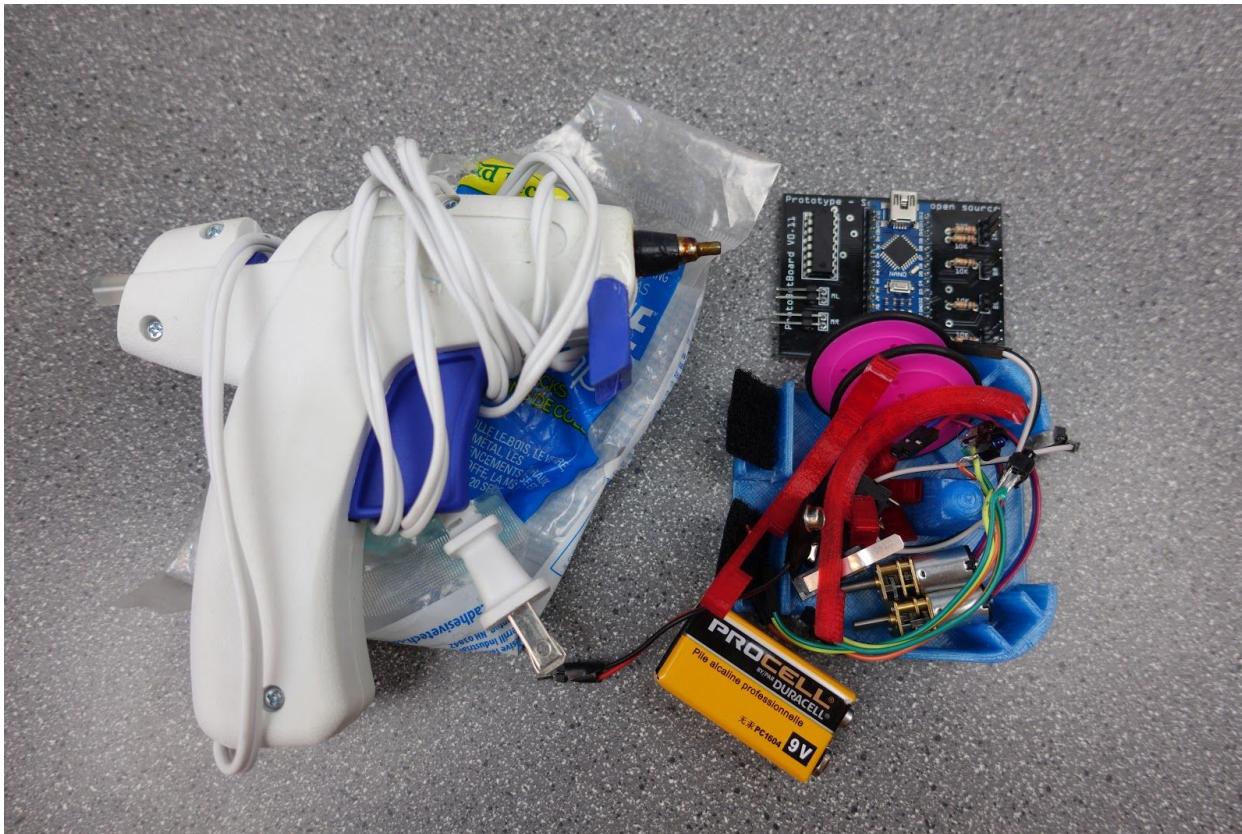


# ProtoBot Assembly Guide



## Stuff you need:

- A ProtoBot kit
  - 3D printed base part
  - 2 x 3D printed Antenna parts
  - 2 x Bump sensors
  - 2 x Motors
  - 2 x Line sensors
  - Control board
  - 9V Battery clip
  - Hook and Loop/touch fastener (IE, VELCRO® brand fasteners)  
(VELCRO® is a registered trademark of Velcro BVBA)
- A hot glue gun (High Temperature is best)
- A 9V battery
- A work surface that can get glue on it

**Tip! Use a piece of old scrap paper for a work surface.**

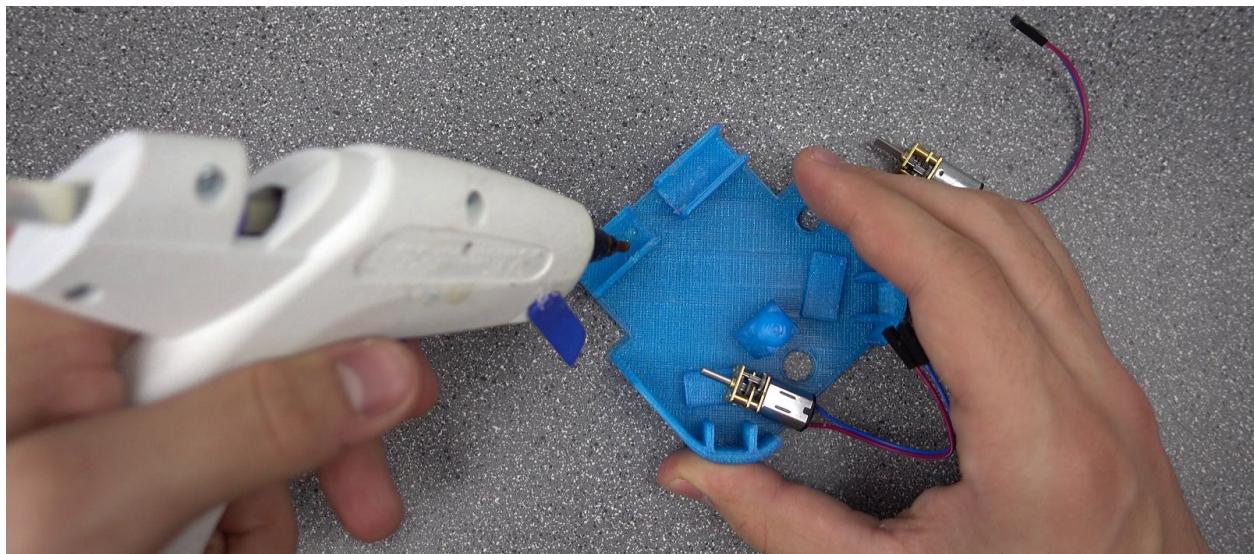


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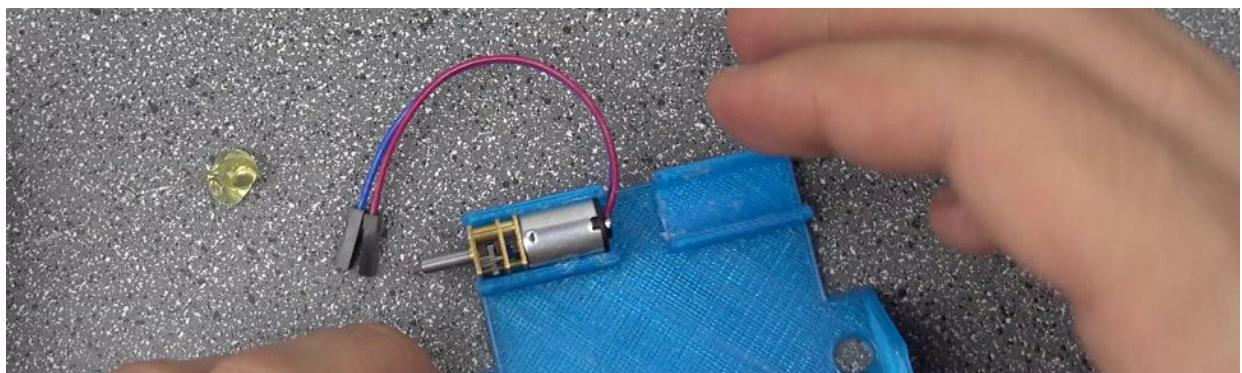
## Step 1

- Plug in your hot glue gun, and set it up on your work surface.
- Wait for it to heat up

