

## How to build the MIYBot circuit board.

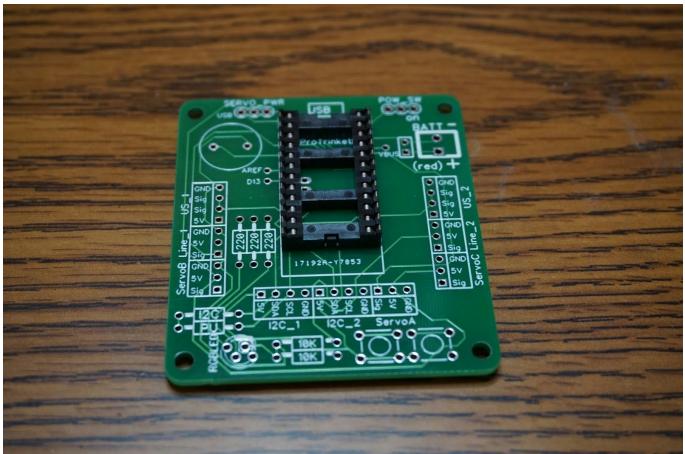
Building the MIYbot circuit board is easy. The board has been designed so that novice solderers can build the board without too much trouble. Use a good soldering iron, keep your tip clean and ask questions if you have trouble. Soldering is a simple task, but does take skill and will improve over time. Try to find someone who has experience soldering to show you how to solder correctly. Or you can just watch a bunch of soldering videos on youtube.com. Enjoy the experience, it is fun!

A fantastic soldering tutorial can be found on-line here:

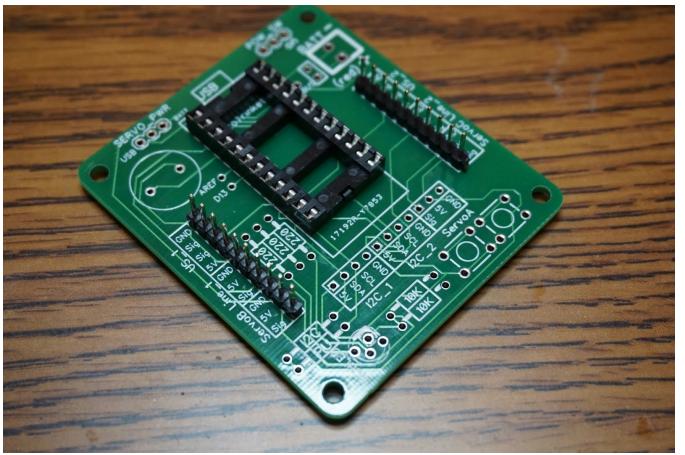
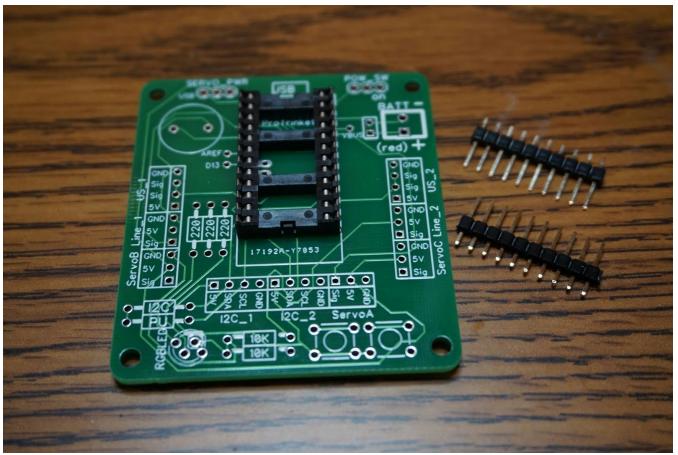
<https://learn.sparkfun.com/tutorials/how-to-solder---through-hole-soldering> and

