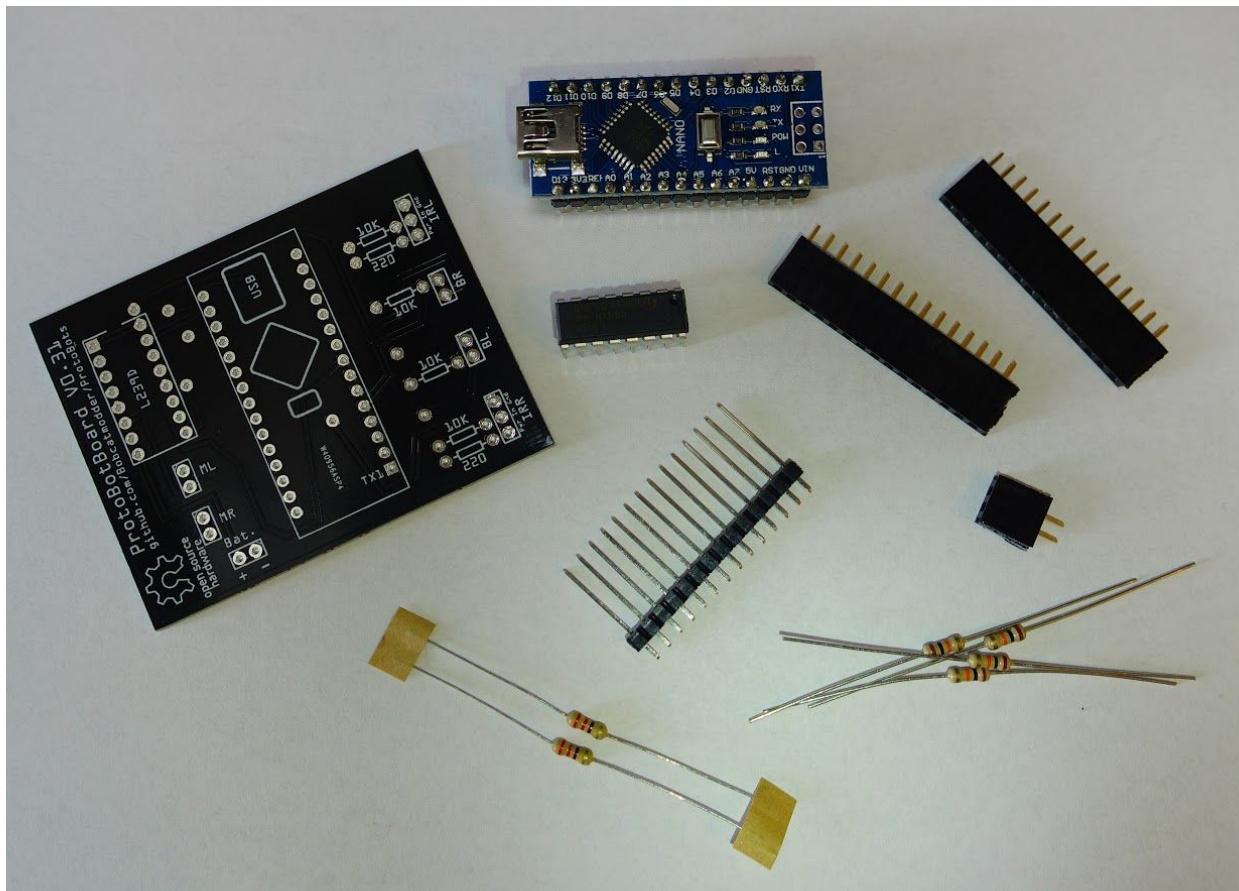


ProtoBotBoard Soldering Guide



You will need:

Parts:

- ProtoBot circuit board
- Assembled Arduino Uno
- 1 x Motor Driver chip (L293D)
- 2 x 220 Ohm resistors
- 4 x 10K Ohm resistors
- 14-pin length of header pins
- 2 x 15-pin length of female header pins
- 1 x 2-pin length of female header pins

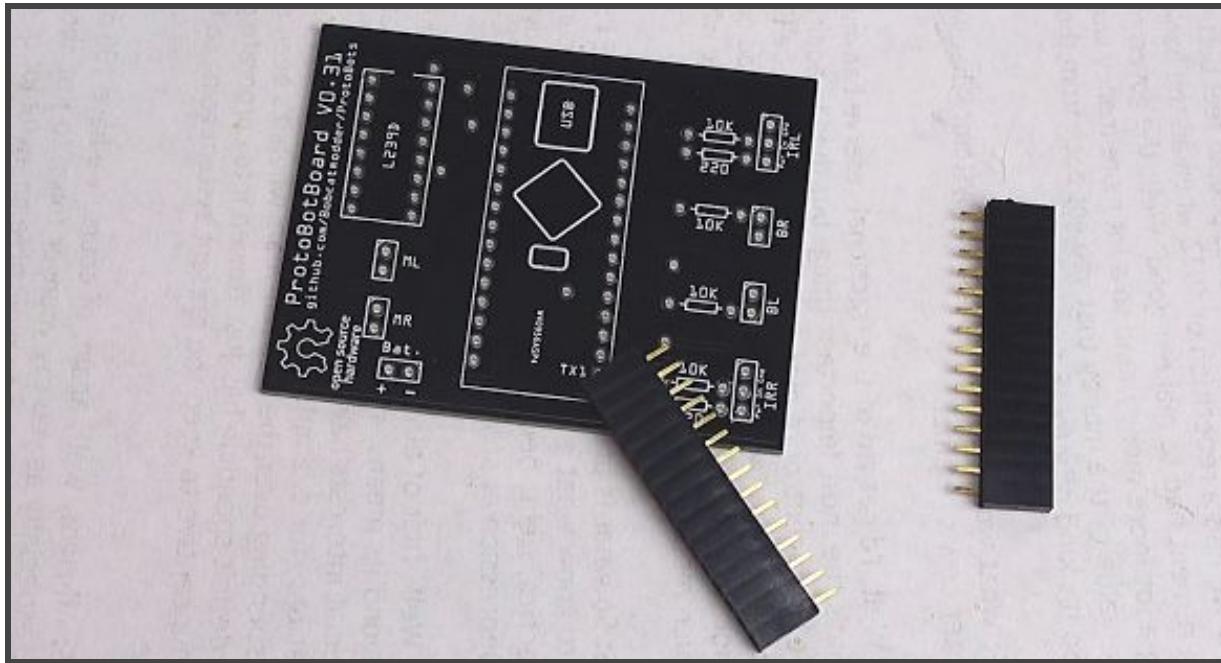
Tools:

- Soldering iron with Fine tip
- Masking tape, or Helping Hands
- Wire clippers (*not* wire strippers/cutters)
- Pliers

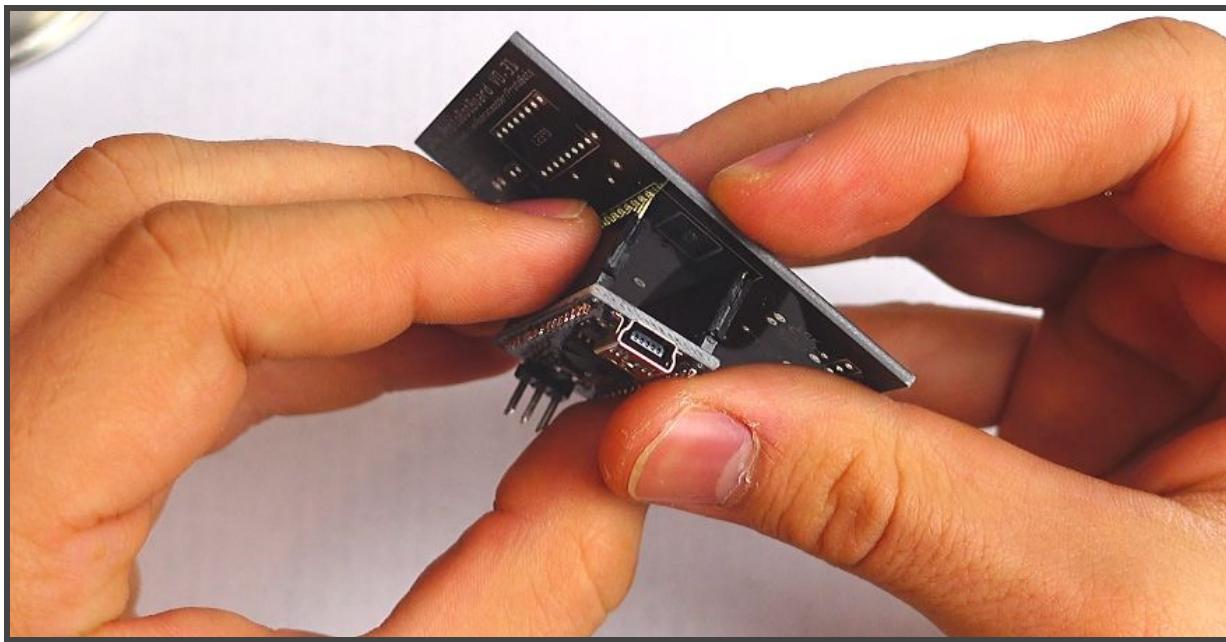


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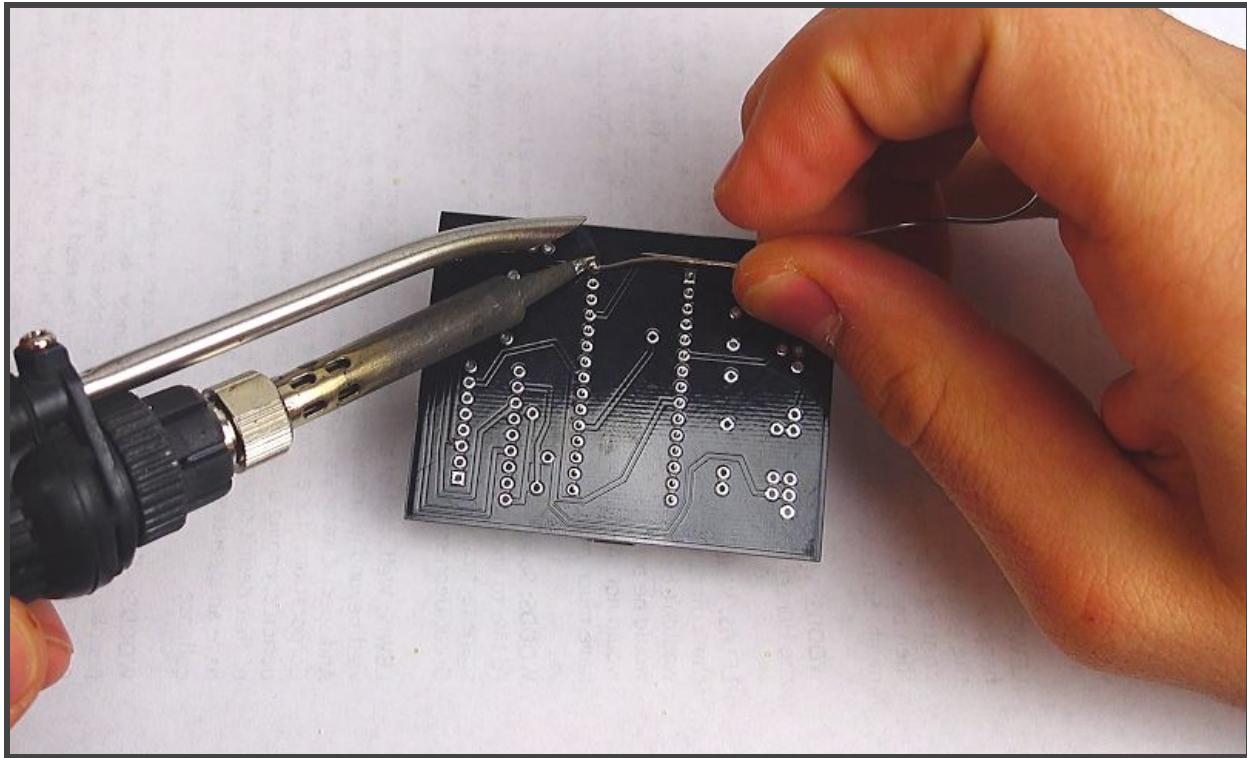
Step 1: Solder female Header pins



