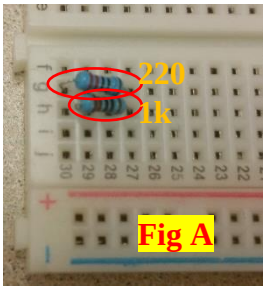
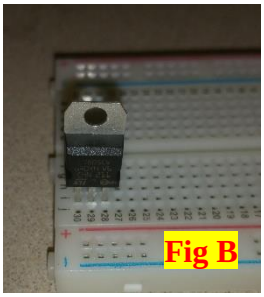
CSRbot

Assembly & Setup Guide

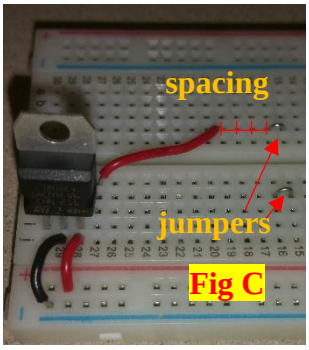
Place a 220 ohm and 1K ohm resistor on your breadboard as shown in figure A.



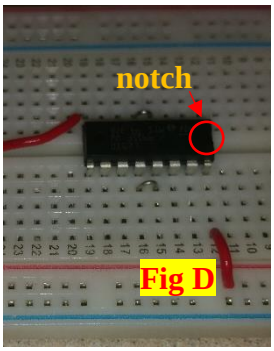
Place a 7805 5v regulator as shown in Figure B.



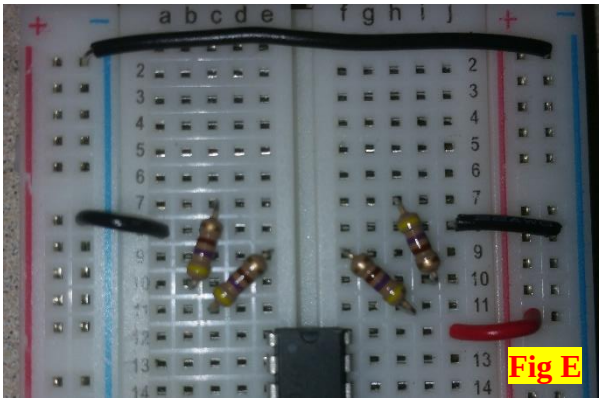
Place your wires according to Fig C. Notice the jumpers and spacing.



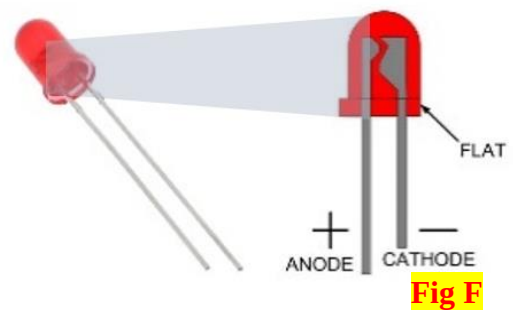
Place an L293 or equivelant driver as seen in fig D. Notice the notch orientation and additional wire.



Place a black wire across the edge of the board to connect the ground rails. Place 4x 470ohm or 330ohm or 220ohm (all should be the same) as shown, along with two black jumper wires connecting to ground. Refer to figure E.



Inspect figure F and notice the structure of a standard LED. You can see the negative lead, the lead connected to ground, has a larger surface area inside the LED, and the positive lead, the lead connected to 5v or signal, has a smaller surface area.



Place two green LEDs, one yellow, and one red as shown in figure G. The positive side of the green LEDs should be towards the front of the board, and the positive side of the yellow/red LEDs should be toward the motor driver, and the negative leads of the LEDs should be on the same connecting rail as the black jumper.

