

Parts list:

4 Switch craft panel mount female jack 3.5 mm

1 DC power pigtail 2.1mm 16 AWG 6" long

1 female power jack 2.1 mm 12" long

1 Rocker switch 12V 20A with light up LED

1 Linear taper 25ohm potentiometer

3 Multipin connector (2 blade) male/female blade style

OR

16-18AWG wire with spade quick connect ends on one end

Heat shrink for wire connections

School supply box

12-14" pairs of thin wire (6 total) –I will strip a cat5 cable and take the wire from this

Heat gun

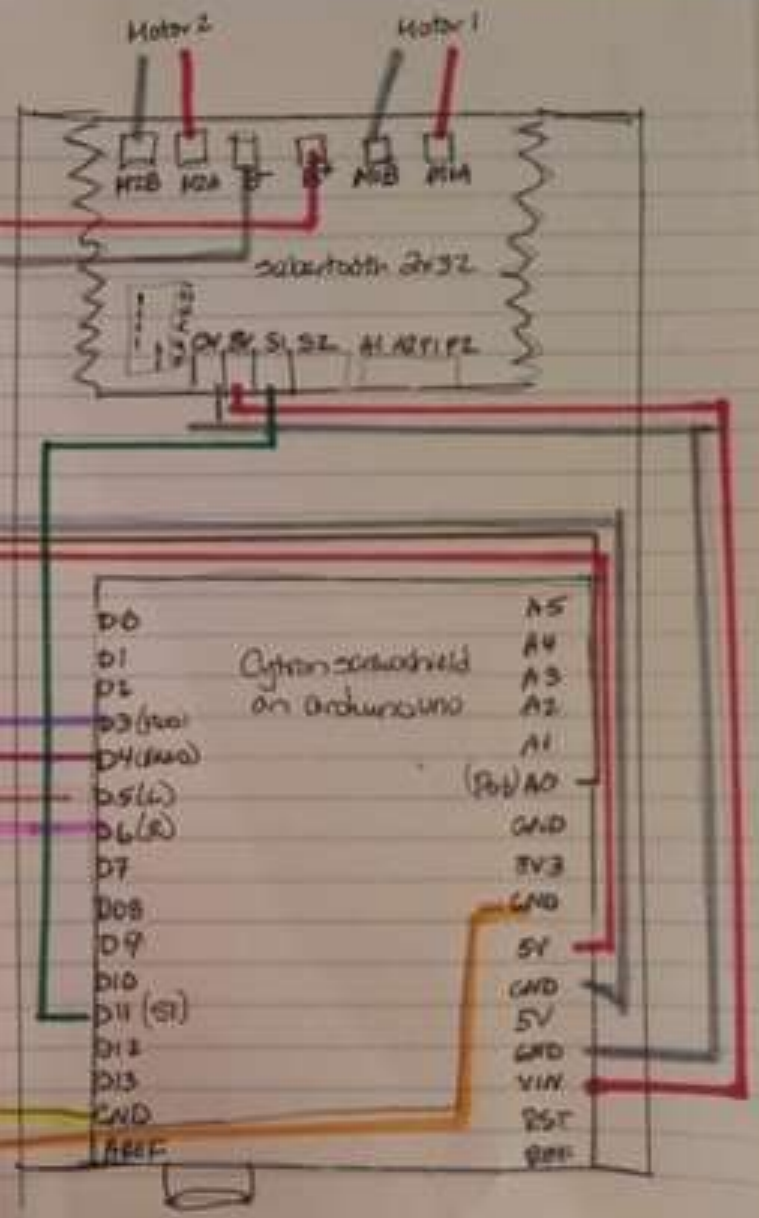
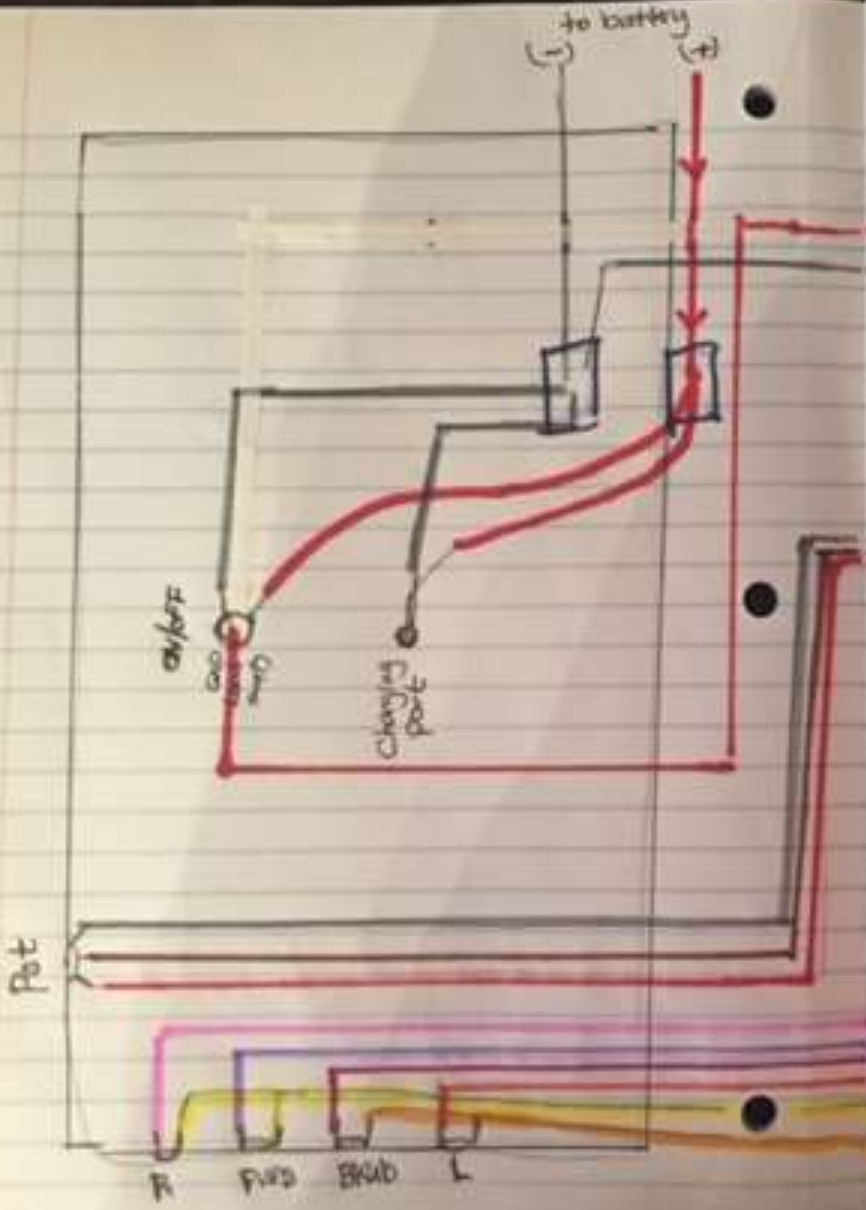
Glue gun