## Step 2

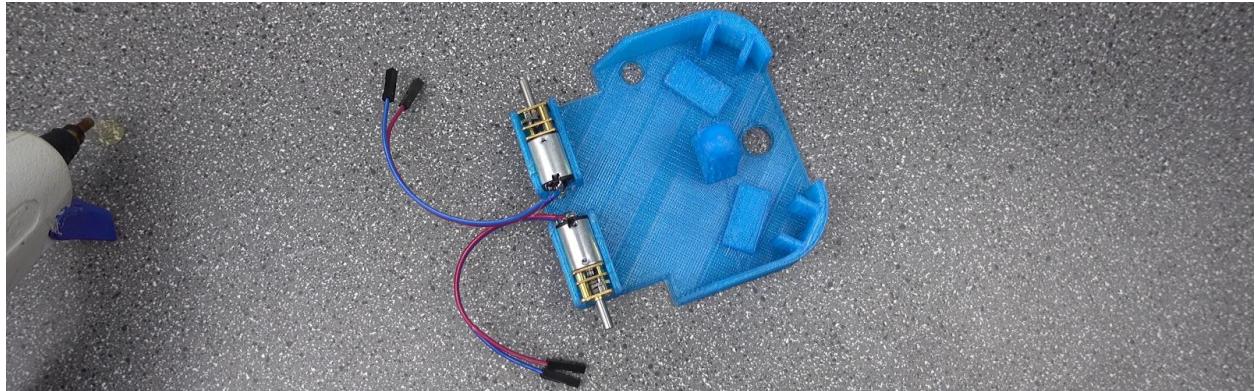


- Put a small dab of glue in one of the motor mounts on the base, as shown in the picture



- Insert the motor, but make sure not to get any hot glue in the gearbox

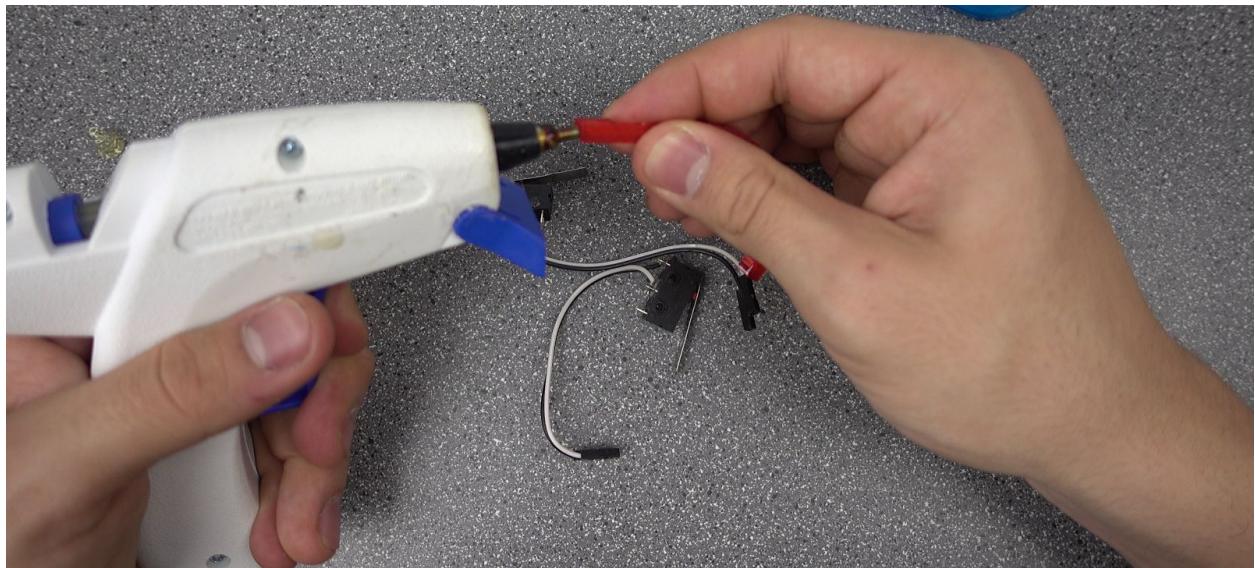
**Warning! Don't get glue in the gearboxes, otherwise your motors won't turn!**



- Repeat for the other side and motor

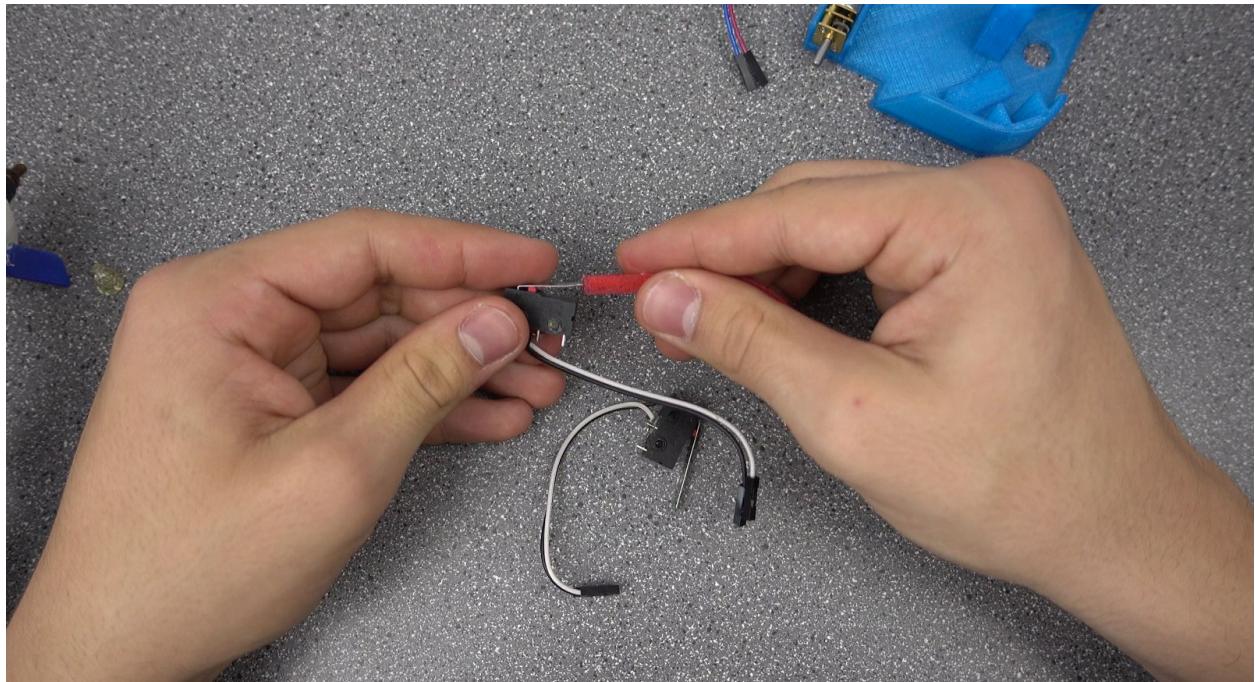
**Tip! Put a dab of hot glue on the places where the wires connect to the motors to help ensure they don't break off.**

## Step 2



- Find your Bump Sensors, and 3D printed Antenna Parts
- Put a tiny dab of hot glue on the end of an Antenna Part

