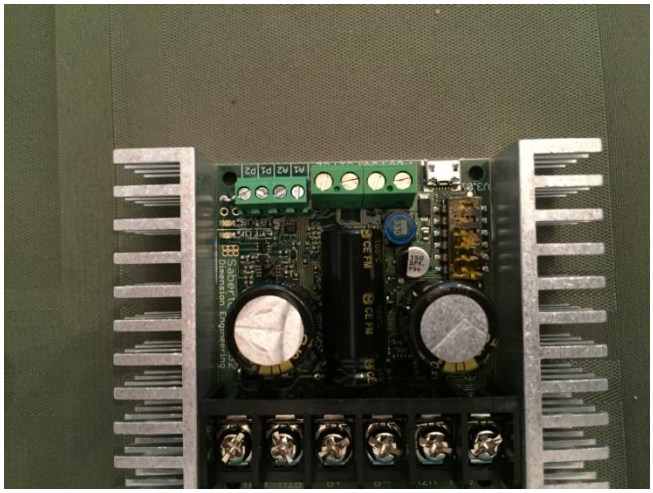


Feed the servo connector that only has a red and black wire thru the remaining hole. Use the 2 medium wire nuts to attach the positive wires (all on far left of the 3 pots) to the red wire and the negative wires (all on the far right of the 3 pots) to the black wire.



Take the remaining servo extension wire that has all three wires, and feed it thru the hole. Then attach the black wire to one of the pots on the joystick (middle wire). Attach the red wire to the other pot on the joystick (middle wire). Attach the white wire to the middle wire on the potentiometer.

Find the motor controller that originally came with the Uprider. Clip the 3 big wires where they attach to the motor controller. Strip 1/8” of the end of each wire.

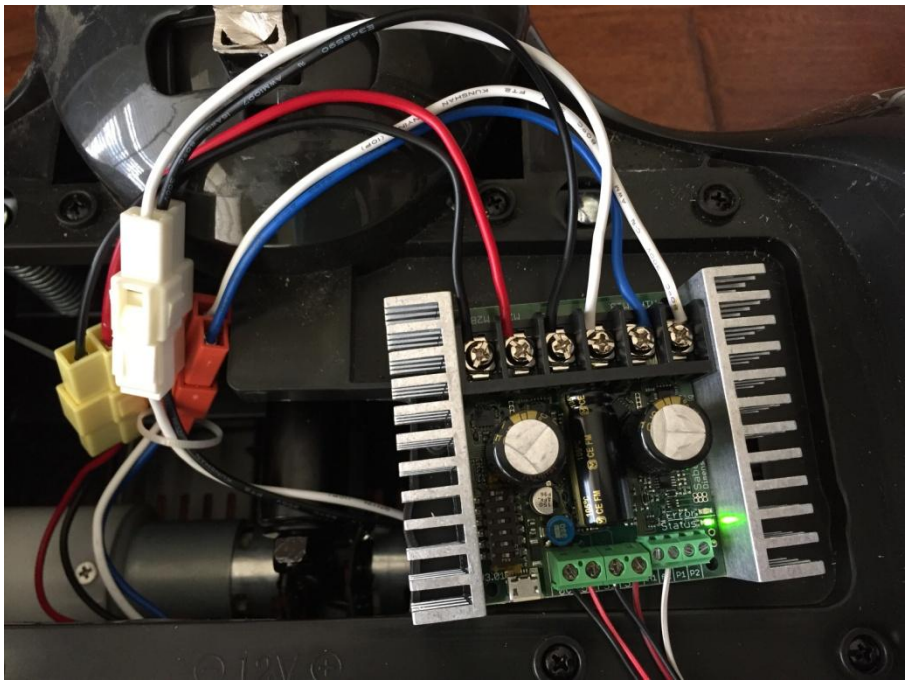


This is your sabertooth 2x32 motor controller. Pull it out of the box and loosen all the screws which take a Phillips head screw driver.