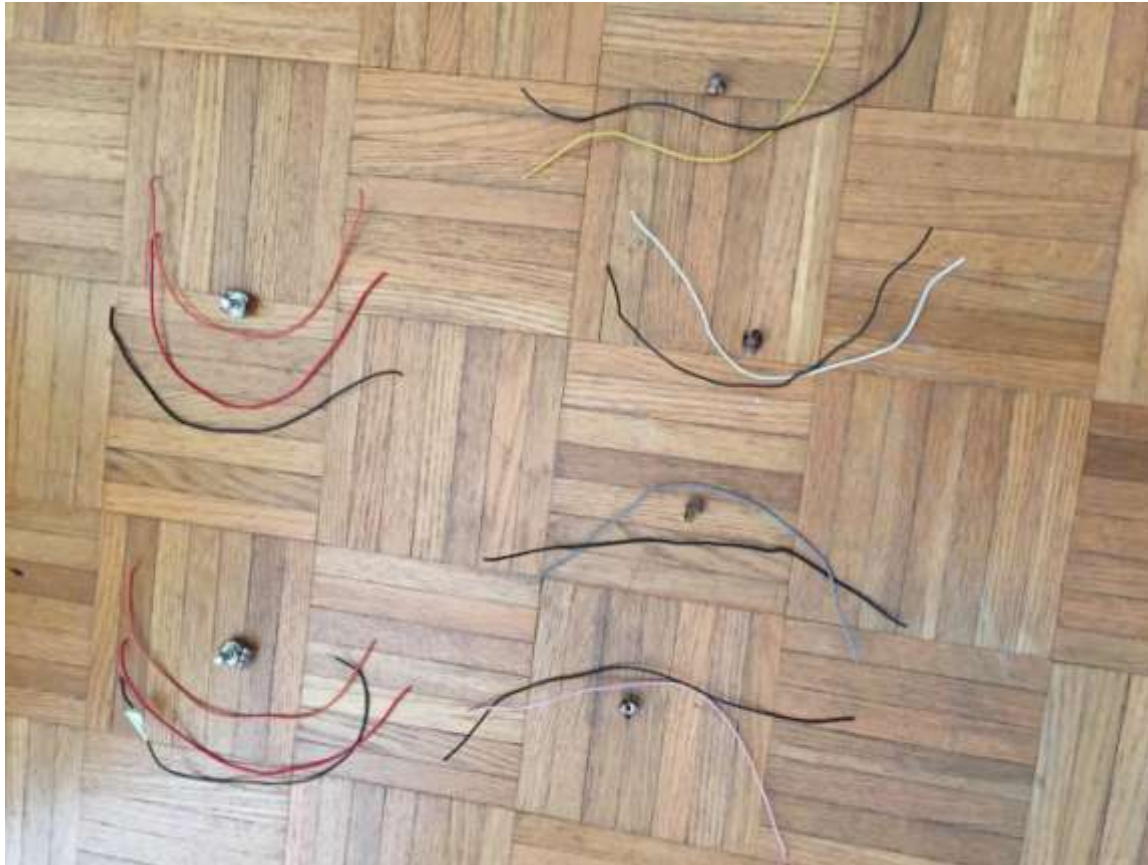
Wire nuts (assorted sizes)

Arduino uno

Cytron screw shield

Motor driver (I like sabertooth 2x32 or cytron MDDS30)





Get and strip the ends off of 22 AWG wires. I like to color code the wires to better identify them. You will need 2 for each of the four mono plugs, and 3 each for the 2 potentiometers.