**Tip! Only a tiny dab is needed to hold it in place. If you put too much, it will be hard to attach the antenna!**



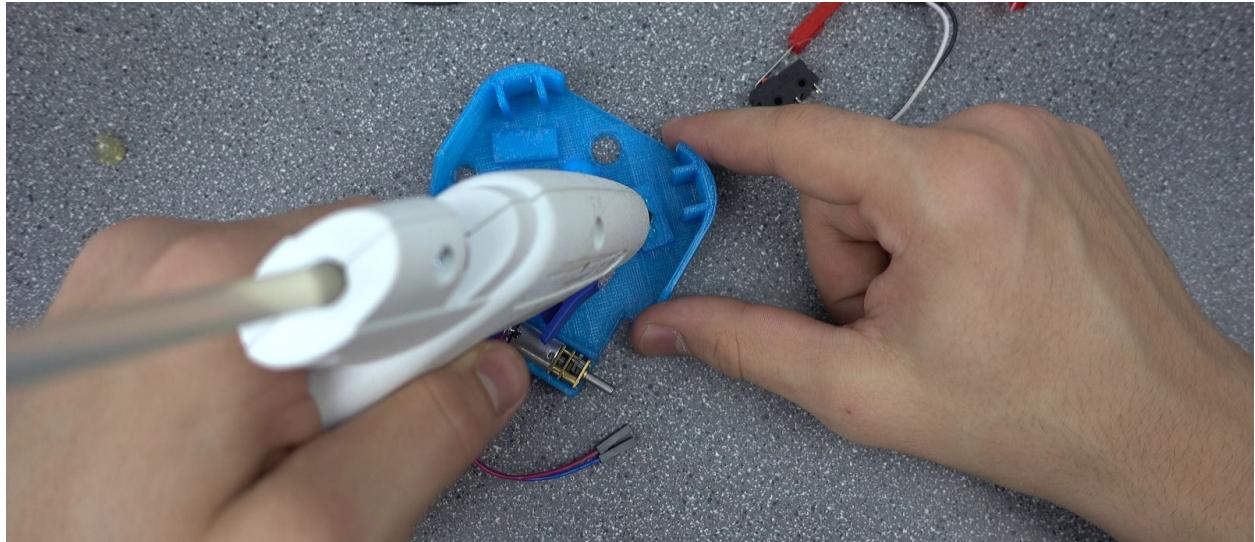
- Push the antenna part onto the sensor, as far as it will go.