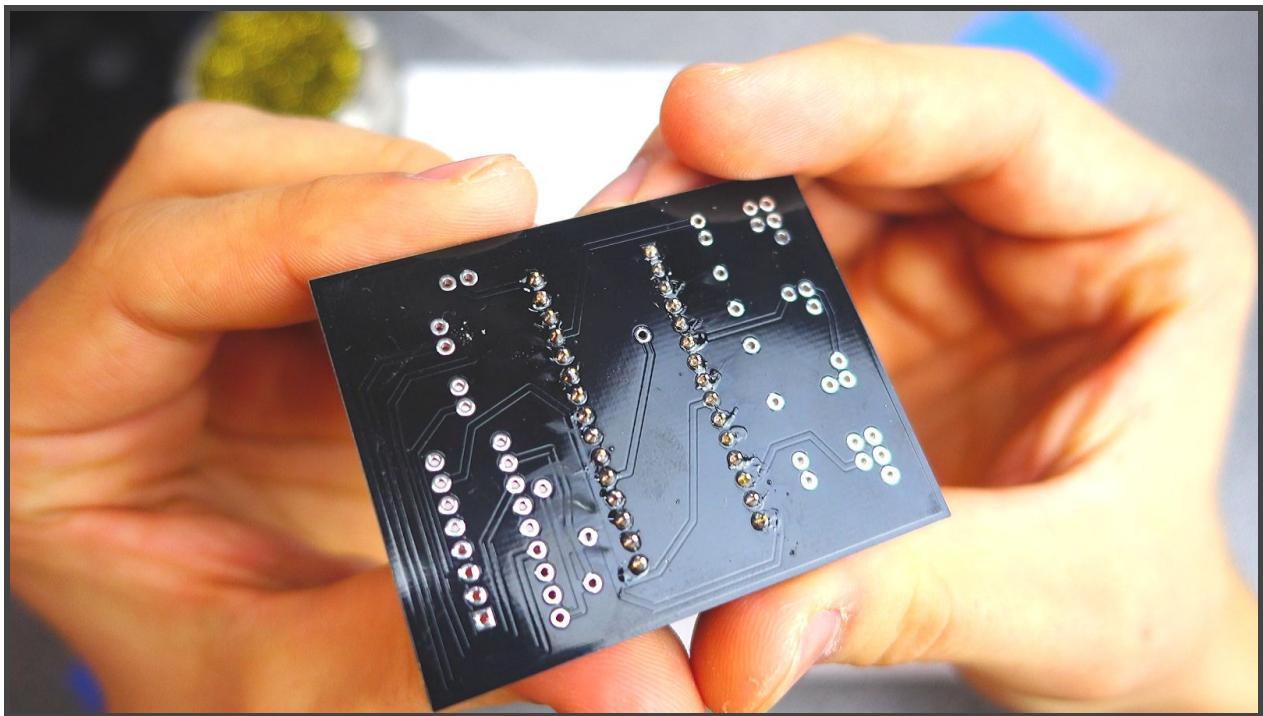
- Get your board, and your female header pins.



- Insert the arduino into the female header pins, then insert them into the board.

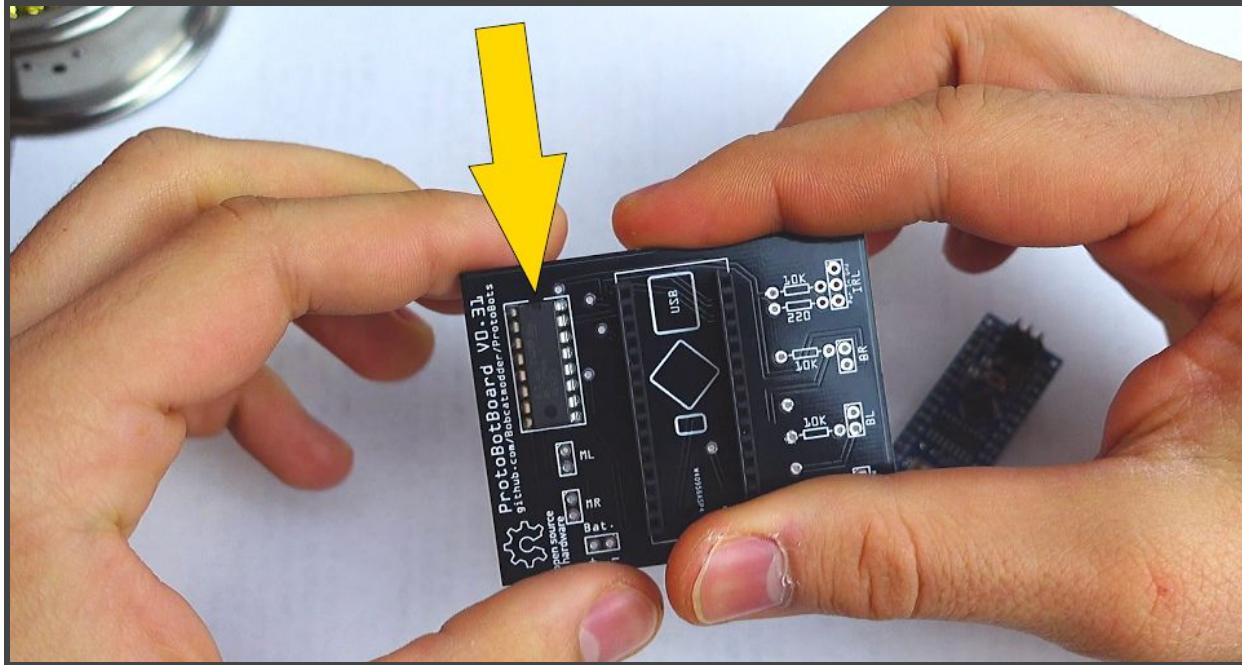


- Starting with the pins in the corner, solder each pin to the board.

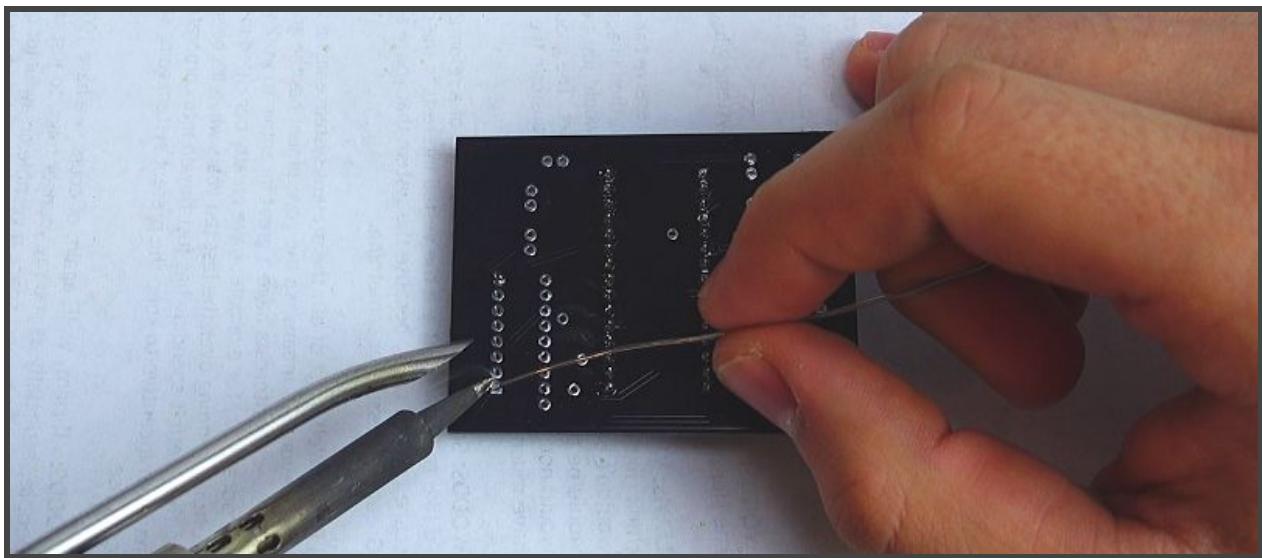


- When you're finished, it should look like this.

