

-Build based on instructions in this video: <https://www.youtube.com/watch?v=d9TXtSUNM>

-I suggest we not have them assemble the ultrasonic section for our challenge. The kit is complex enough and it has no real benefit. It might be better left as an added bonus challenge for students that want to try assembling it.

-I used this wiring:

Motor Driver	Arduino
ENA	Digital pin 6
IN1	Digital pin 7
IN2	Digital pin 5
IN3	Digital pin 4
IN4	Digital pin 2
ENB	Digital pin 3
5V	2V (+5V)

From this PDF: <http://www.cs.columbia.edu/~sedwards/presentations/robot-car-instructions.pdf> for the motor controller so that I could use the code from this pdf. This code lets us control the speed of the motor, which could be used to compensate when/if the motors don't move exactly the same.

-We need to add 2 jumper wires to each kit for motor power. We need to connect the 2-port screw terminal on the Sensor Shield to the 3-port screw terminal on the motor driver. Polarities are labeled on Sensor Shield. Plug ground wire into the middle terminal and power wire into the outer terminal on the motor driver.

-I didn't use the power switch in my build because you're supposed to solder the switch to the battery and the kids can't do that. Instead you can just plug the barrel jack of the battery case into the battery jack port on the Arduino. Plugging that in will be the on/off switch I guess.

-Encoder's PWM cables can plug into the digital port terminals. Make sure the black wire aligns with G, the red wire aligns with V, and the white wire aligns with S.

-It's easiest to mount the encoder wheels to each motor before attaching each motor to the base plate.

-I ran the encoders down through the circular hole in the base plate, then zip-tied them to the motor wires to hold them near the magnetic plates. It's a little janky though, so hopefully

someone has a better idea on how to do it. Also if we do this, the students will have to use the zip ties from the base kit for this.