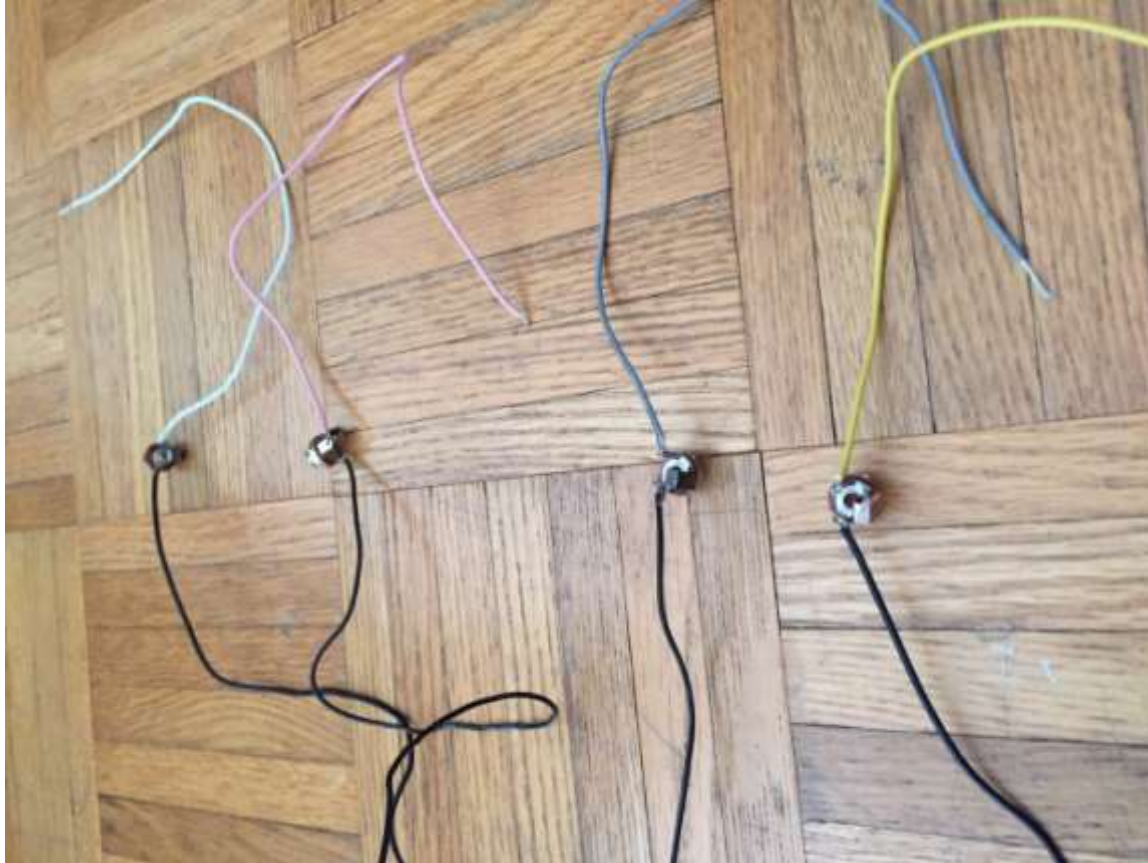
Using 16-18AWG wire, cut 12" portions (2 red , 2 black). Strip the ends.
Get 3 insulated connectors.



Affix the connectors to the ends of your 3 wires for the on/off switch, leaving one black wire without a connector,