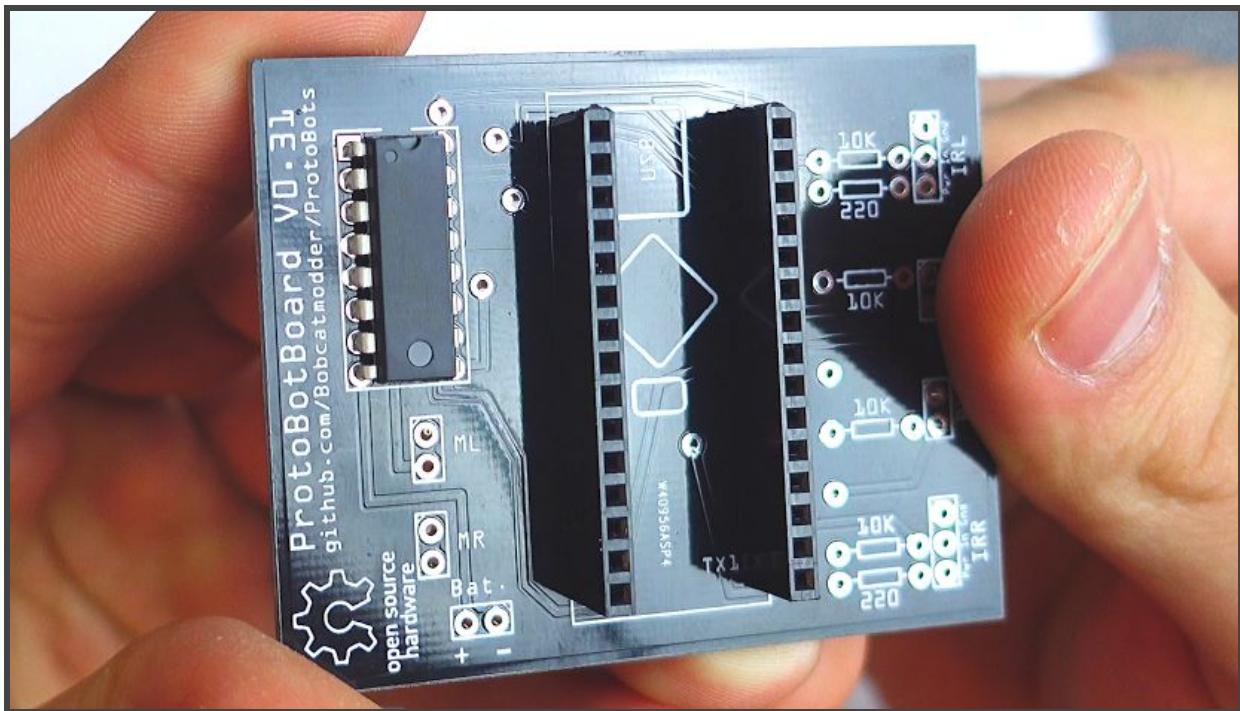
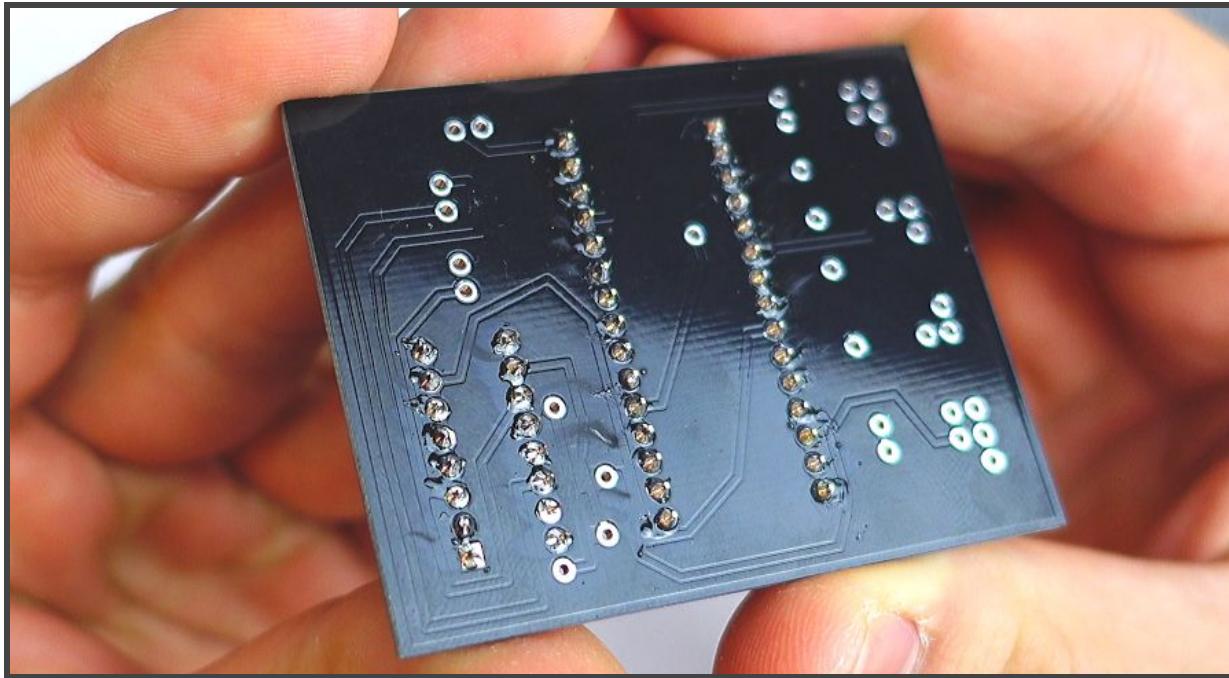
Step 2: Solder Motor Driver chip



- Take your motor driver chip, and insert it into the board as shown, with the notch at the top lined up with the gap in the outline on the board.

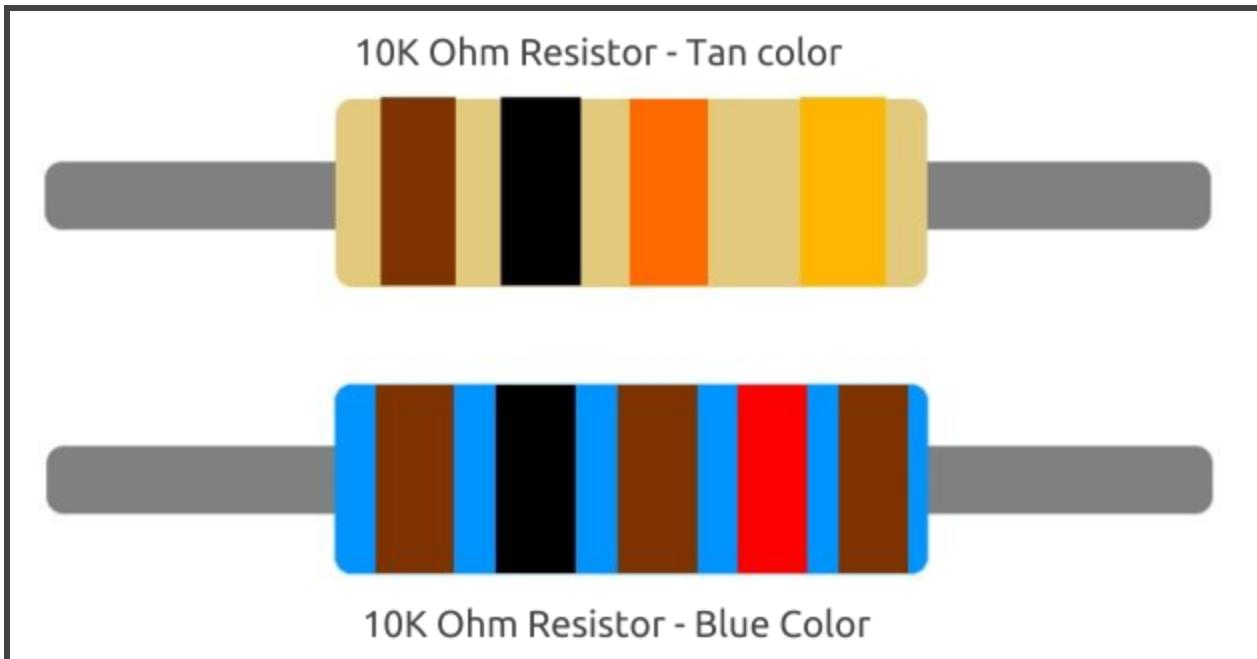


- Starting at the corners, solder the chip into the board.

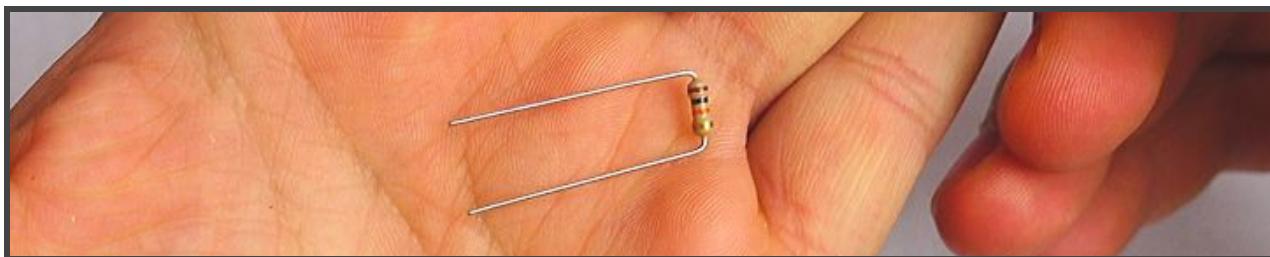


- When you're done, it should look like this.