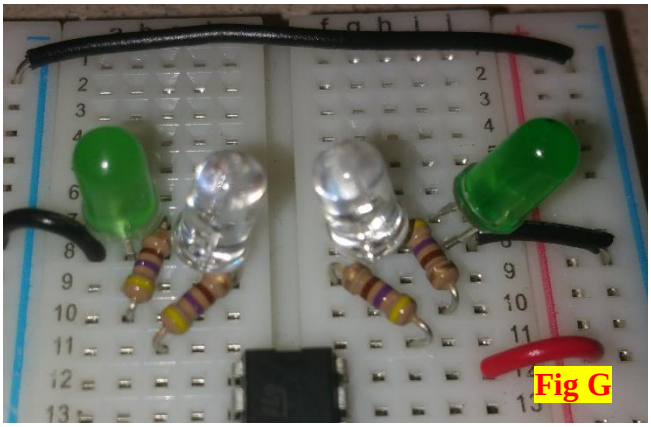


Fig G

Place a buzzer with the + terminal on one of the inside rails (here its #24) and the other terminal connected to the outside ground rail. Place a switch and a red jumper as shown. Notice the jumper connects to the far side of the switch. See figure H.

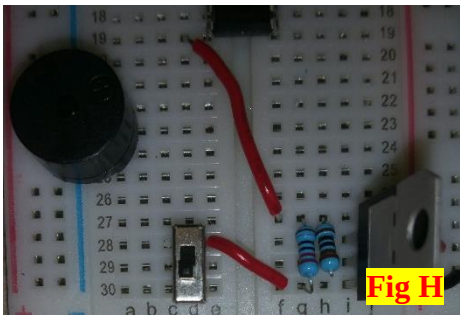


Fig H

Place 3 jumpers as seen in figure I.

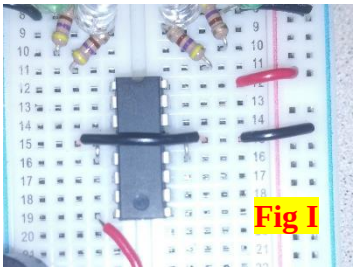


Fig I

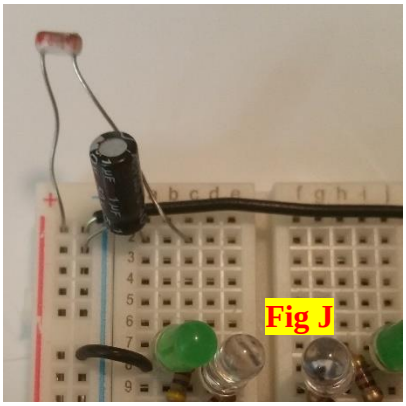


Fig J

Place a photo resistor on both sides of the board as seen in figures J and K. Then, place a capacitor with the white strip side lead connecting to the ground rail, and the opposite lead connecting to the same rail as the other photo resistor lead. Leave a space between the leads for our signal wire (we will install later).


Fig K

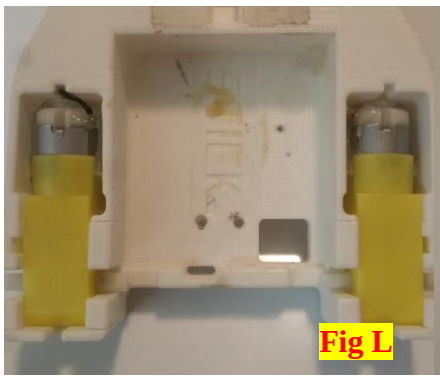


Fig L


Fig M

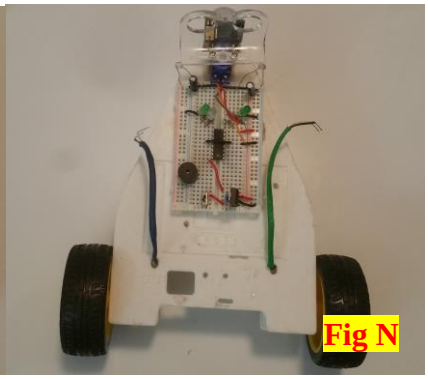


Fig N

Install the two motors as shown in figure L, and route the motor wires through the holes on the inside of the motor cavity and up to the top of the robot frame as shown in figure M. Install the wheels and breadboard as shown in figure N.