Thread wires thru connection points to prepare to solder



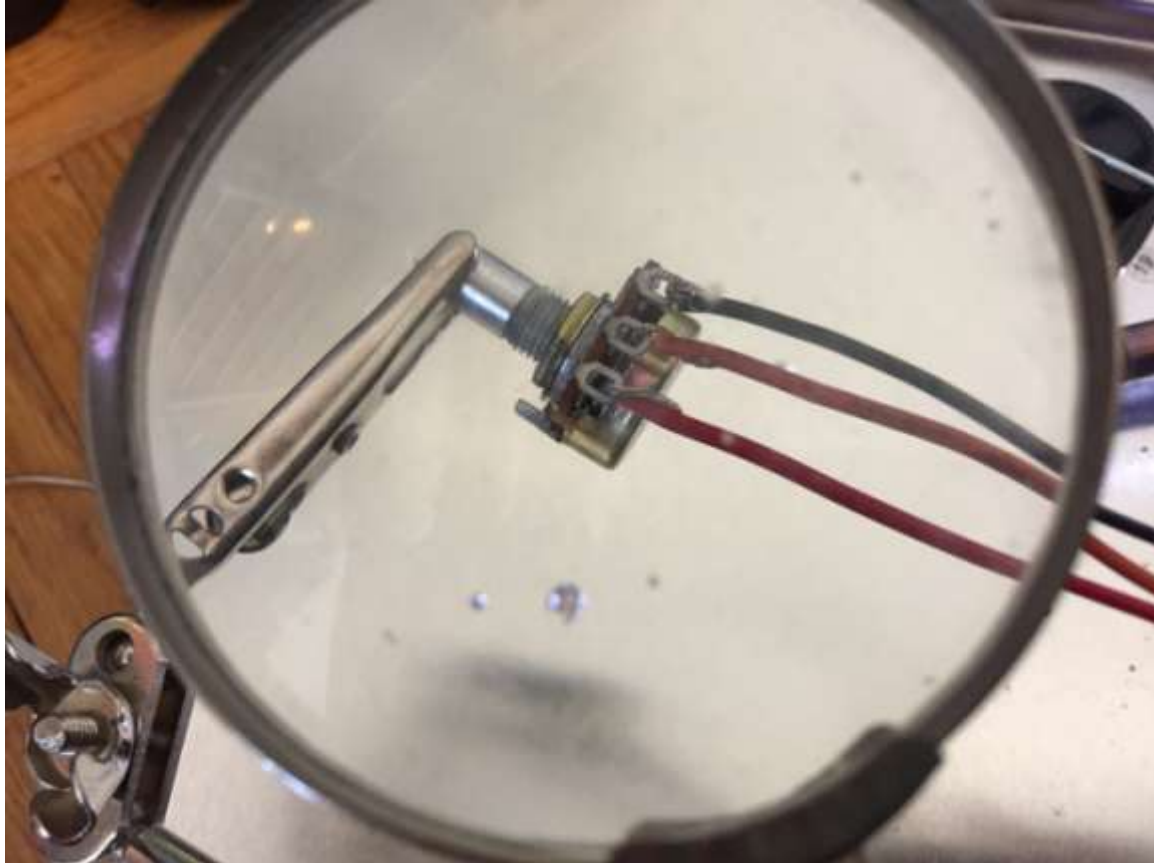
Thread the wire thru the connectors on the mono plug, staying consistent on which will be ground and which connector will be positive



Usually the connector nearest the upright is your ground lead.



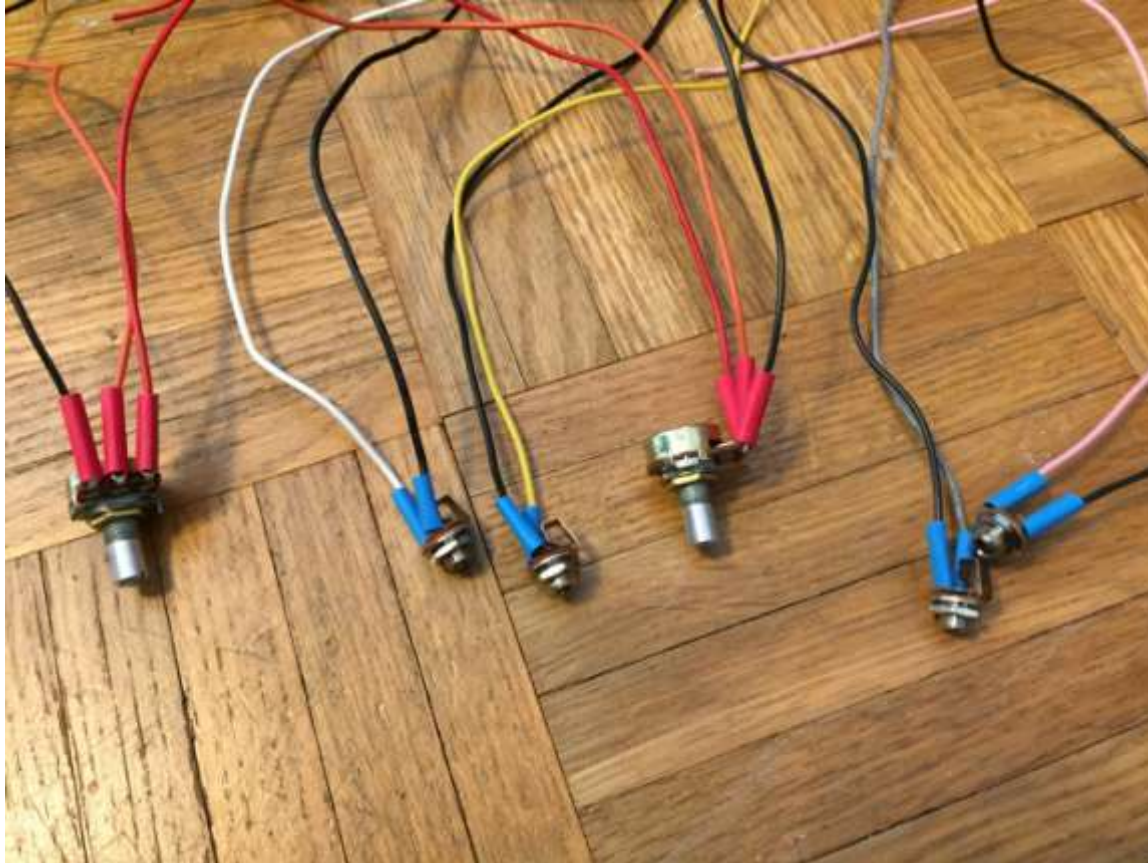
Solder connections to jacks.