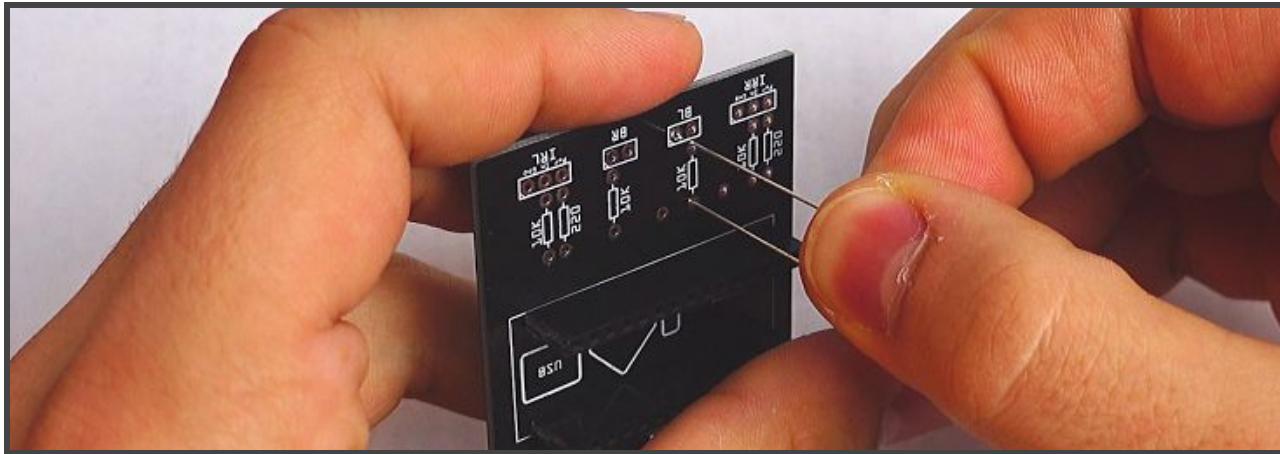
Step 3: Solder 10K resistors



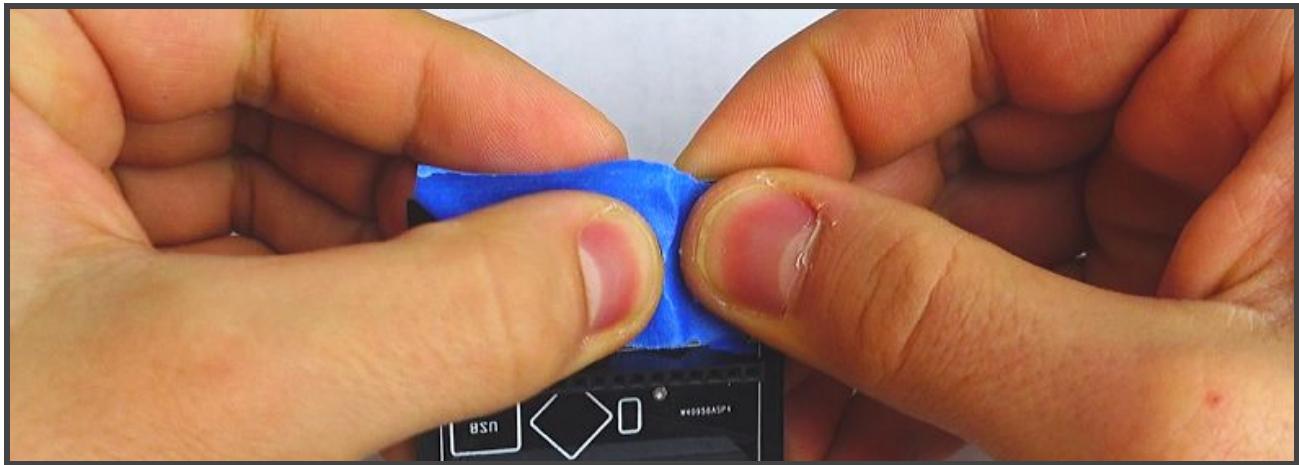
- Find four 10K resistors.
- Your 10K resistors can be either blue or tan. Make sure the color bands match the color bands in the picture for whichever color you have.



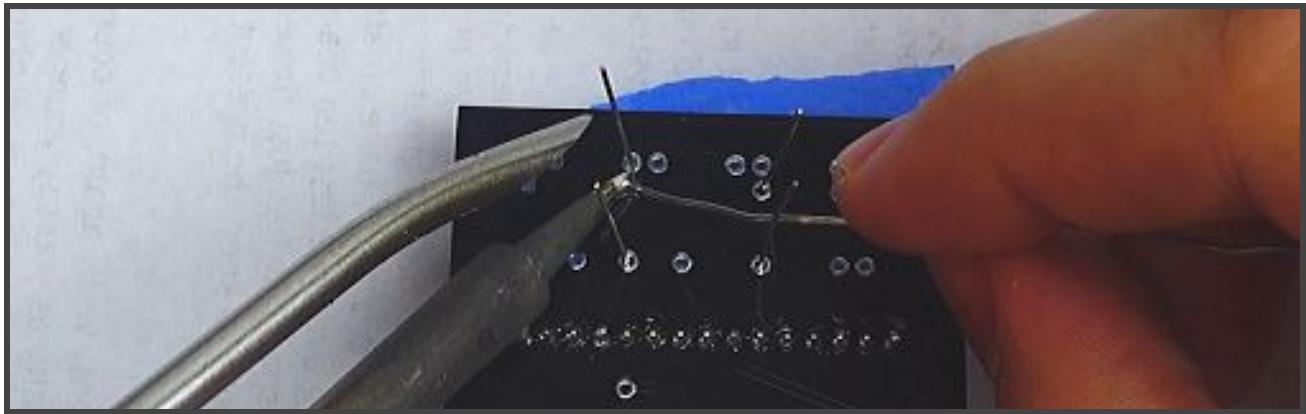
- Bend the leads of each resistor at a 90 degree angle, as shown.



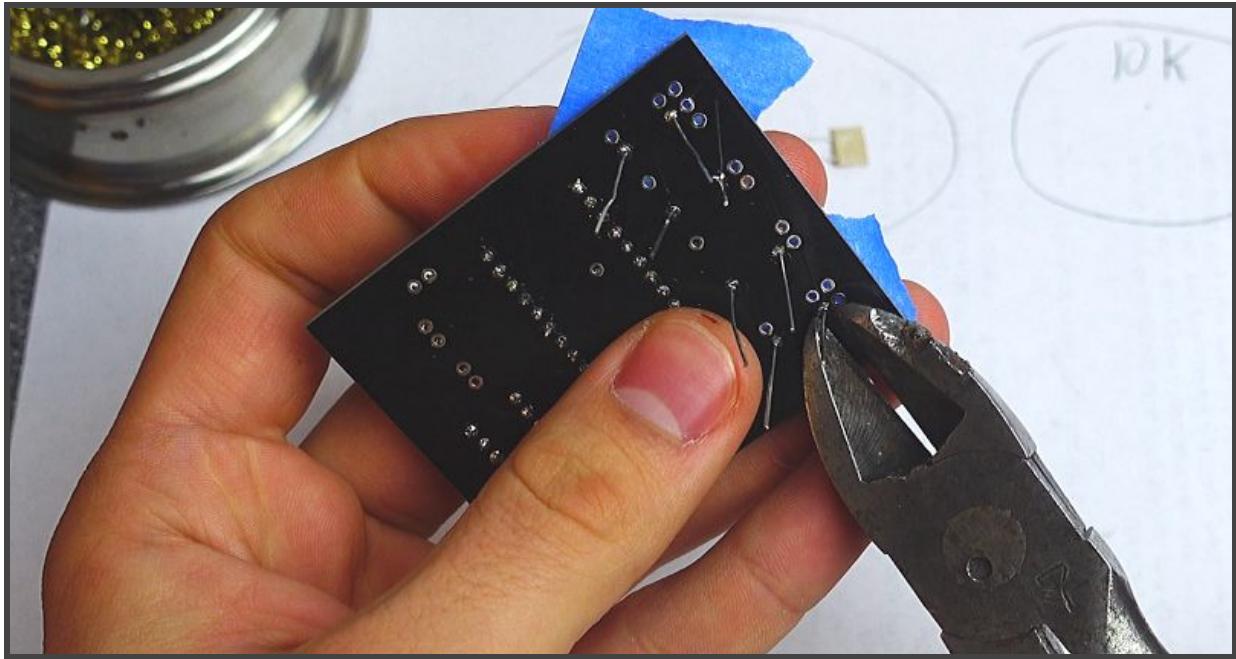
- Insert each 10K resistors into the spots on the board marked "10K".



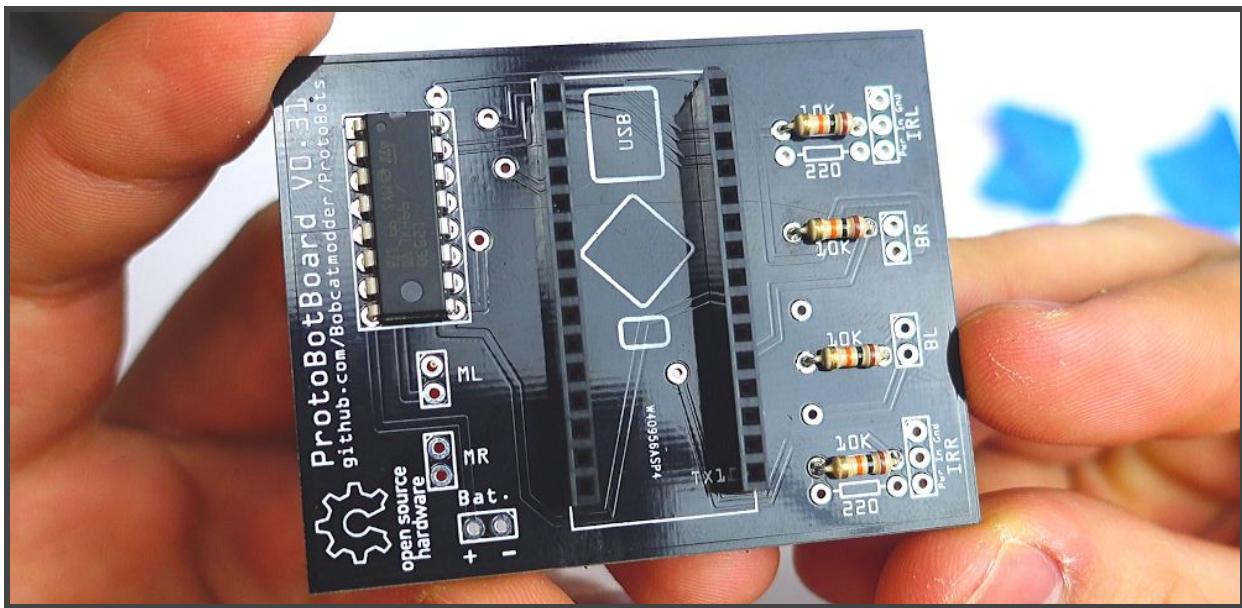
- Use some masking tape to hold down the resistors while you're soldering them.



- Solder the leads of each resistor to the board

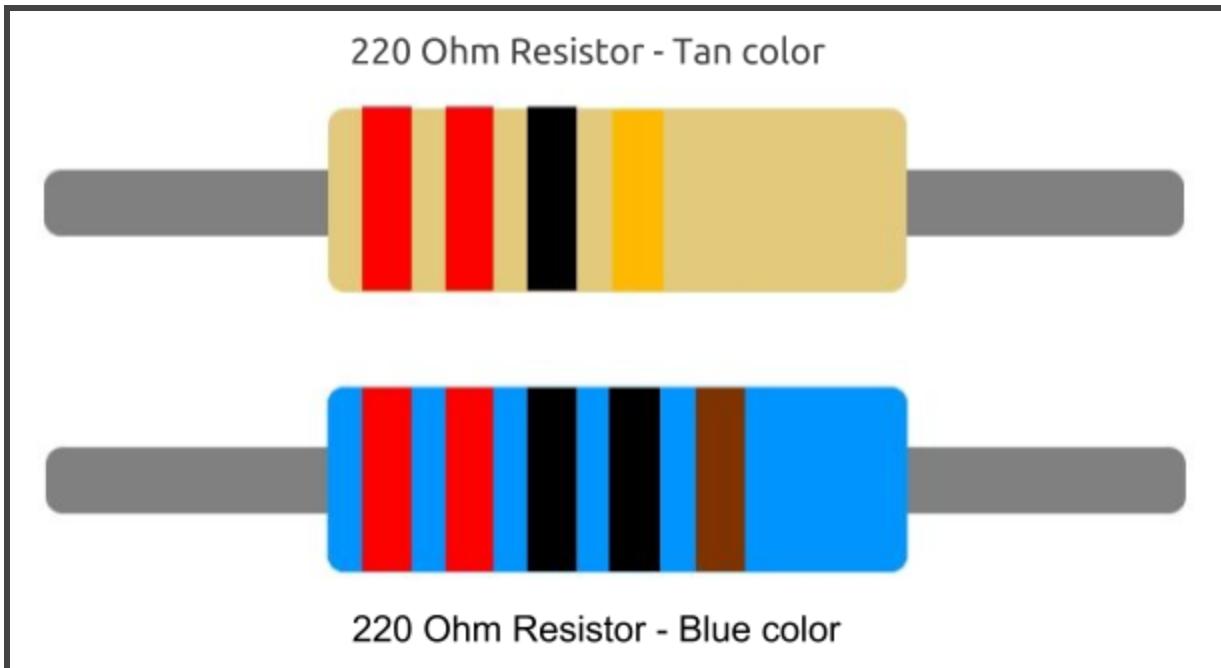


- Use your wire clippers to cut off the extra leads.