**Warning!** Be careful not to bend the metal!

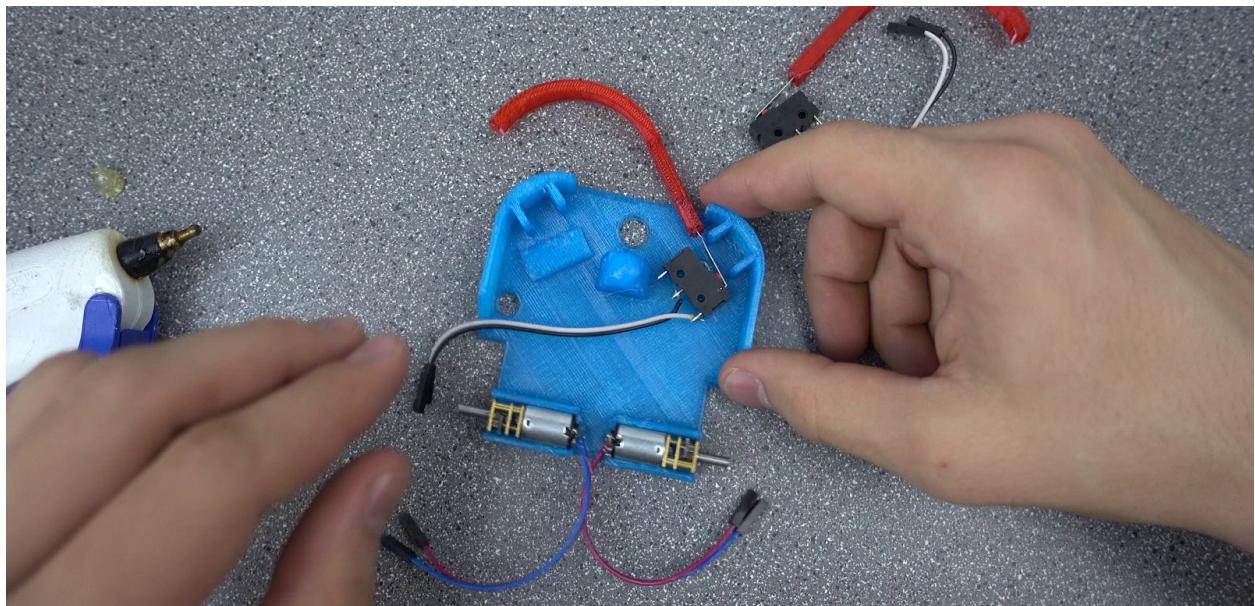


- Repeat for the other Antenna Part and Bump Sensor

## Step 3

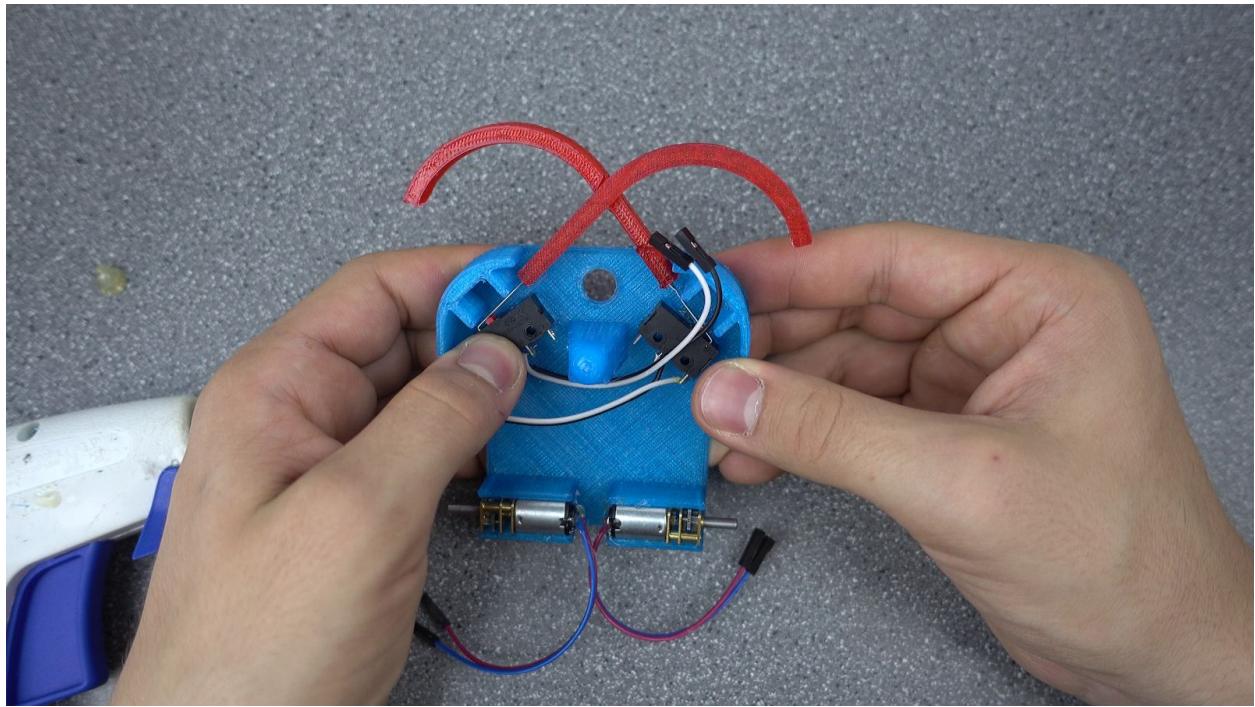


- Put a small dab of hot glue on one of the touch sensor platforms



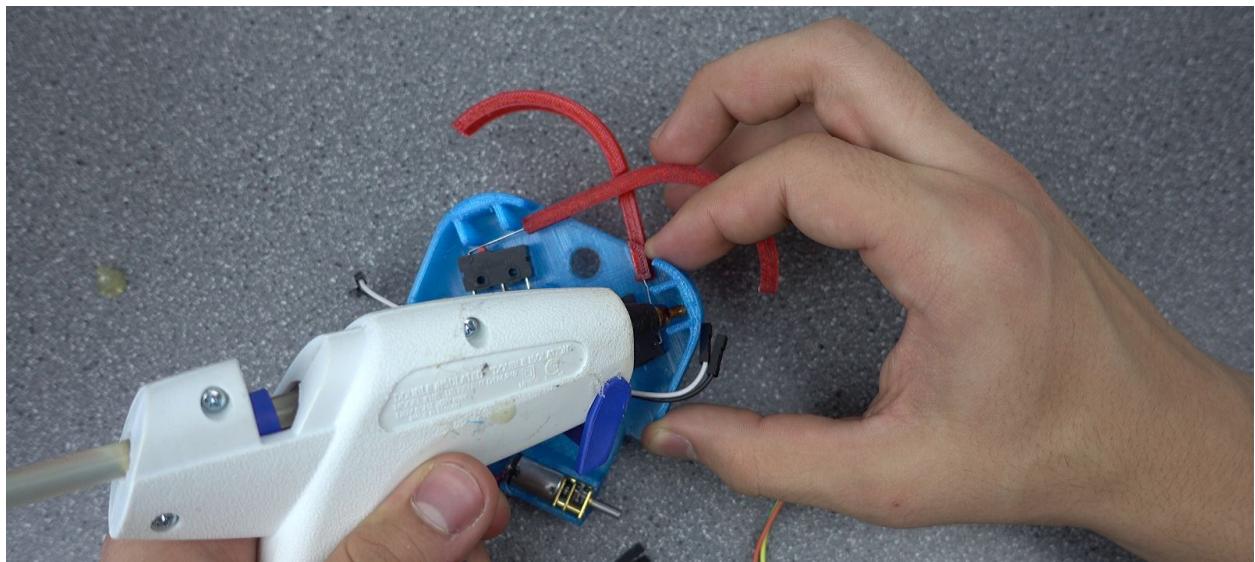
- Place the touch sensor on top of the platform, and make sure it's lined up with the edges.

**Tip! To make sure your sensors work best, line them up exactly to the platforms**

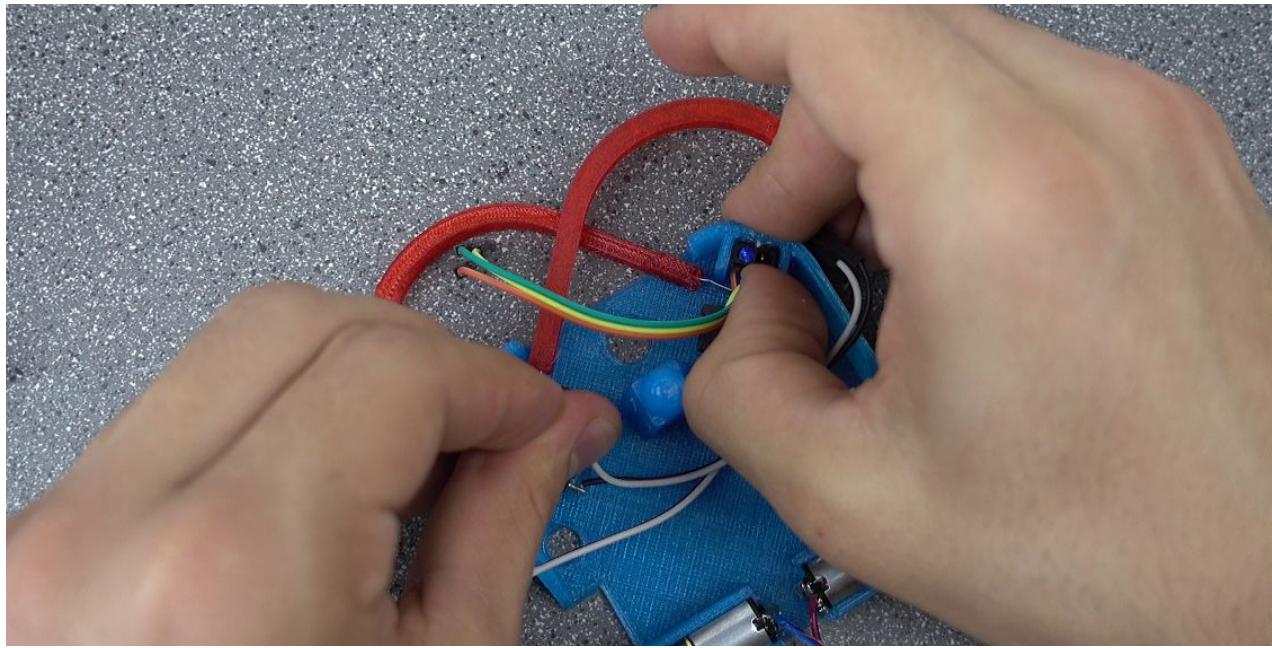


- Repeat on the other side of the base, with the other Bump Sensor

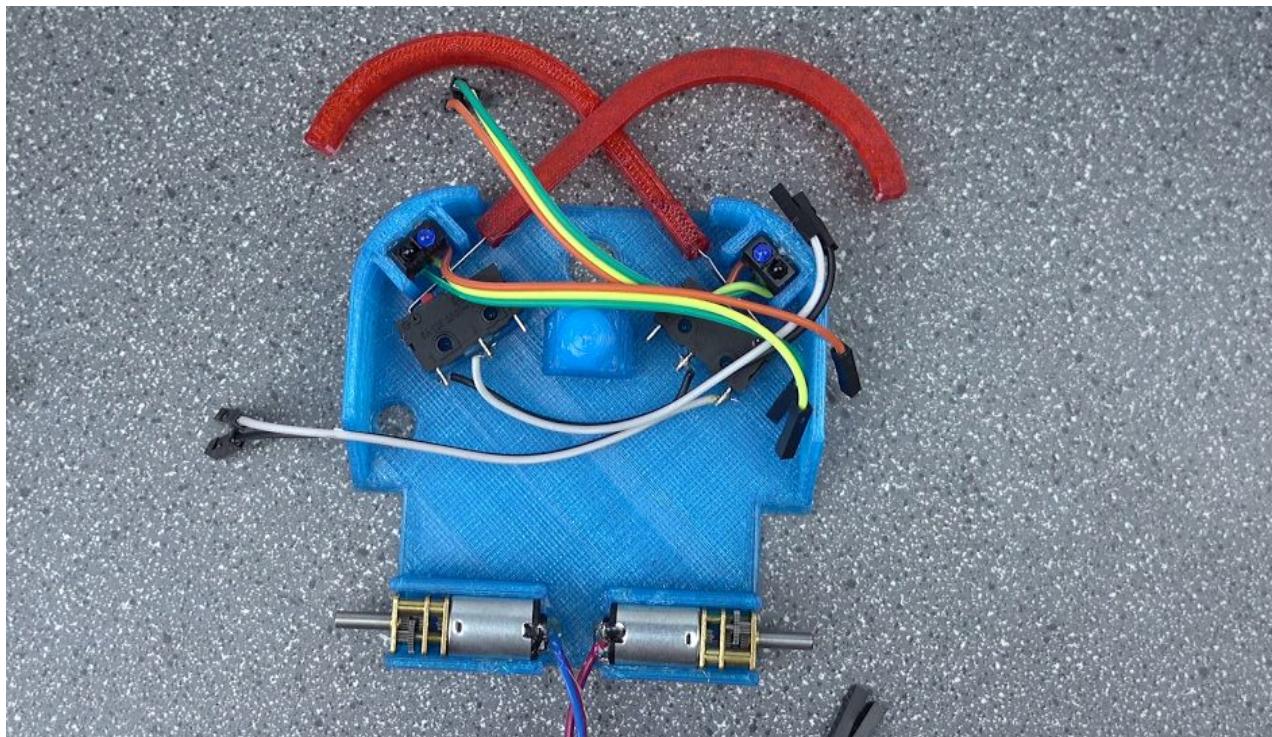
## Step 4



- Put a dab of hot glue in the line sensor mount.