<https://www.youtube.com/watch?v=Qps9woUGkvI>

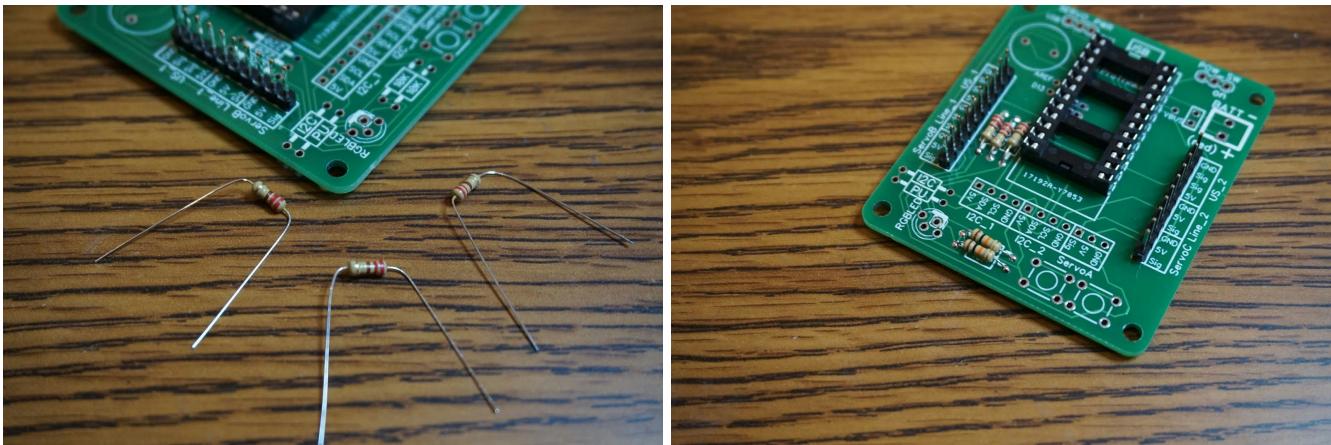
Step 1. Solder the 24 pin socket. Sockets have a key notch. Have this notch point toward the outside of the board if possible.



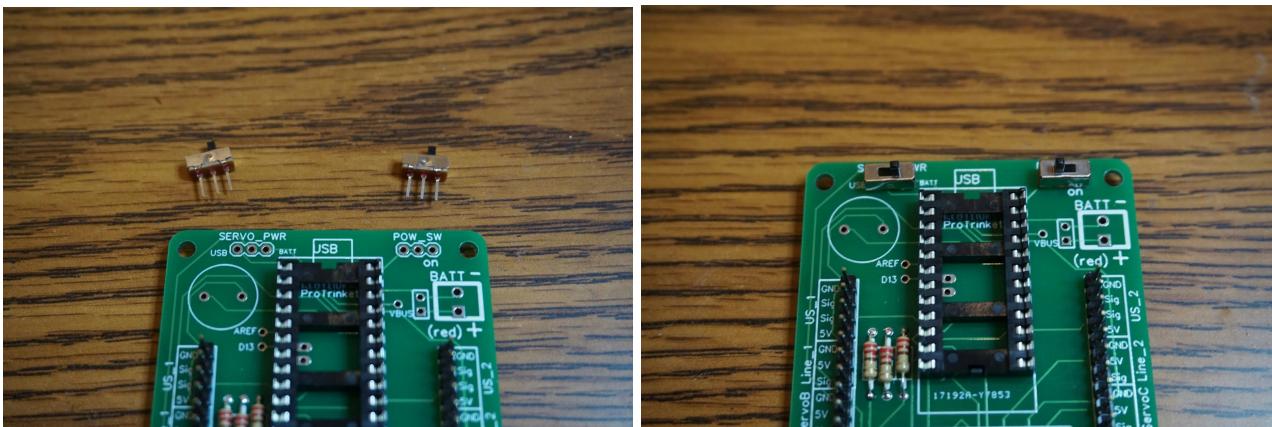
Step 2. Solder the two 10 pin male headers. Put the small end in the top of the board and solder on the back. The third 11 pin male header is optional and will not be soldered at this time.