Connect the red and black servo wires to 5v and gnd and the yellow wire to an open rail as seen in figure O.

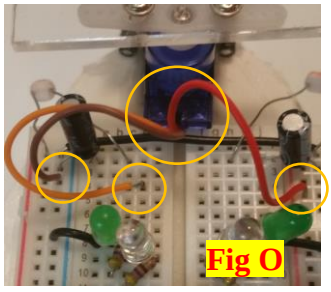


Fig O

Connect the motor wires to the l293 chip as seen in figure P. See the "output" pins in the picture below.

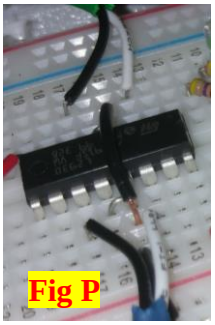


Fig P

Connect the 5v and ground wires of the PIR sensor to the power rails and the signal wire to an open rail as seen in figure Q.

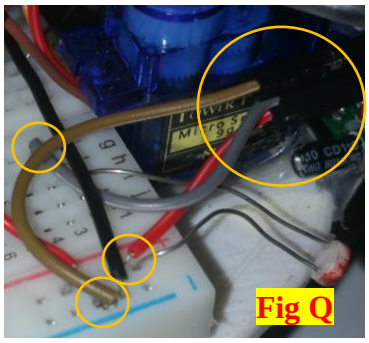
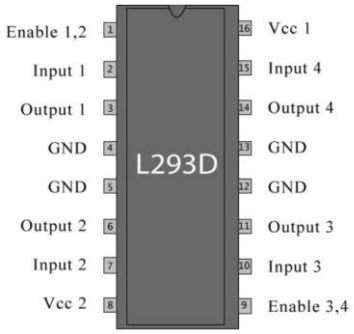


Fig Q



You will need the hardware script and the raspberry pi pinout diagram for the rest of the instructions. Connect the motor wires per the hardware script and the L293 pinout diagram as shown in figure R.

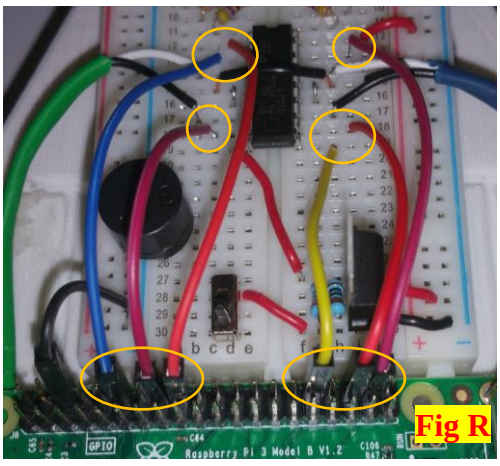


Fig R

Connect a ground wire and the buzzer wire as shown in figure S.

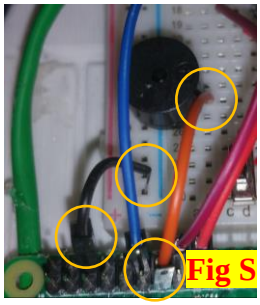


Fig S

Connect a wire to the PIR signal, green LED, and red LED as seen in figure T.