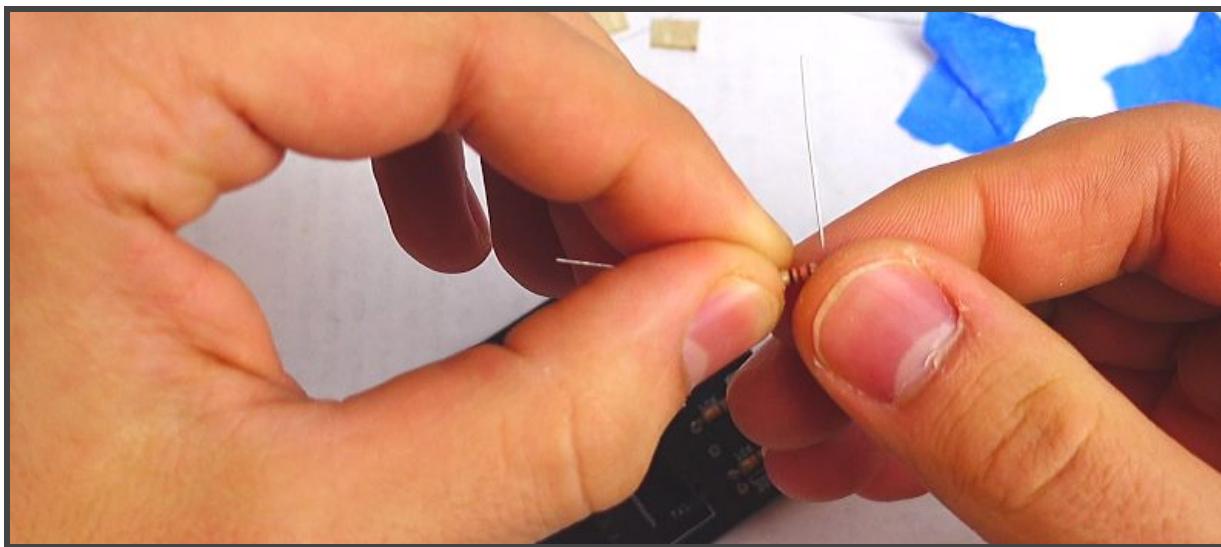


- When you're done, it should look like this.

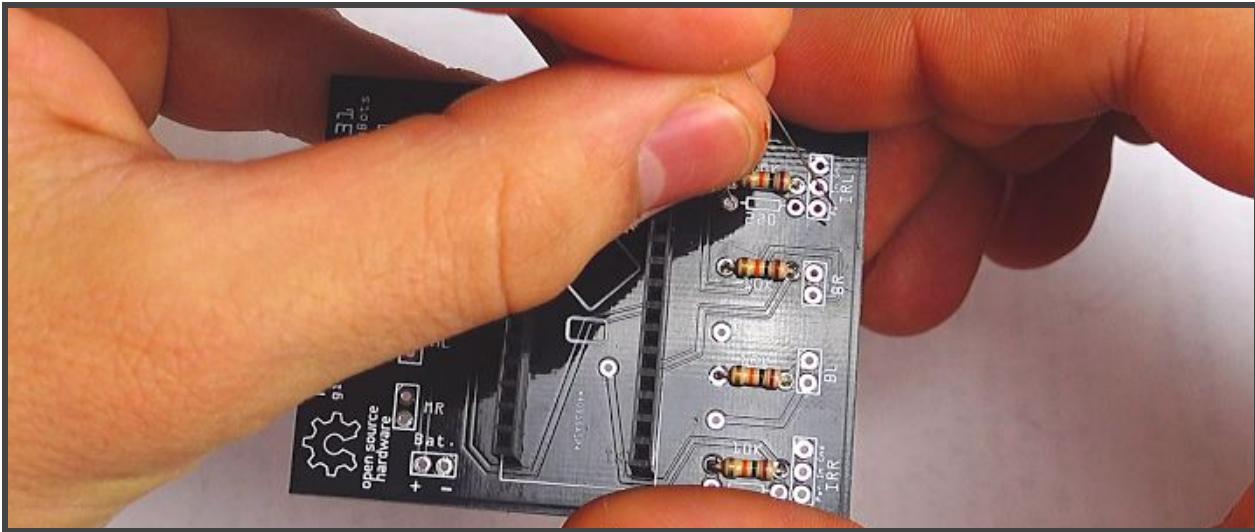
Step 4: Solder 220 Ohm resistors



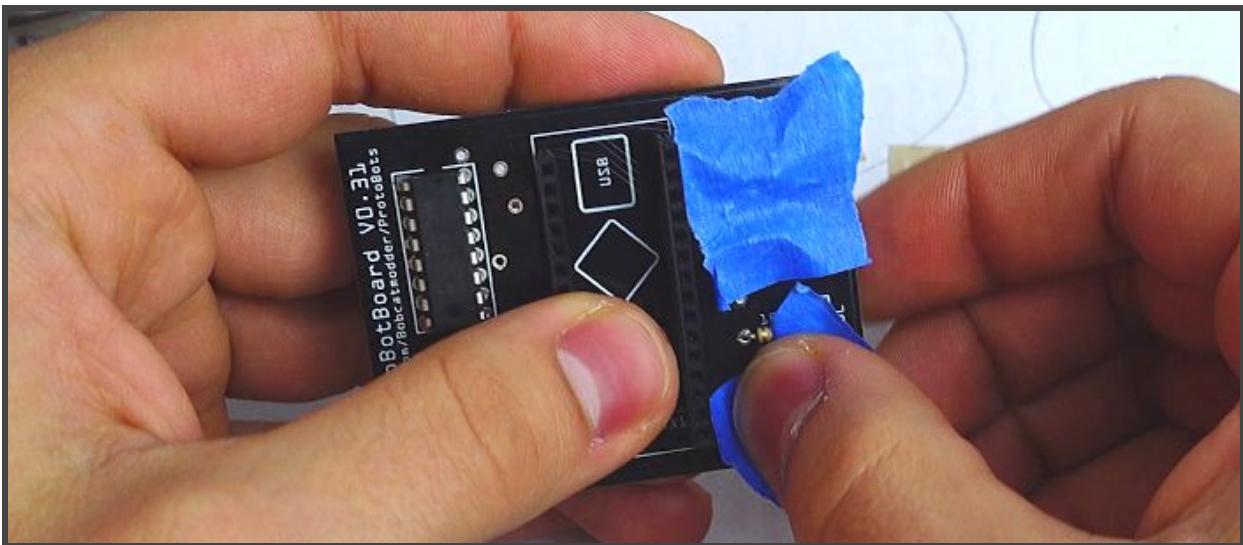
- Find two 220 ohm resistors.
- Yours might be blue or tan, but make sure the color bands match whichever color you have.



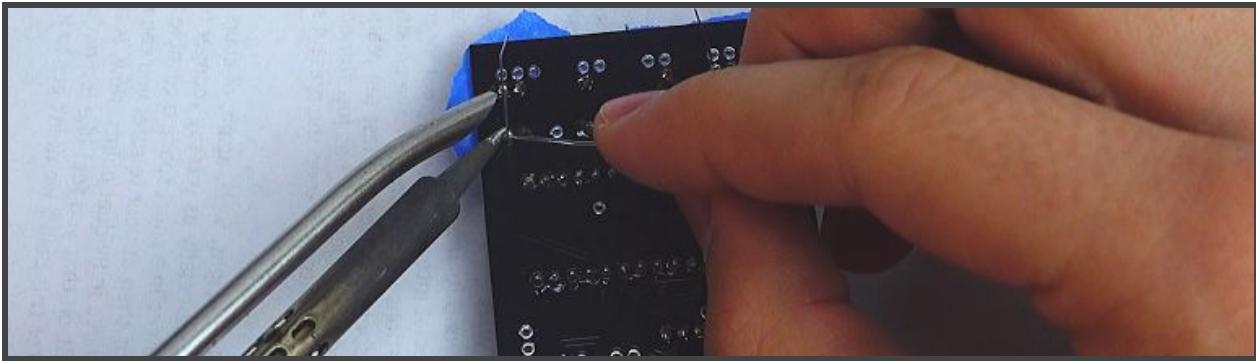
- Bend the leads of each resistor at a 90 degree angle, as shown.



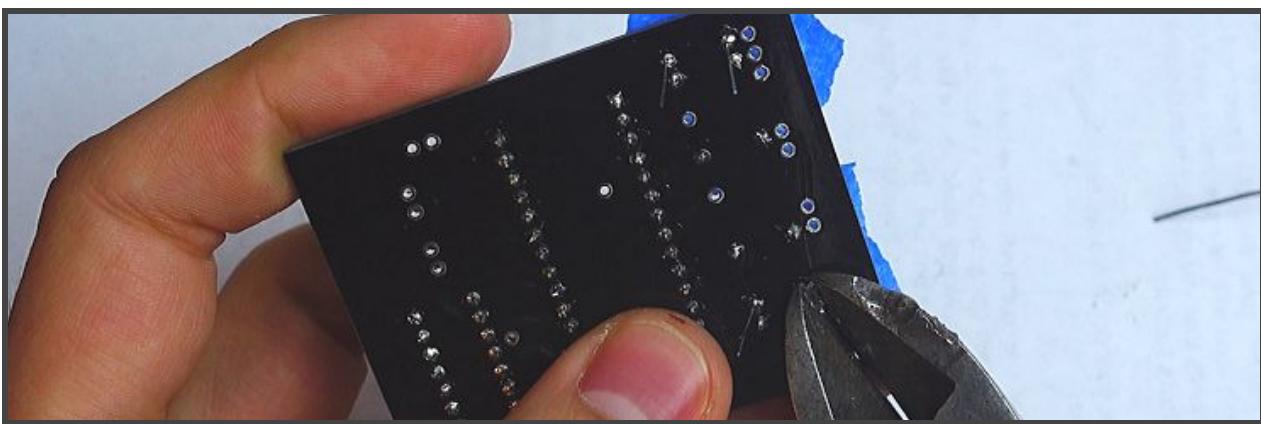
- Insert the 220 ohm resistors into the spots marked "220" on the board.