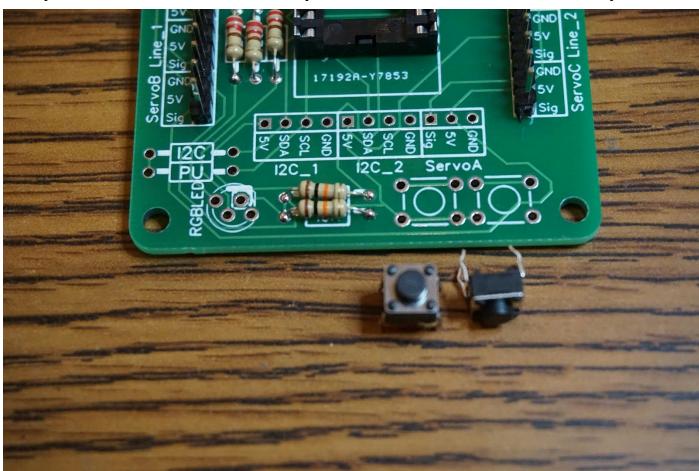
Step 3. Solder the three 220 Ohm resistors as shown. 220 Ohm resistors are marked Red-Red-Brown. Also solder the two 10K Ohm (Brown-Black-Orange) resistors in place. Do not worry about the I2C PU resistors. They are an advanced optional component. Trim off the bottom leads after soldered in place.



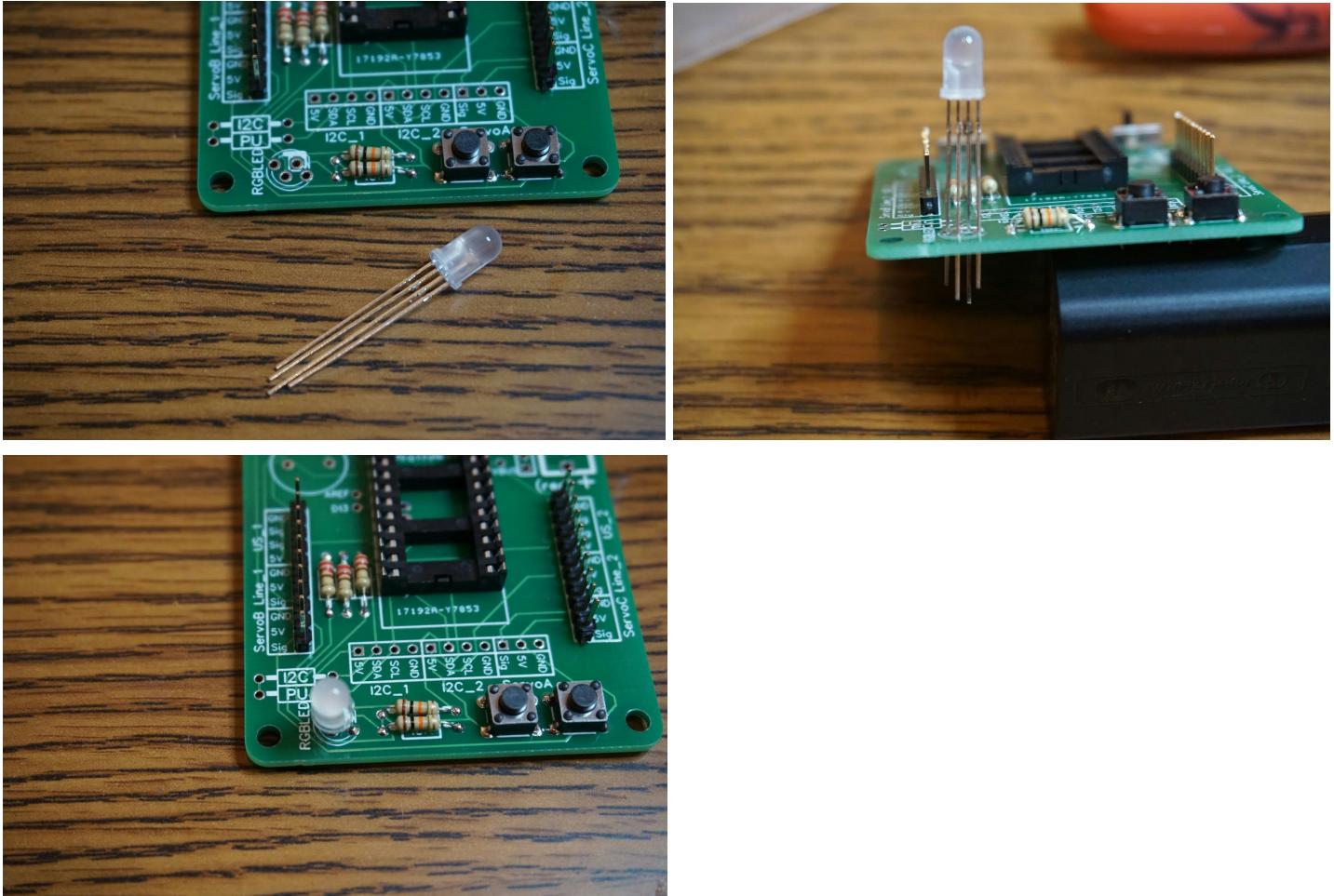
Step 4. Solder the two slide switches in place. Cut any extra length of the leads on the bottom. You might want to solder one lead in and then adjust the slide switch so that it fits flush against the board by reheating the joint and moving the switch with your finger so it fits against the board.