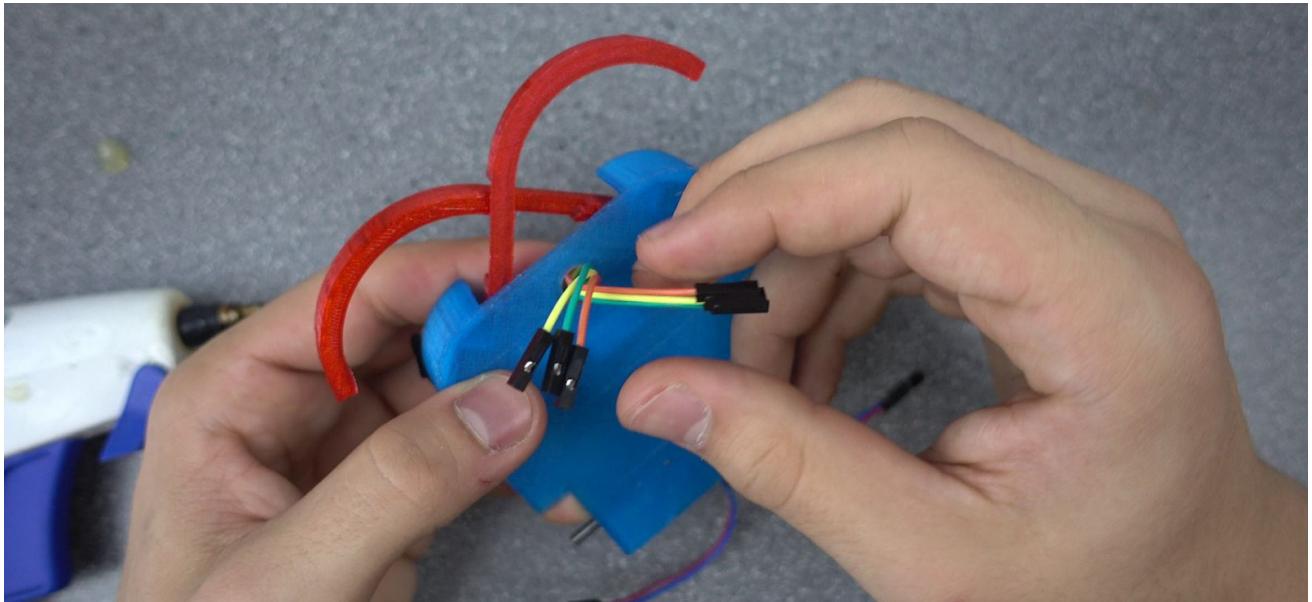


- Put the line sensor in, so that the top is level with the top of the holder



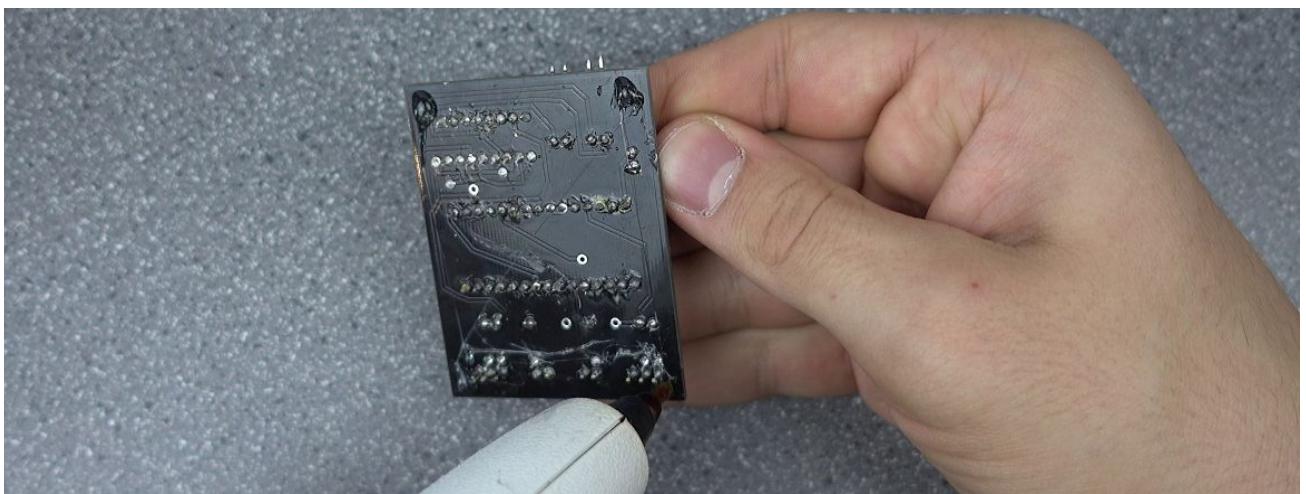
- Glue and attach the other line sensor as well

## Step 5

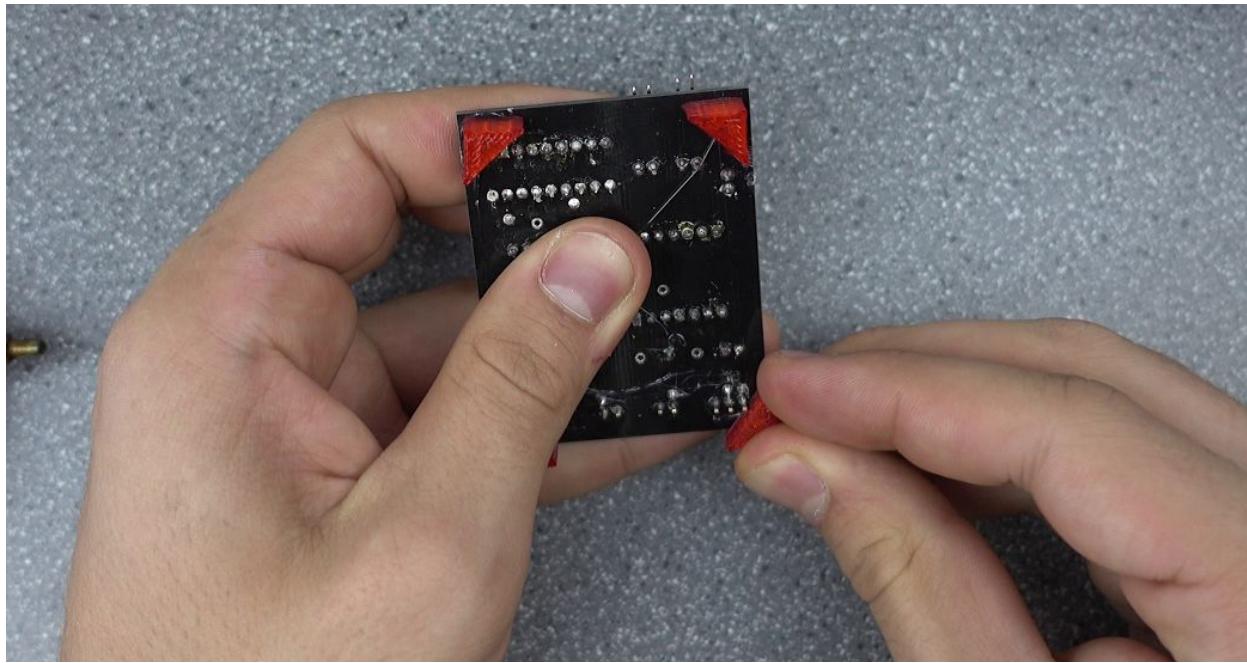


- Pull all the sensor wires through the hole in the ProtoBot base, making sure not to pull them too hard.