Solder connections to pot.



Put shrink wrap on connections and heat with heat gun



Add heat shrink to wires to cover connections



Use heat gun to shrink wrap around connections



Prepare the box for equipment. Place the motor driver and Arduino in the top of the box and mark where the holes will need to be drilled to mount it. Make sure to mark on the end with the motor driver where holes will need to be drilled for the wires.



Next mark the holes on one end of the box for the 4 jacks (1/4 drill bit), and then on the bottom section for the 2 potentiometers (9/32 drill bit).



Finally, mark the spots on the bottom section for the switch (15/32 drill bit) and the charging cable (1/4 drill bit)



Drill all holes, using a piece of wood to drill into, so you do not splinter the plastic. For larger holes, drill a smaller pilot hole and then use a forstner bit to make the bigger hole.



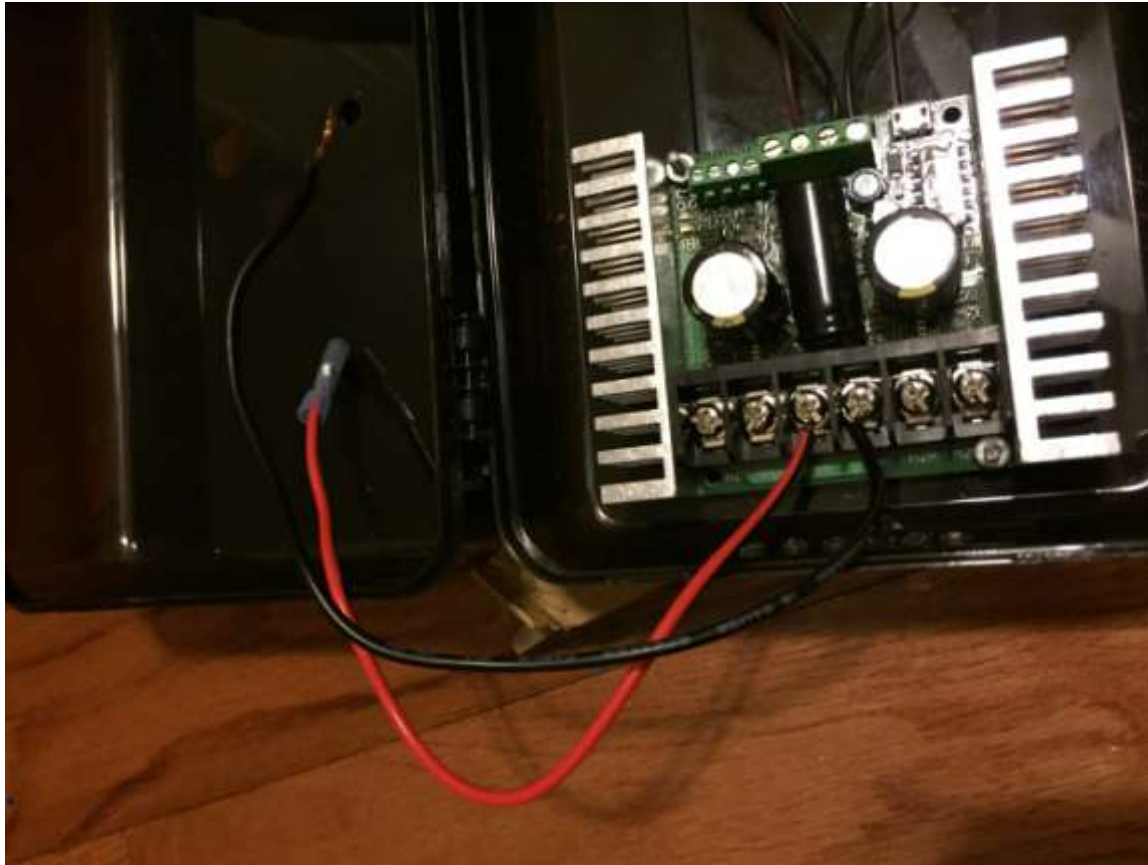
Affix the motor driver and Arduino to the lid of the box. Affix the jacks and potentiometers.



Finally affix the charging port and on/off switch.