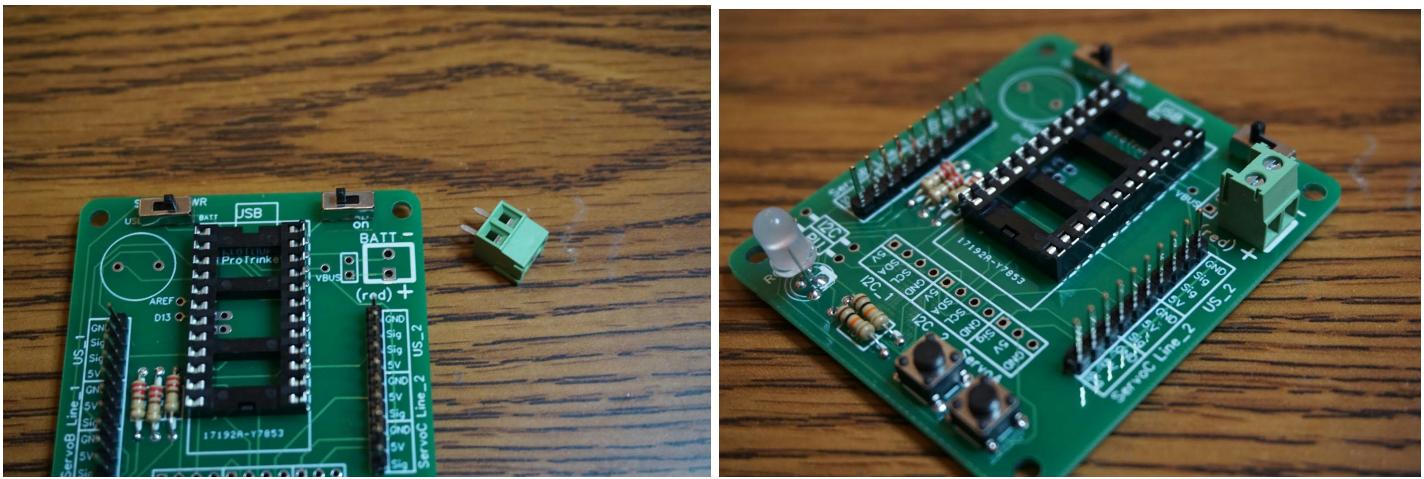
Step 5. Solder the two pushbutton switches in place. They should snap in.