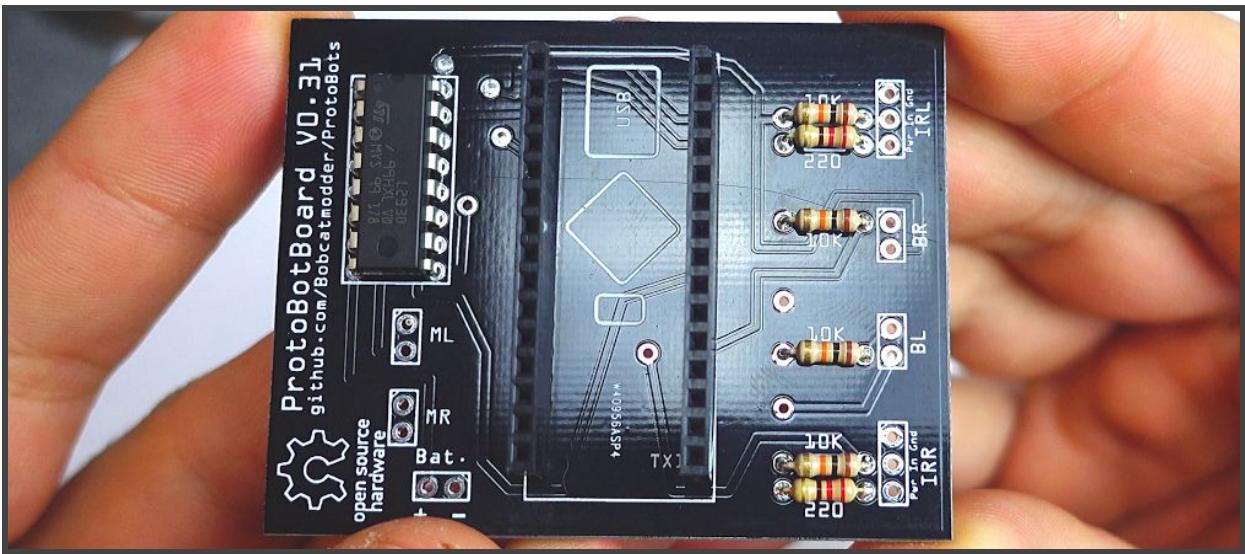
- Use some masking tape to hold the resistors in place while you solder.



- Solder the leads from the resistors into the board.



- Use the wire clippers to cut off the extra leads.

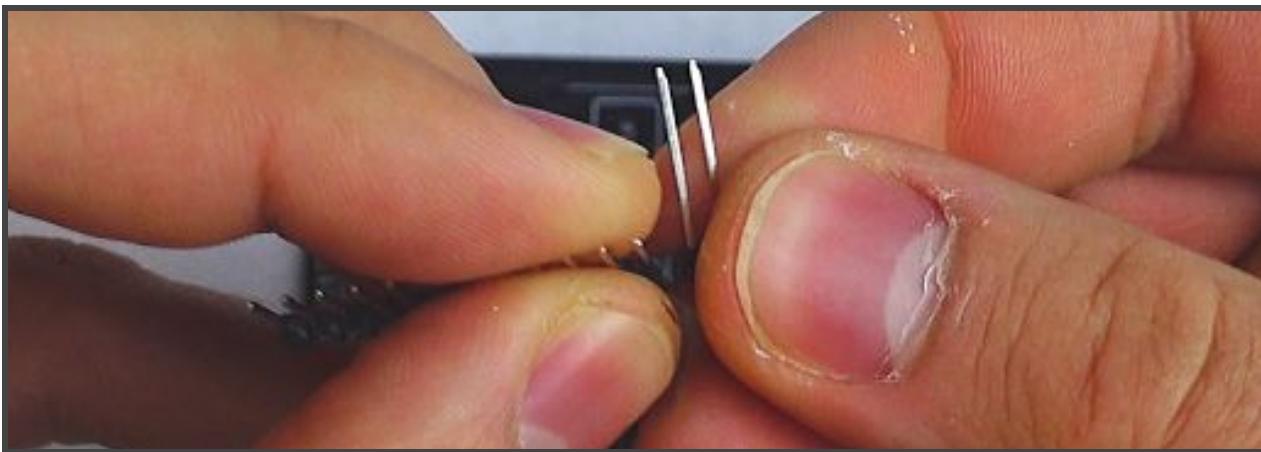


- When you're done, remove the masking tape. It should look like this.

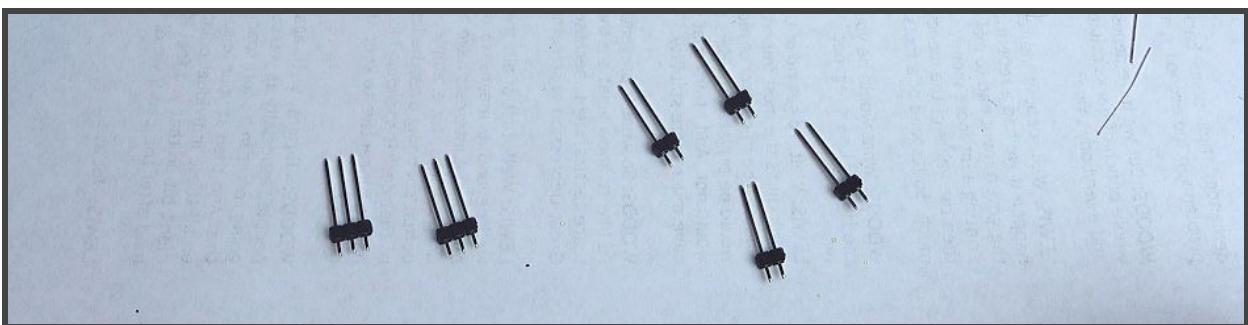
Step 5: Solder the sensor Header Pins

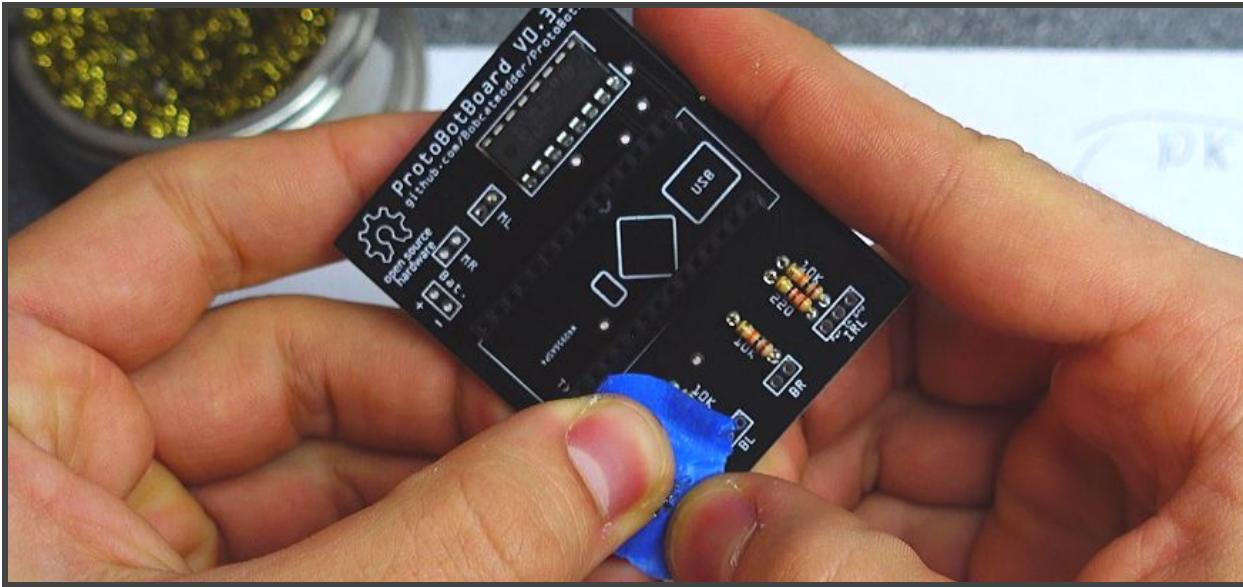


- Find your header pins. You'll need a row of 14 of them.

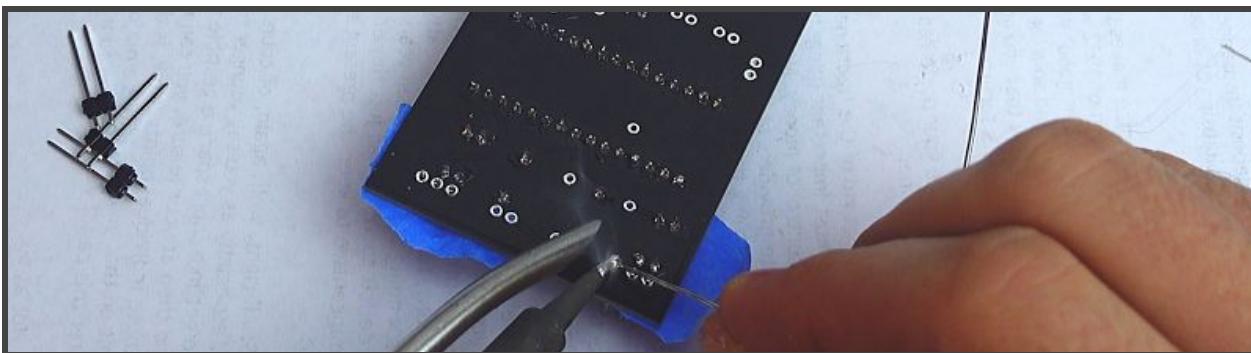


- Using your fingers as shown, break the header pins into 4 sections of 2, and 2 sections of 3, like so:

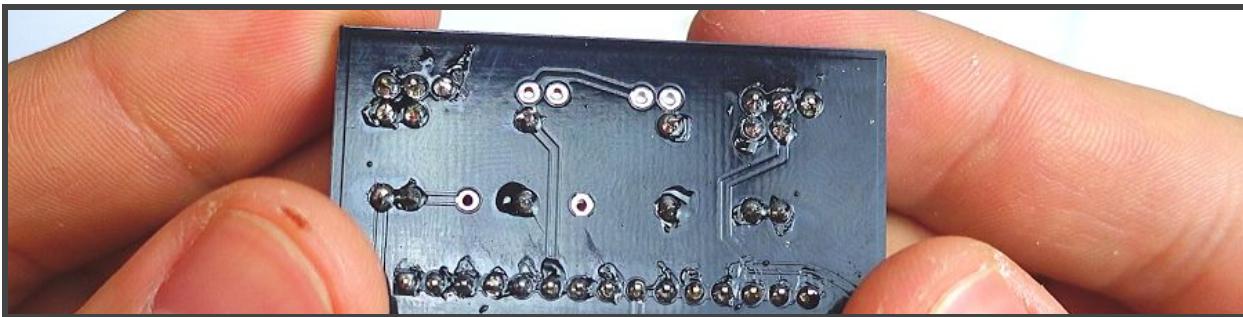




- Insert each of the 3-pin lengths into the spots marked "IRR" and "IRL", with the *short side down*, and use masking tape to hold it in place for soldering.