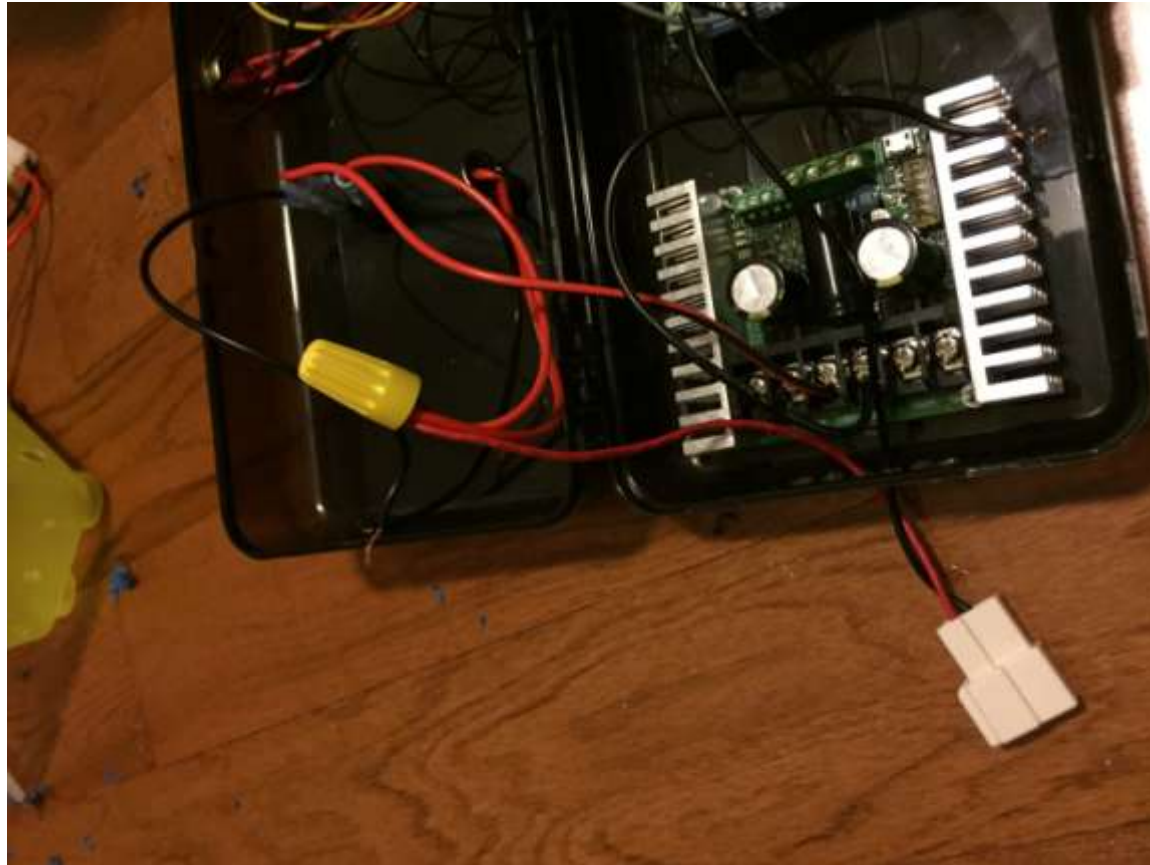
Now it is time to wire Take the black and red wires that you added the quick disconnects and place on the corresponding paddles of the switch



Now wire a plain black jumper wire (16-18 awg) and the last red wire to the sabertooth . The red goes to Batt + and the black goes to Batt -



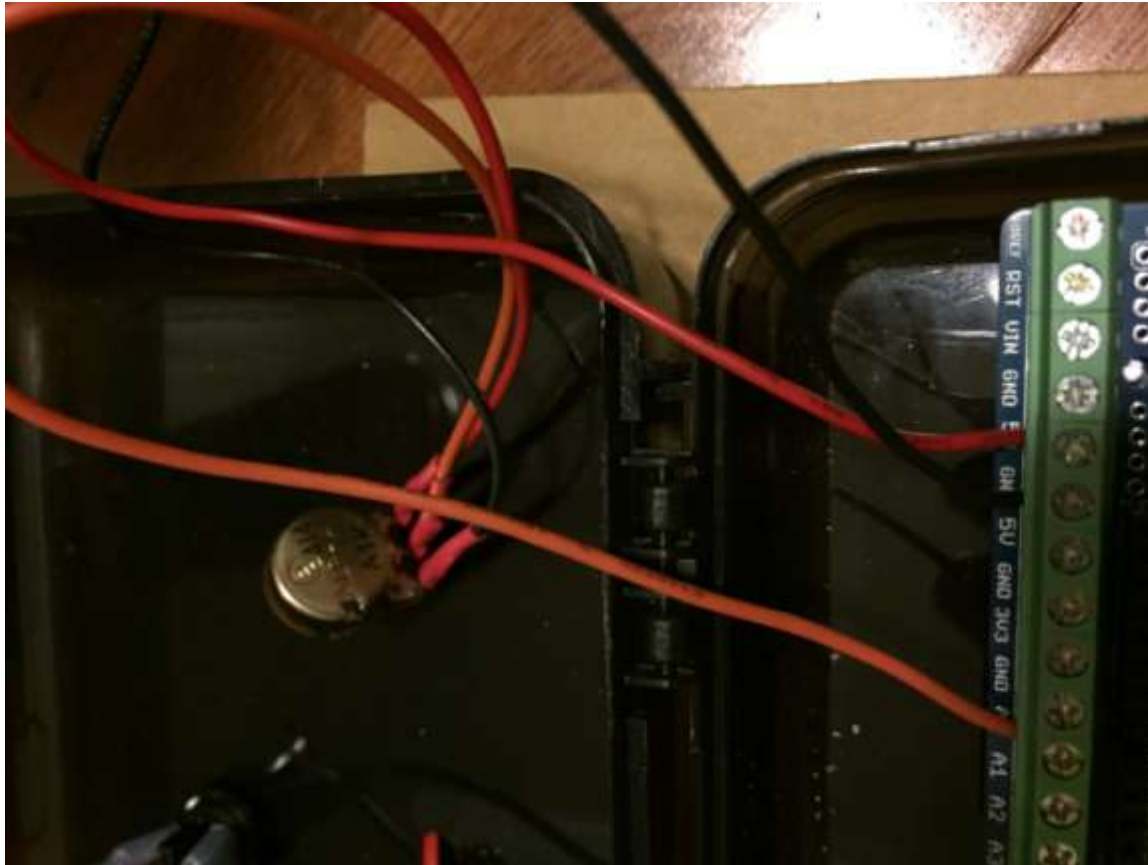
Plug the wire from Batt + of the sabertooth to the middle of the on/off switch.