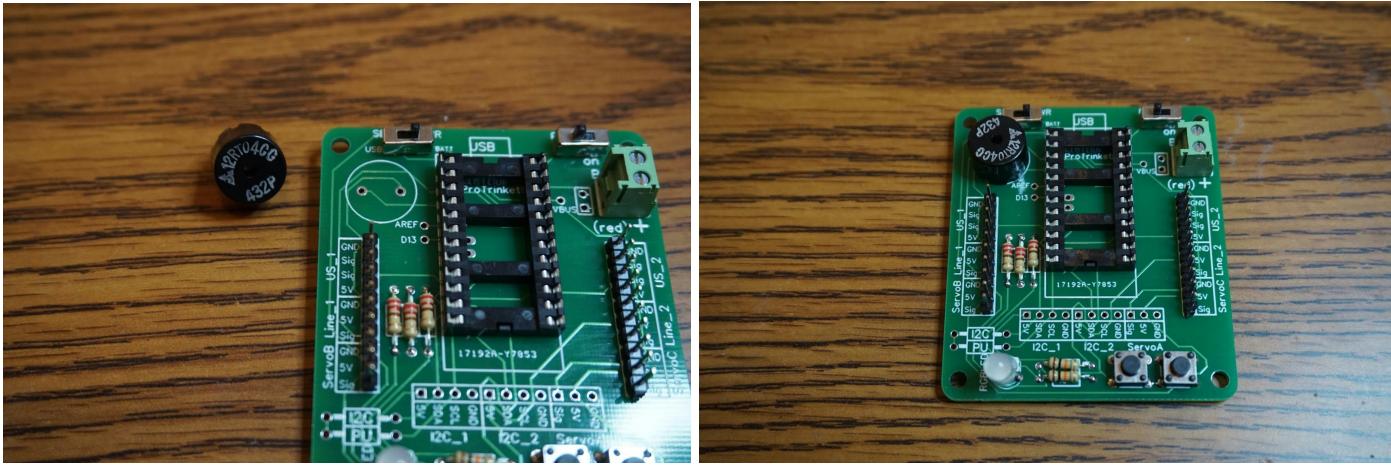
Step 6. Solder the RGB LED in Place. The RGB LED is common cathode. The longest end should go through the third hole on the board. Look carefully at the diagram. The LED will not fit flush against the board. Solder and clip the leads.



Step 7. Solder the battery pack screw terminal. Make sure the battery will install toward the outside of the board by making sure the metal on the screw terminal points toward the outside.



Step 8. Solder the Piezo buzzer to the board. The longer lead (+) of the buzzer is the hole closest to the outside of the board and is marked with a + sign.