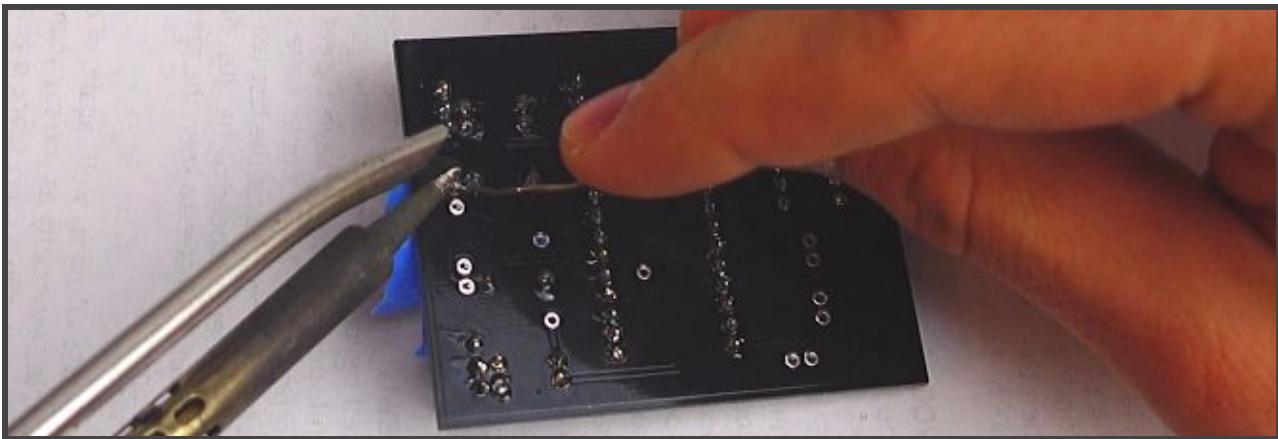
- Solder them in place.



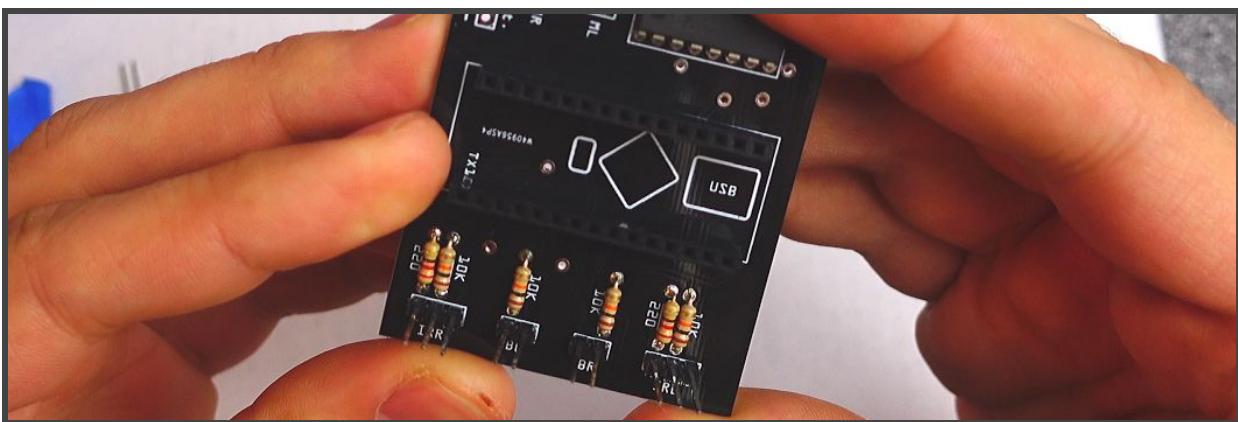
- When you're done, it should look like this.



- Insert each 2-pin length into the spots marked “BL” and “BR”, with the *short side down*.
 - Use a bit of masking tape to hold them in for soldering.

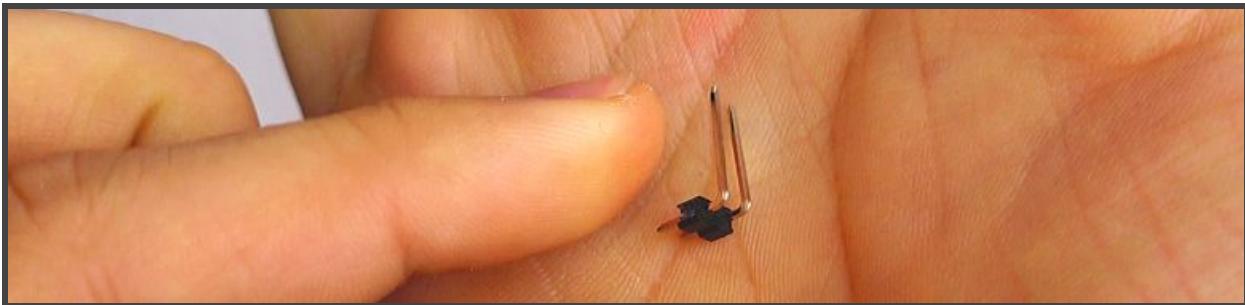


- Solder each pin into the board.
 - When you're done, remove the masking tape.

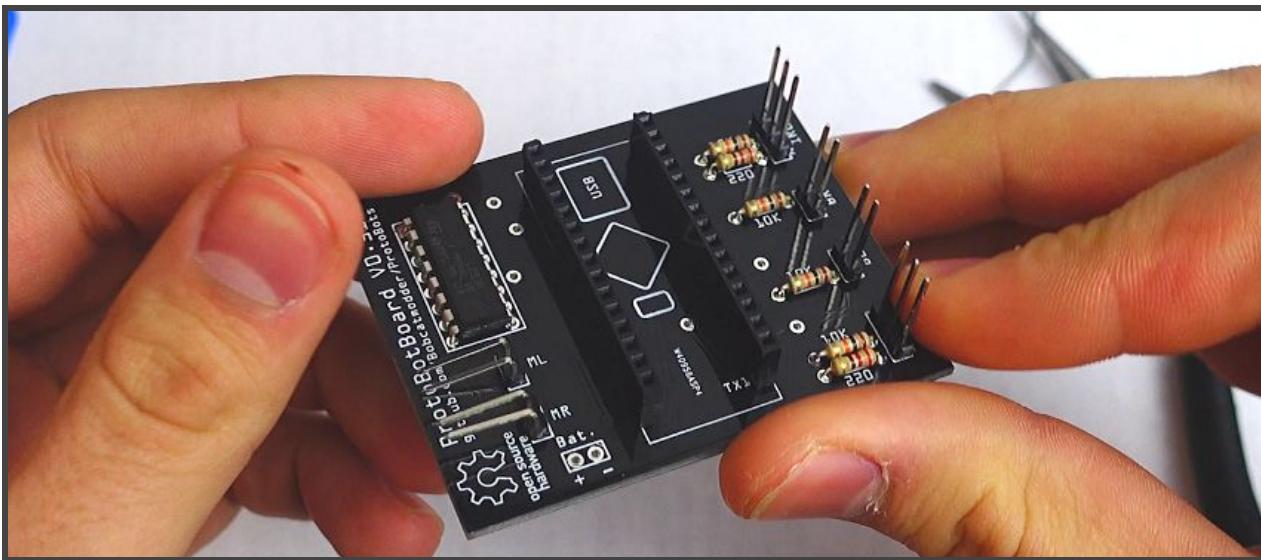


- Once you're done, it should look like this.

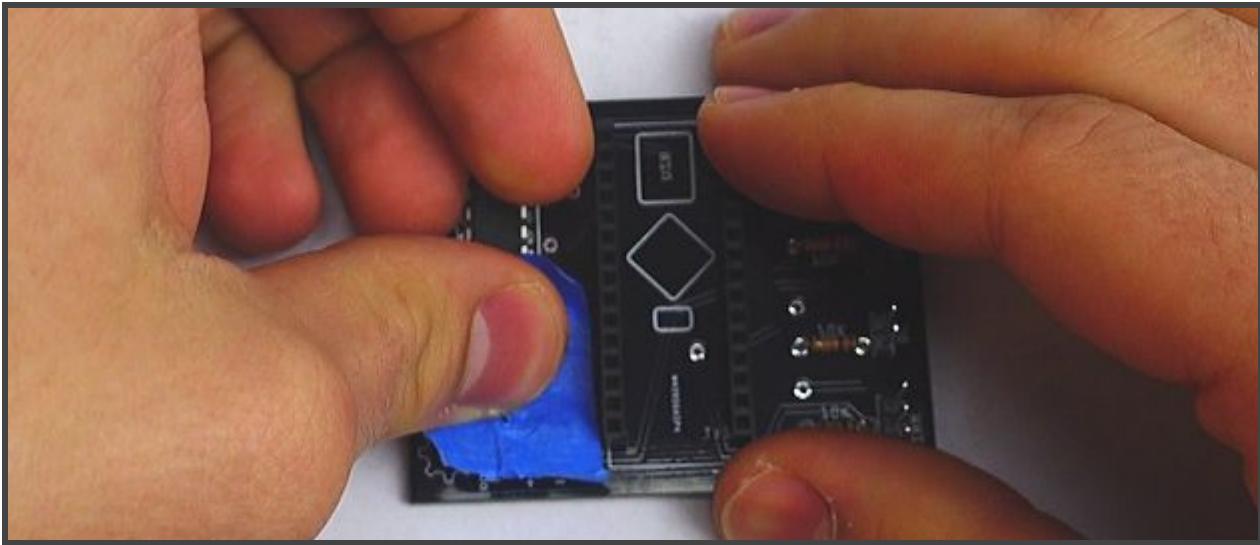
Step 6: Solder motor header pins



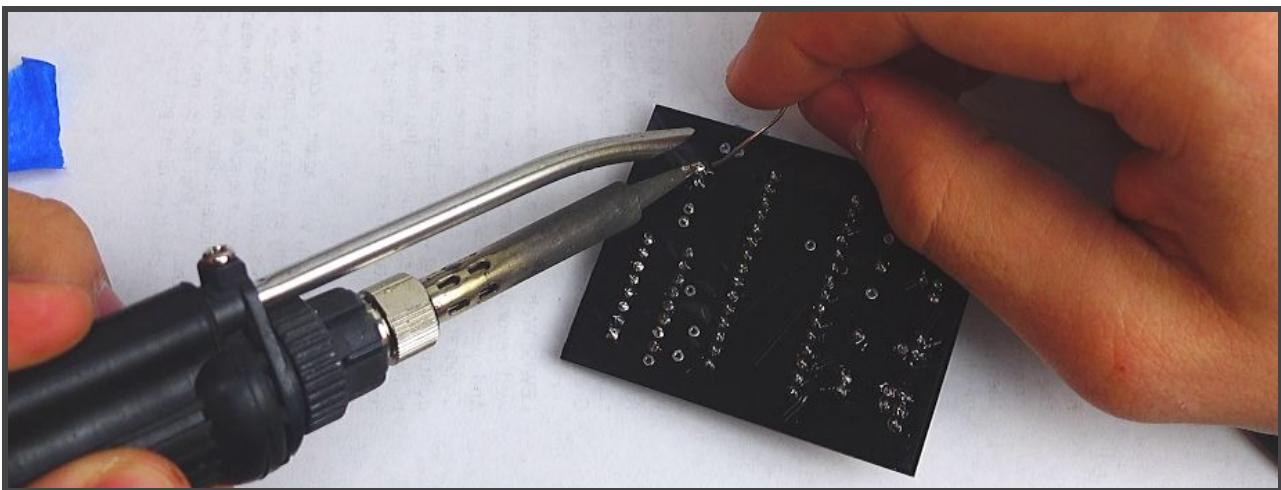
- Find the last two 2-pin lengths of header pins.
- Using a pair of pliers, bend the longer side at a 90 degree angle.