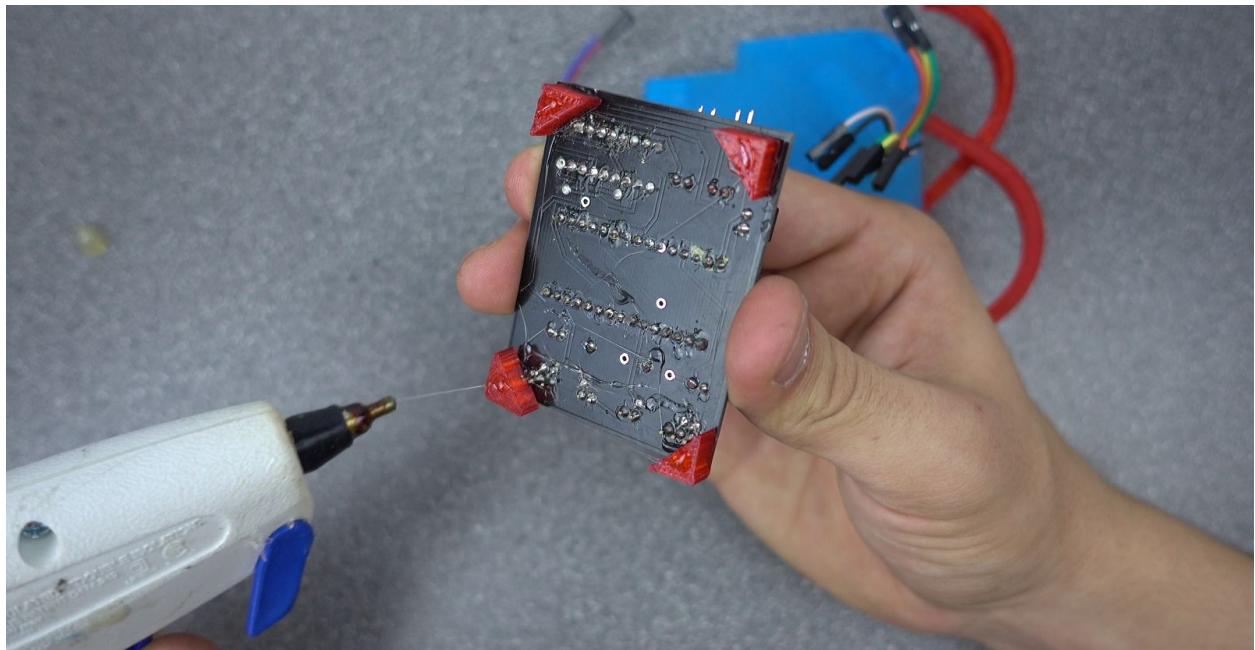
## Step 6



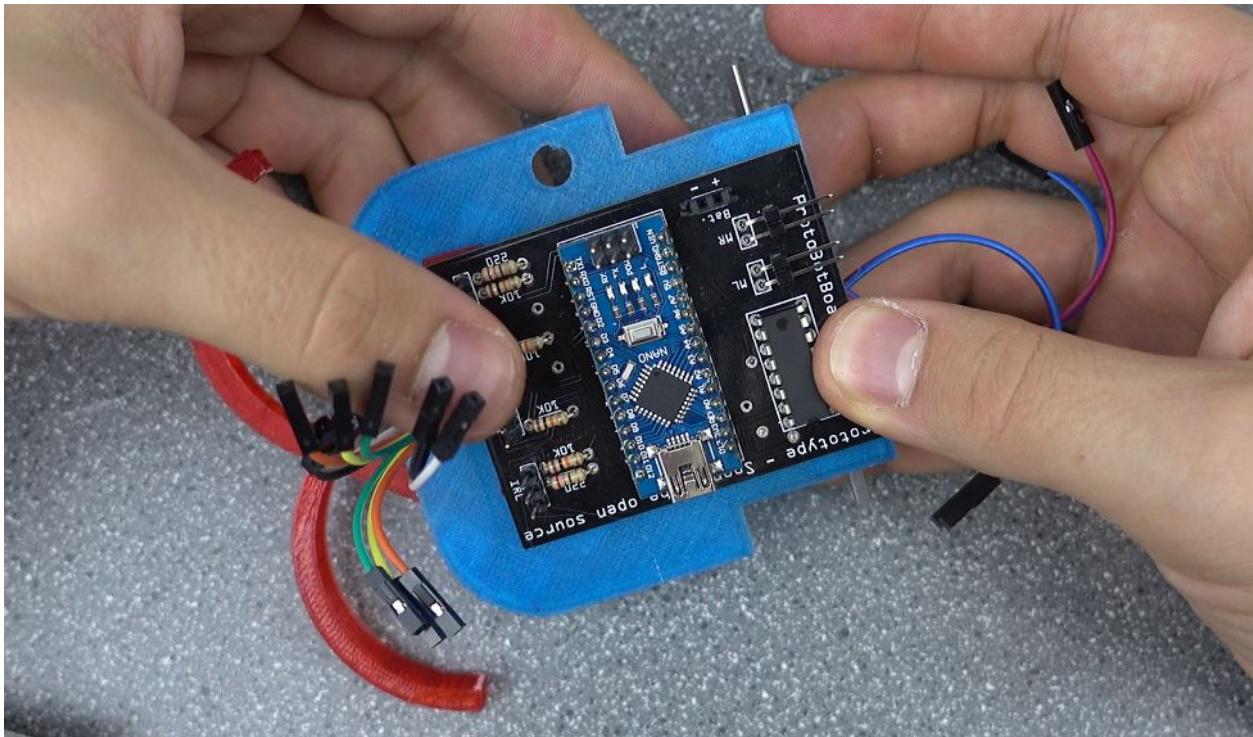
- Put a small dab of hot glue on each corner of the board.



- Put a PCB Support piece on each corner of the board.

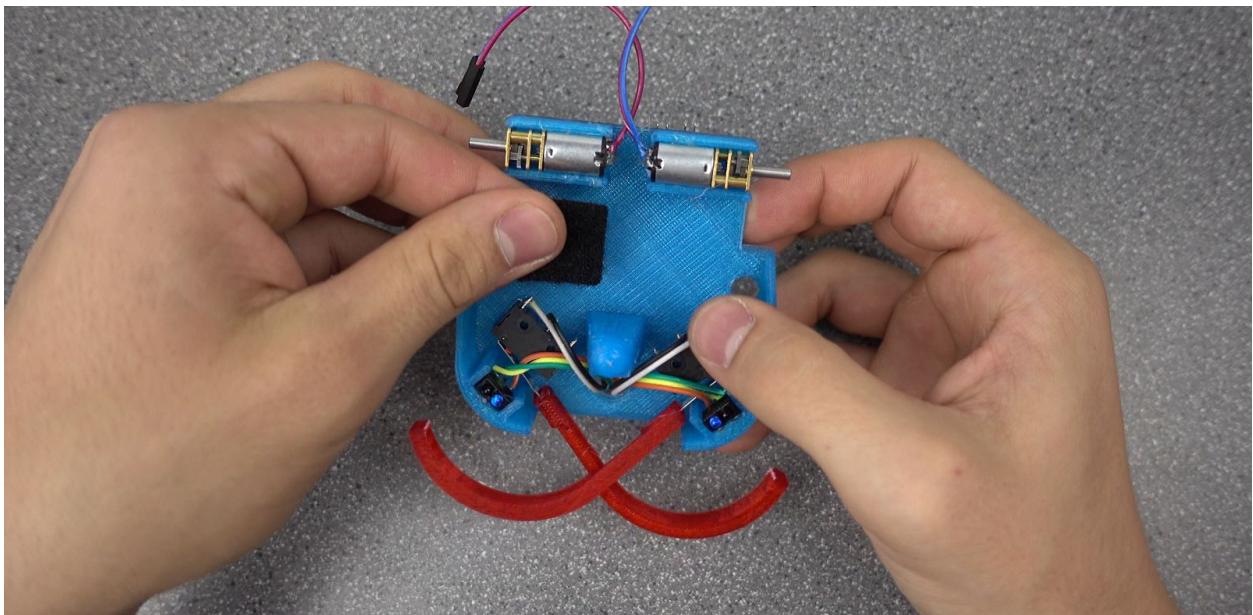


- Put a small dab on each board support.