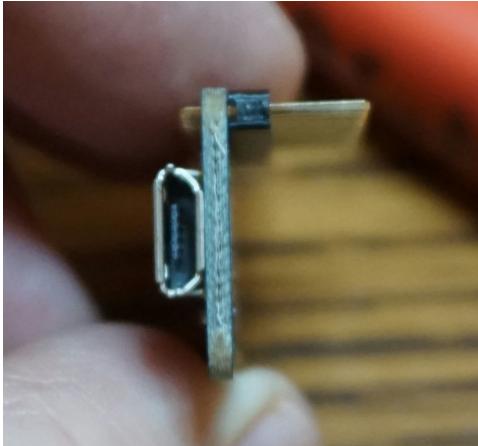
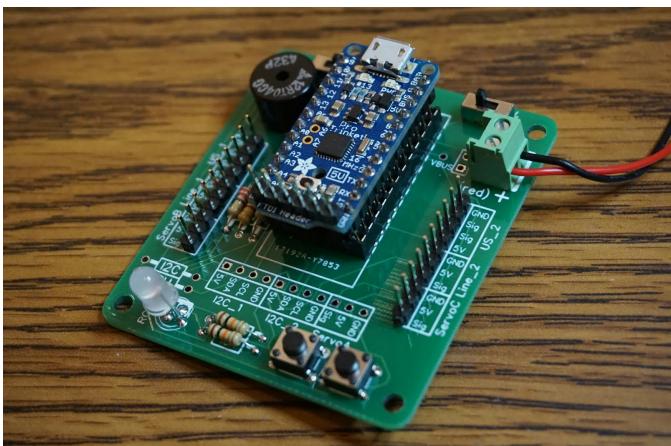
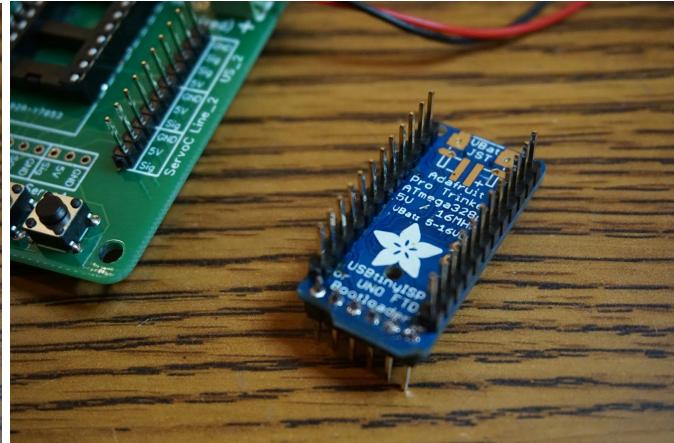
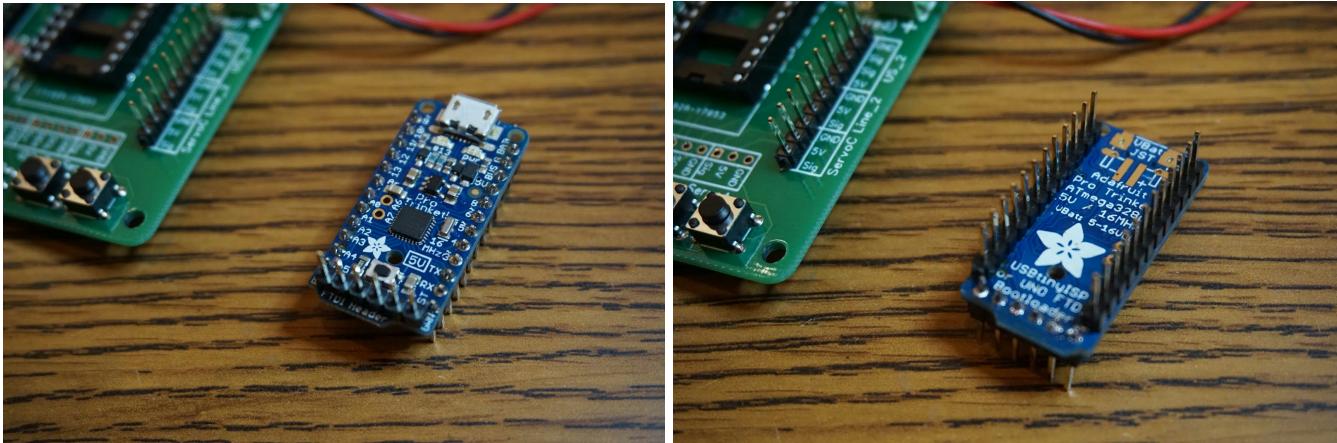


Step 9. Congratulations, the board is done. The remaining holes on the board are optional I2C headers and a header for another servo.