- Insert the bent headers, with the *short end down*, into the spots marked "MR" and "ML" on the board.

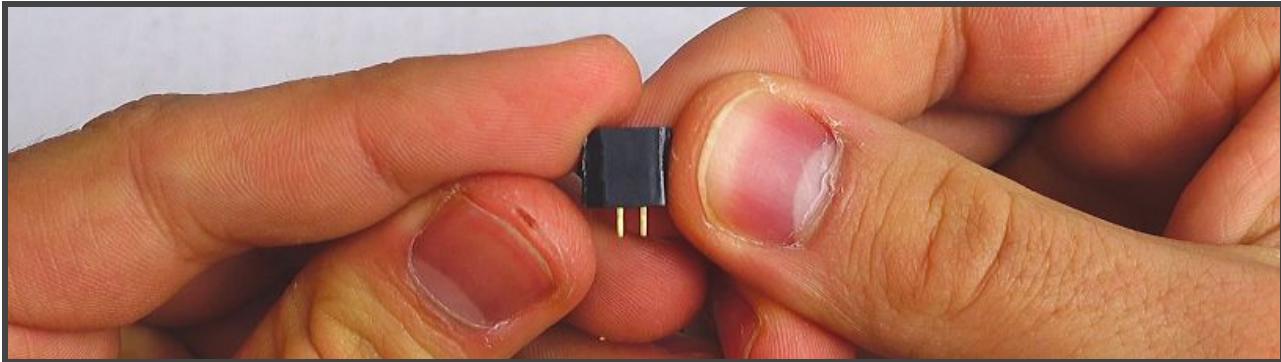


- Use a piece of masking tape to hold the headers in place while you solder them.

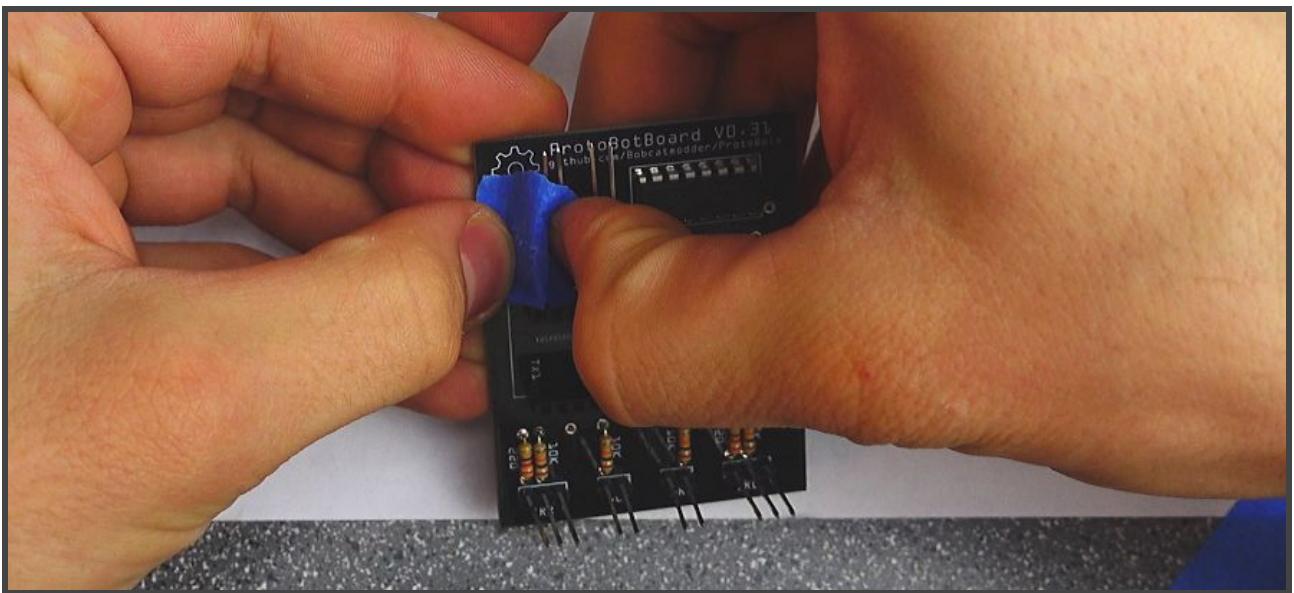


- Solder the pins to the board.

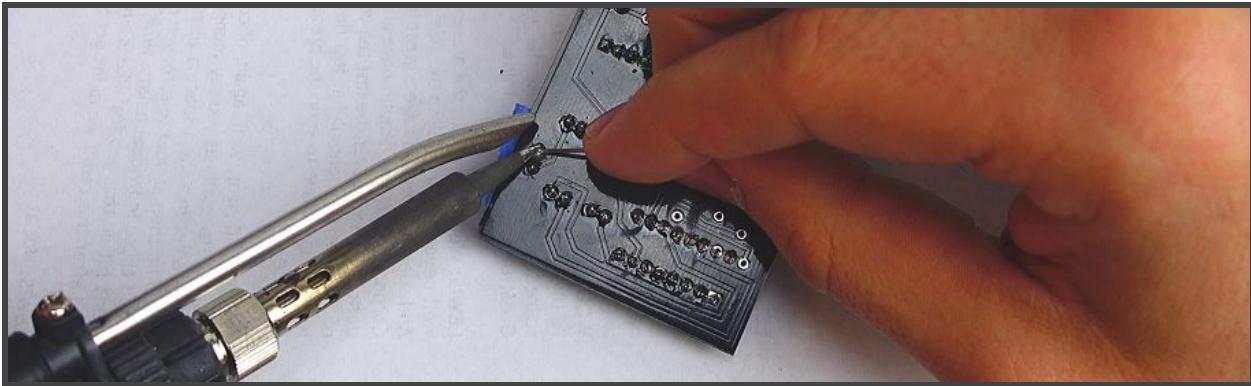
Step 7: Solder Battery Connector



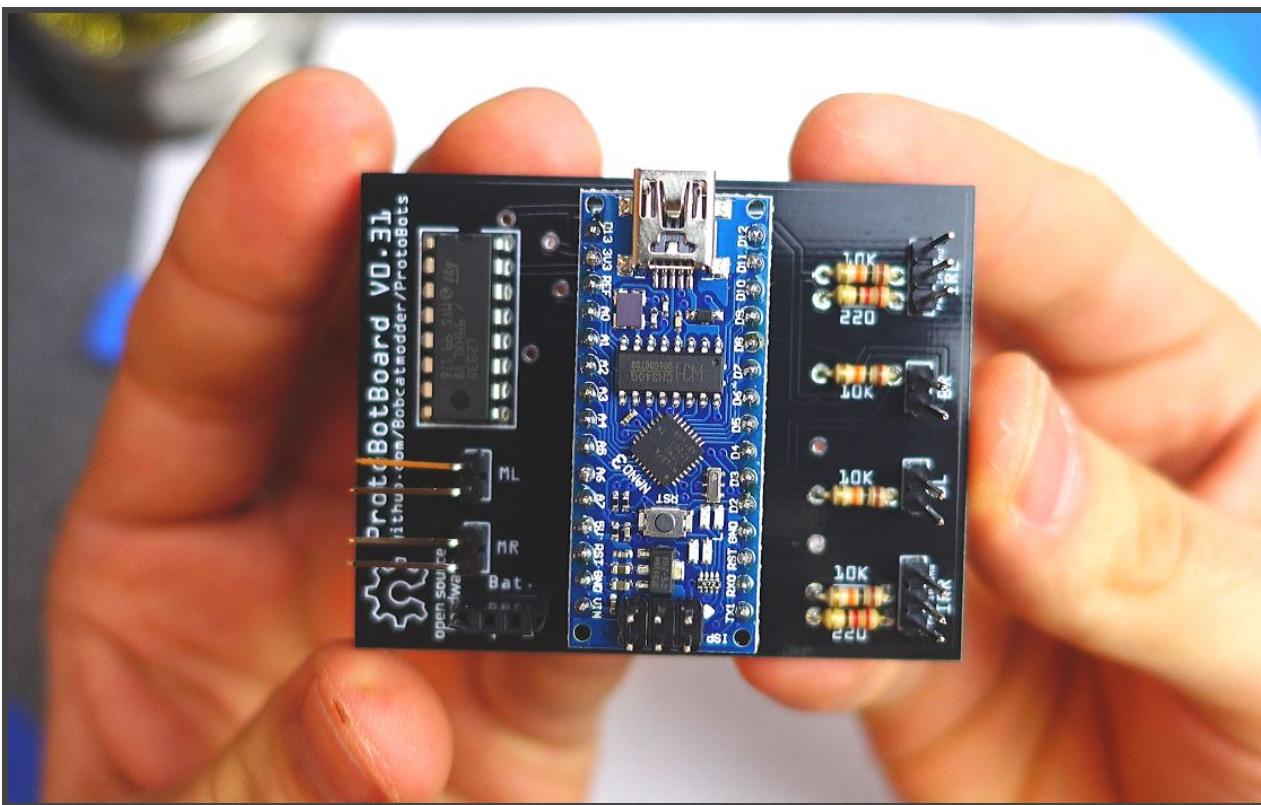
- Find your 2-pin length of female header pins



- Insert it into the spot marked "Bat.", and use a piece of masking tape to hold it down.



- Solder it into the board, then remove the masking tape.



You're done!