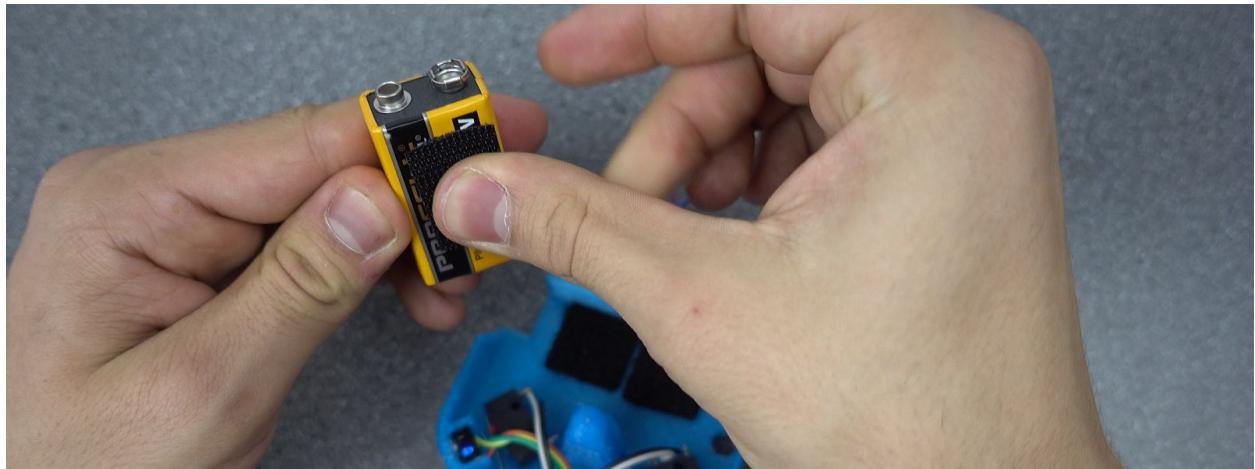


- Place the board on the 'bot base as shown.

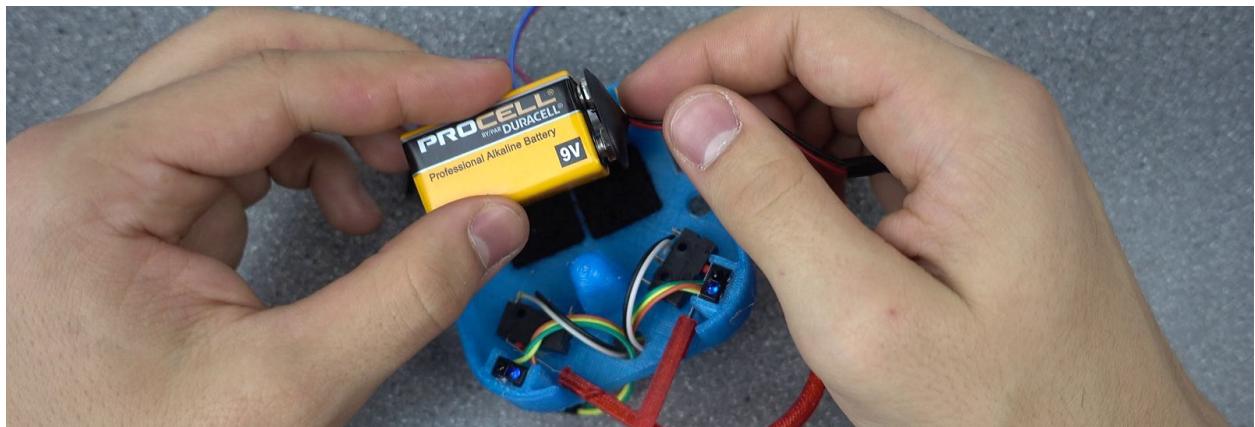
## Step 7



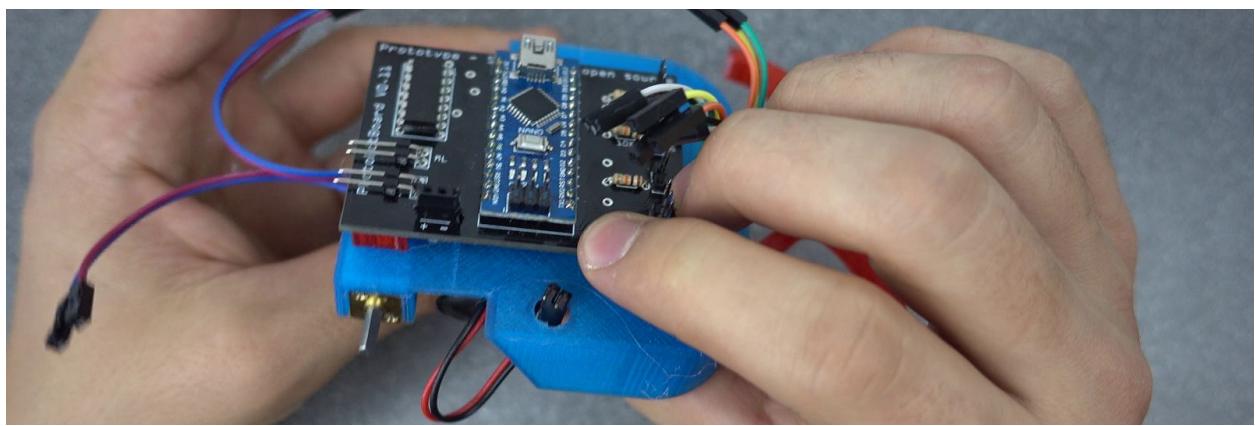
- Put a piece of VELCRO®/hook and loop fastener as shown on the robot base.



- Put the opposite piece of VELCRO®/hook and loop fastener on the battery.



- Connect the 9V Battery Clip to the 9V Battery.

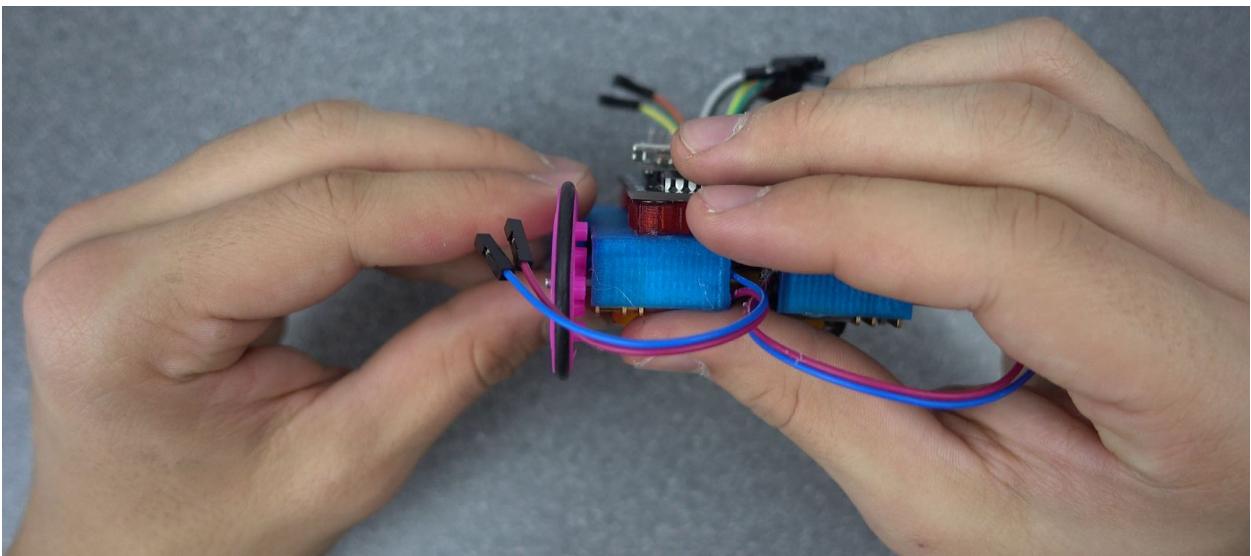


- Attach the battery to the base, and feed the wire through the power hole.