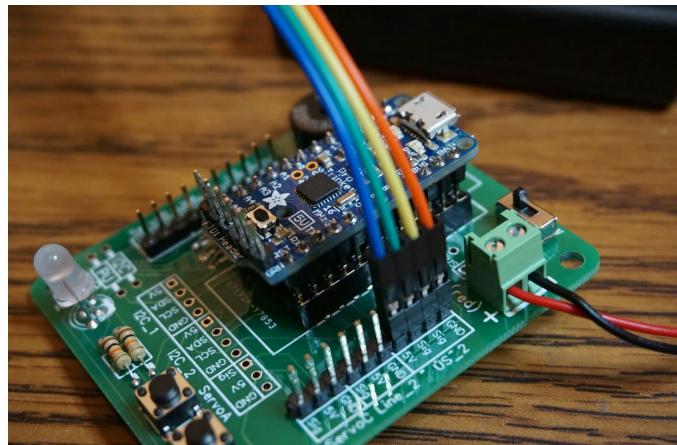
Step 10. Connect the 4 AA battery pack. Pay careful attention to connecting the RED wire to the + terminal of the battery screw terminal.



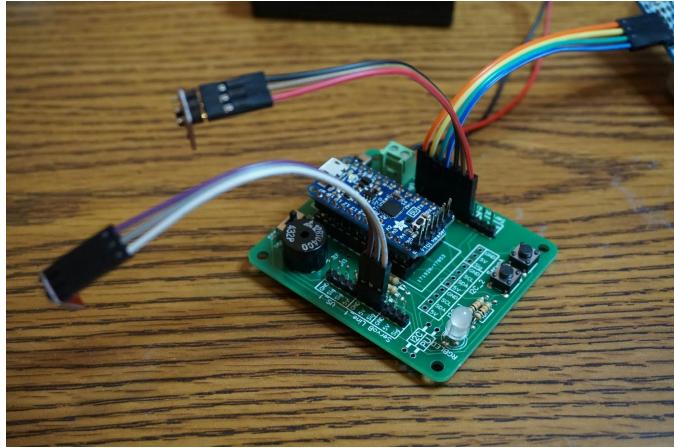
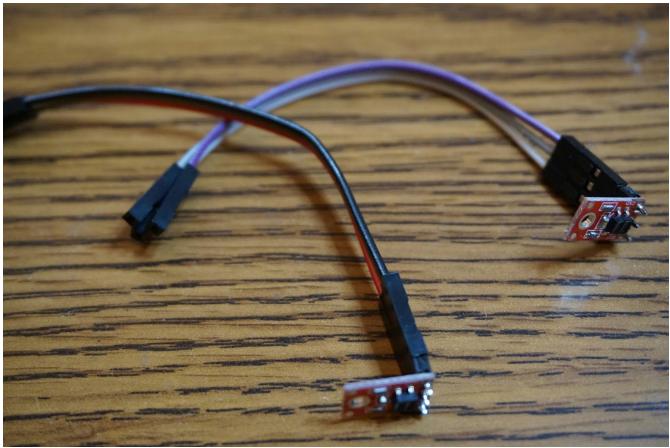
Step 11. Solder the headers onto the Pro Trinket. The header pins will need to be completely vertical to fit correctly in the socket. Solder one pin on the header and then reheat the joint and adjust the headers to be vertical. Because this is critical, it is wise to have the header set by someone experienced in soldering. Solder the serial port headers on the end if you need those for debugging your software.



Step 12. The Ultrasonic sensors are connected to the board using dupont Female-Female cables. You can pull the cables apart as needed. Pay close attention to which wires go to which pins. e.g. The GND pins go to GND, the Trig and Echo pins go to Sig and the 5V goes to VCC.



Step 13. Similarly, the line sensors are connected to the board with GND matching GND, Out matching Sig and 5V matching the inner connector on the line sensor that is not marked. 3 pin headers come with the sensors and will have to be soldered on.



Step 14. Attach the Servos. The servo wires attach to the ServoB and ServoC header pins. Typically the yellow wire is the Sig pin and the Brown is the GND wire. If you put them in backwards, the servo will not work. Simply reverse the pins and it should then work. Sorry no pictures.

Step 15. Mount it to your robot body! Have Fun! Be creative and solve problems.