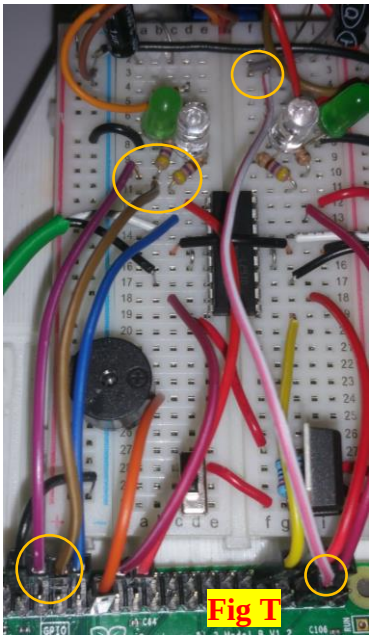


Fig T

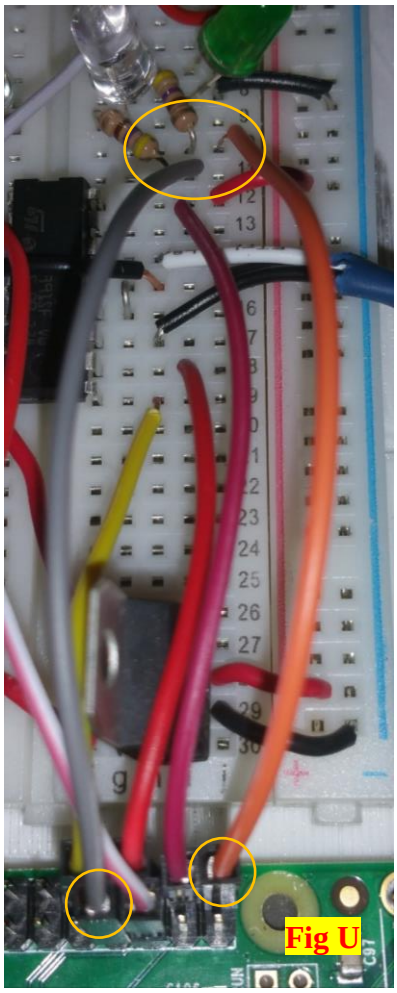


Fig U

Connect a wire to the other green LED, and yellow LED as shown in figure U. Pay attention to which resistor they connect with.

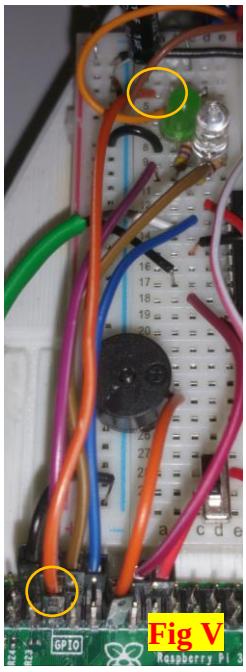


Fig V

Connect a wire to the servo signal rail as seen in figure V.