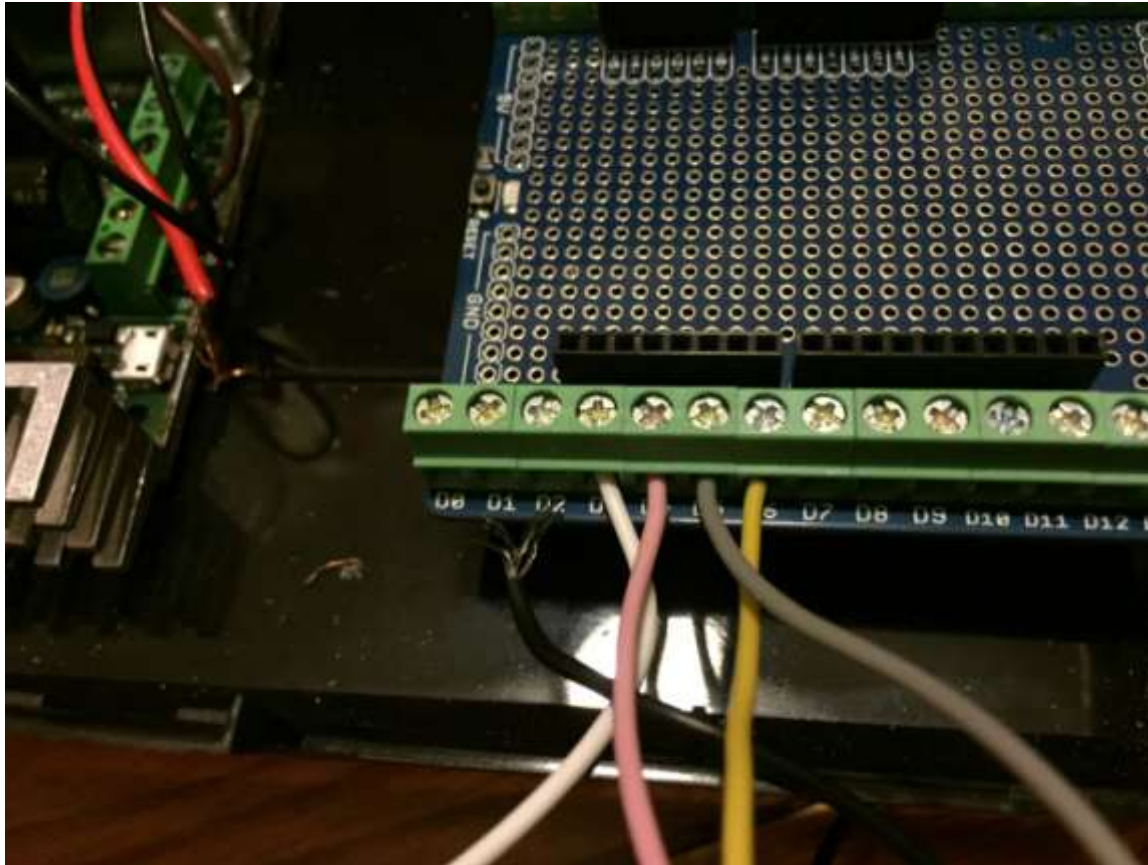
Now take the red wires going into the on/off switch (at bottom), the charging port, and the red wire that will come from the battery and wire nut together. Re-inforce with hot glue