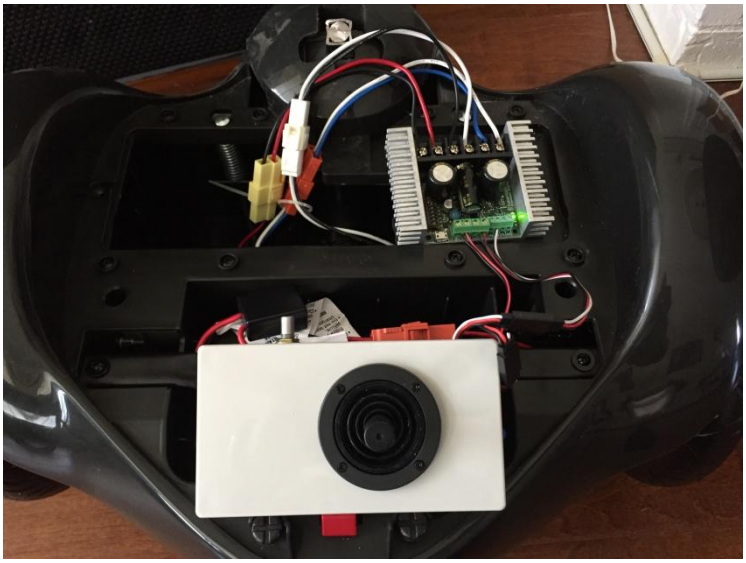
Take the white connector- the white wire goes to B+ and the black wire goes to B-

The orange connector goes to M1A (white wire) and M1B (Blue wire)

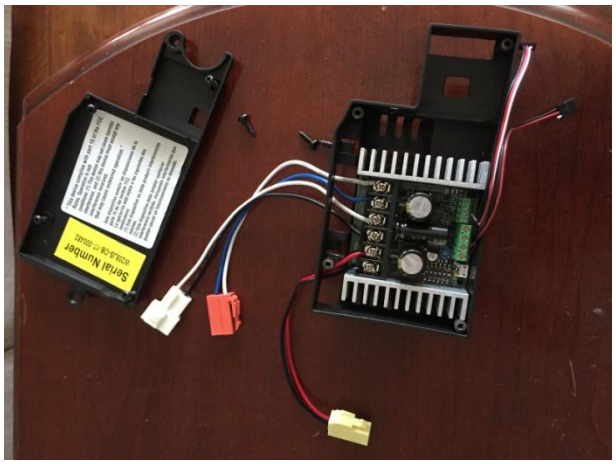
The yellow connector goes to M2A (red wire) and M2B (black wire)



Take your two remaining servo extension wires. On the set that does not have a white wire, wire the black wire to 0V and red wire to 5V. With the remaining extension wire, wire the black wire to S1, the red wire to S2, and the white wire to A2. Attach the servo wires to their mates on the joystick control box, and the power/motor connectors to their color matches mates. It should look like the next picture:



Once everything is hooked up, turn on the power and the green light should turn on with the sabertooth. The joystick should respond appropriately for right and left; forward is pulling the joystick down, and reverse is pushing the joystick forward. The overall speed is controlled by the potentiometer on the side.



Once you have verified that your wiring works, you can either mount your motor controller outside of the Uprider, or inside the Uprider, where the previous controller was. For this, we will put it in the enclosure where the previous controller was. The wires/connectors to the battery and motor are fed thru the side, and the wires to the joystick control box will be fed thru the lid.

Screw the top on the enclosure. Connect the orange, yellow,and white connectors to their mates, and then replace the holder in the Uprider. Remember to screw it in.

Then drill a hole thru the foot board for the servo extension wires. Connect them with another set of servo connection wires and feed thru the hole. The replace the foot board.

Now you are ready to modify the base to add a seat. It could look something like this, or come up with your own design based on what you need……