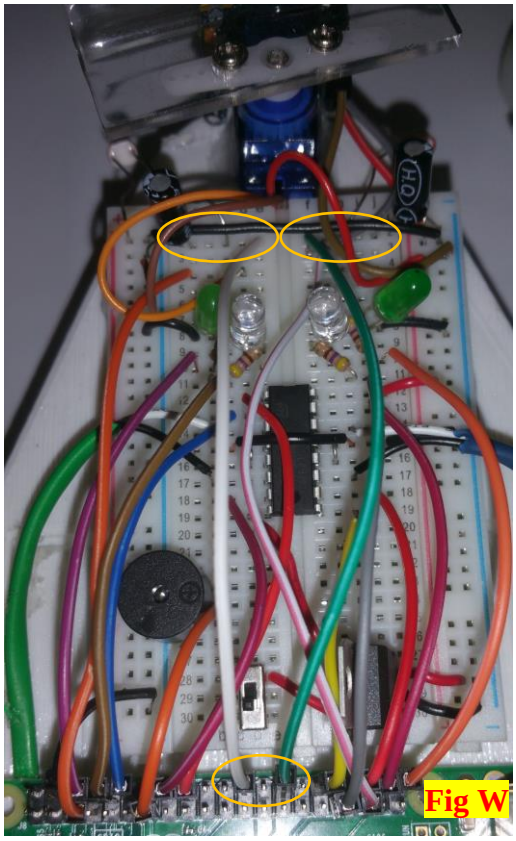
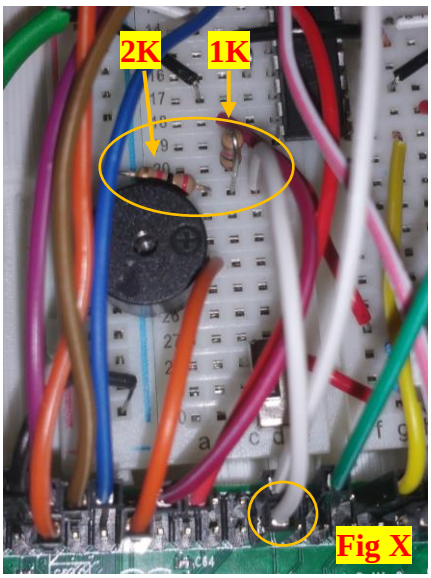
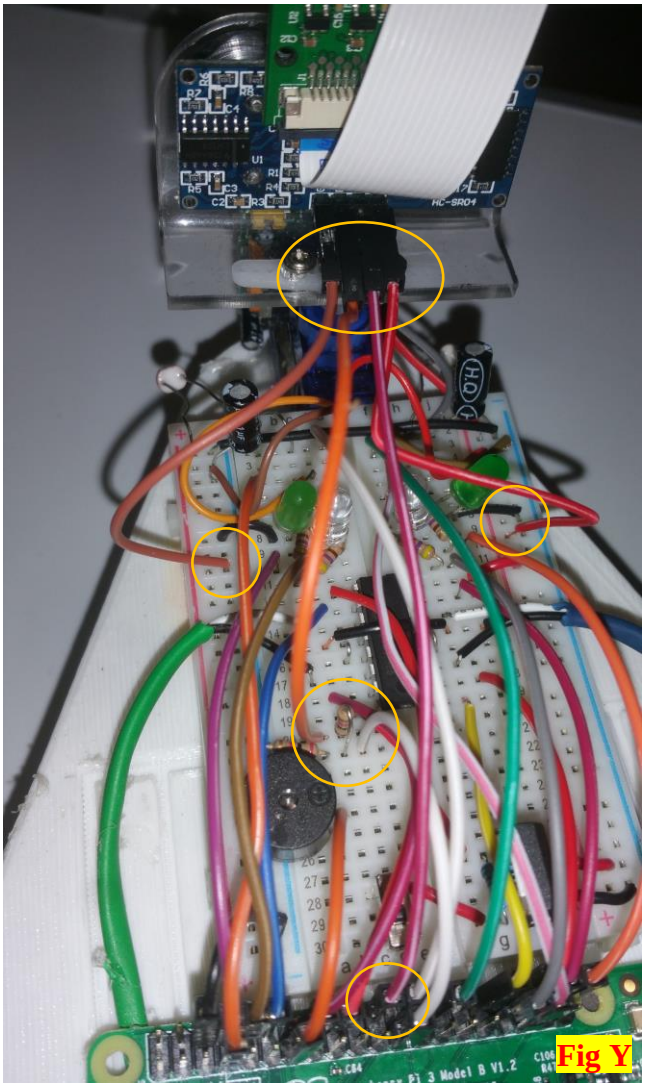


Fig W

Connect a wire to the photo-resistor rails as shown in figure W. Also, take this time to inspect the figure and ensure your connections are correct.

Connect a 2K ohm resistor from the ground rail to the breadboard. A 1K ohm resistor to the same rail, and the rail above it. Then connect a wire from the shared rail to the raspberry pi as seen in figure X.





Install the sonic range sensor and camera and connect the 5v, gnd, trig, and echo pins as seen in figure Y. Note the echo pin connects to the 1K resistor of the non-shared rail. Connect the camera cable as seen in figure Z.

Congratulations! You have assembled your robot! Now its time to setup your raspberry pi.