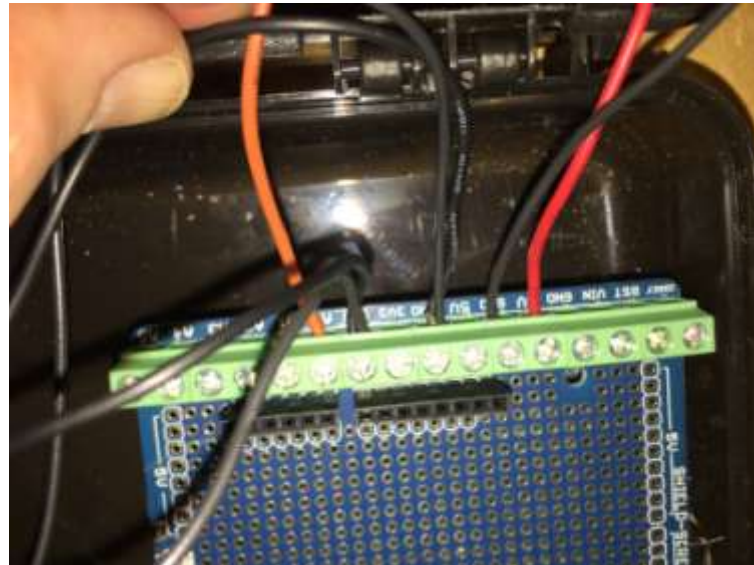
Take the extra black wire that you wired in to the sabertooth, and connect it with a wire nut to the black wires from the on/off switch, the charging cable, and the cable going to the battery



Take the (+) power wire from the potentiometer and attach to the 5V of the Arduino. Take the (-) wires and attach to a ground port. Finally, take the middle signal wire and attach one to A0. Mount the pot thru it's hole and add the nut to affix.



Now attach the signal wires from the jacks to the Arduino, pins 3,4,5,6.
(directions.....)



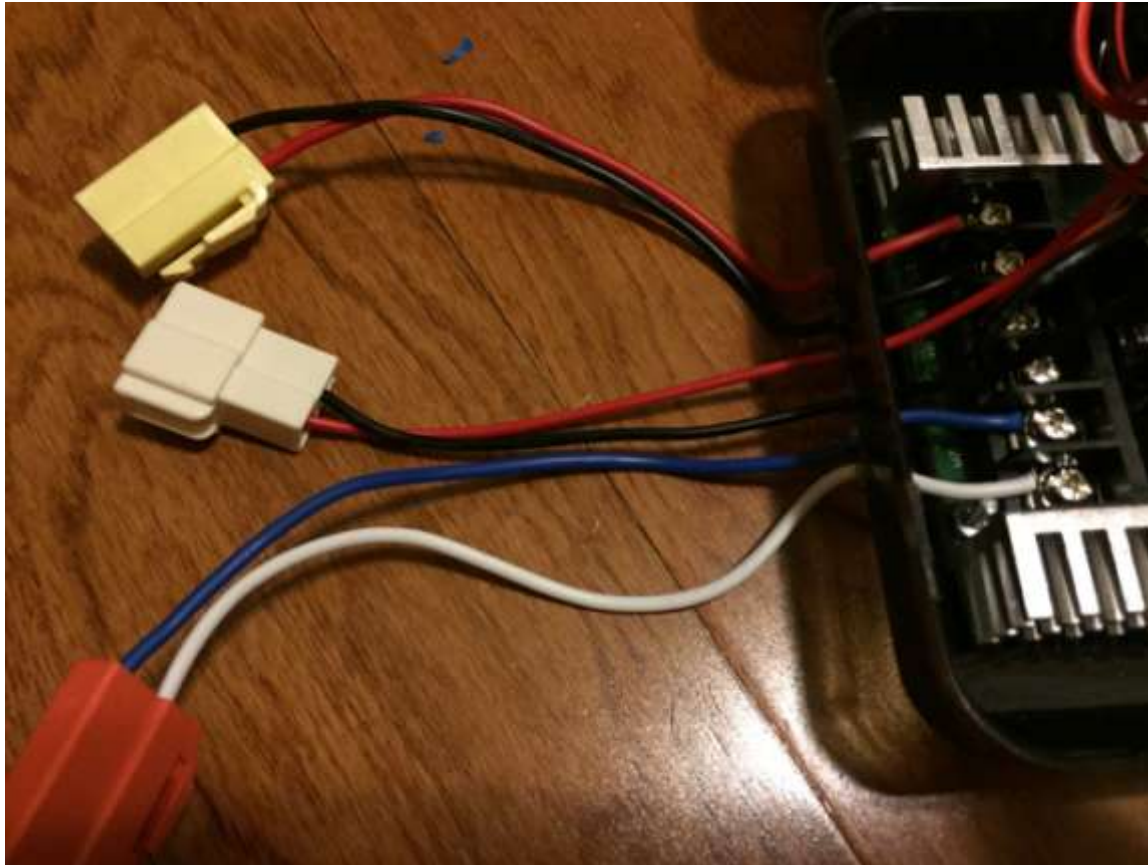
Take 2 of the ground wires from the jacks and attach to a GRN port. Take the other 2 of the ground wires and attach to a different GRN port.



Now mount the jacks to the sides and affix with the nuts.



Now take 3 18-20 AWG wires (approx. 12" long). Attach the first from the motor driver (0V) and attach to a ground port on the Arduino. Attach another between the motor driver (5V) and the VCC on the Arduino. Attach the last between the motor driver (S1) and the Arduino digital pin 11.



Attach to the sabertooth the 2 sets of wires that will go to the motors. I like to use the 2 blade connectors, and have them color coded to avoid errors. **On the Wild thing, you will use spade connectors instead.**