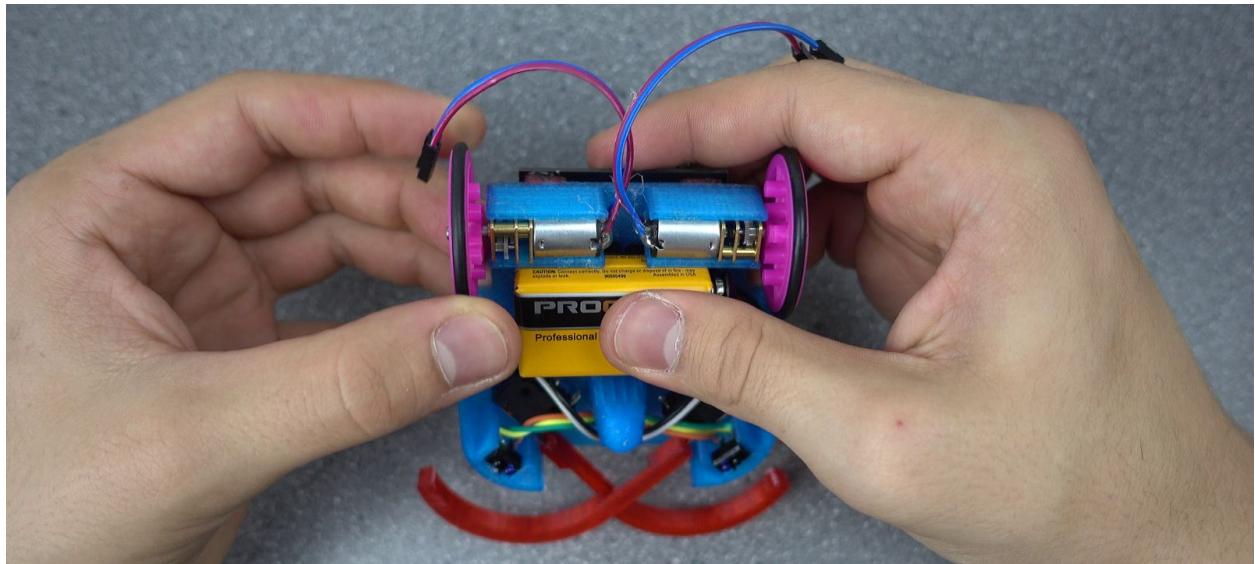
## Step 7



- Take a wheel, and line up the flat edge in the hole with the flat edge on the motor shaft.

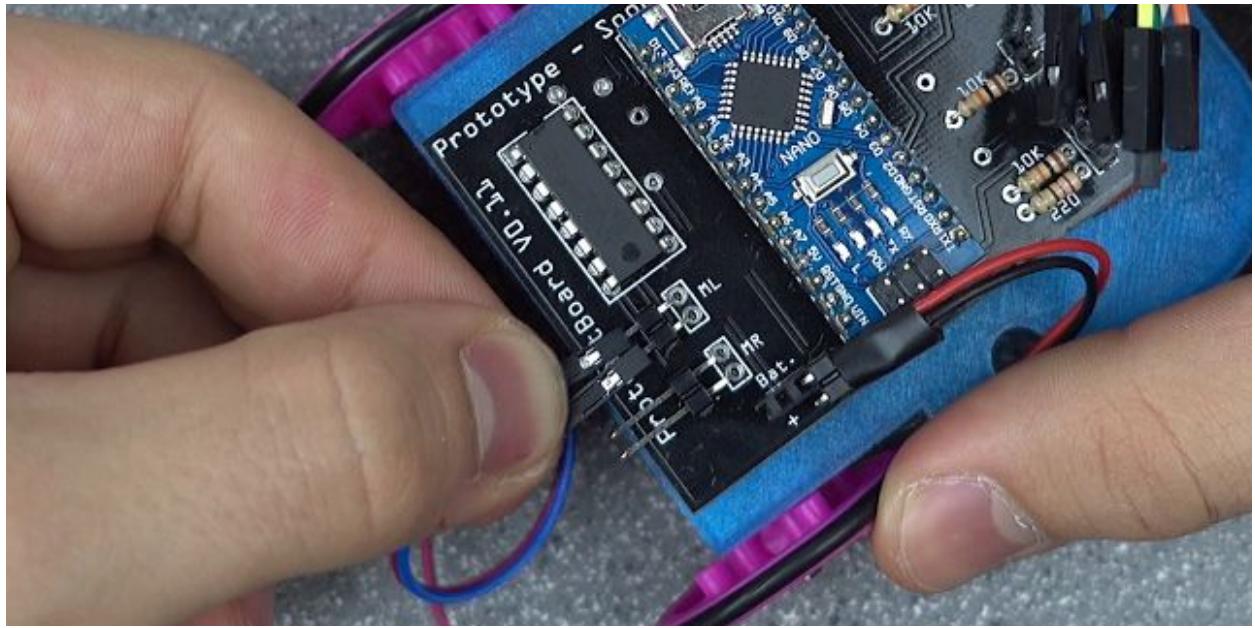


- Press the wheel on, being careful not to push the motor out of its holder.

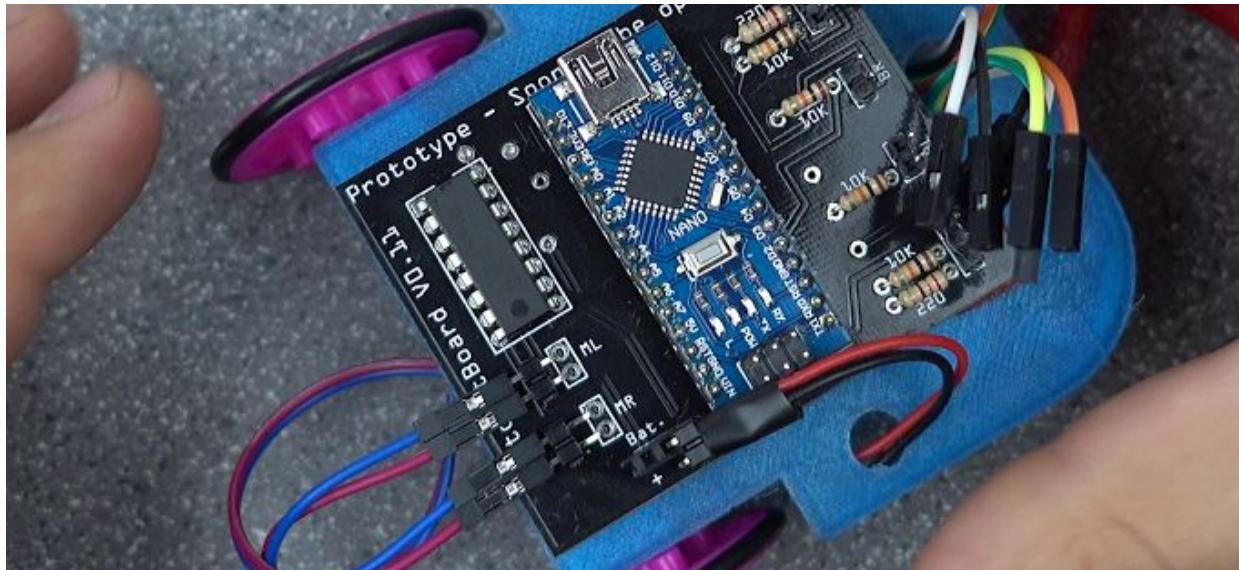


- Repeat for the other Wheel and Motor

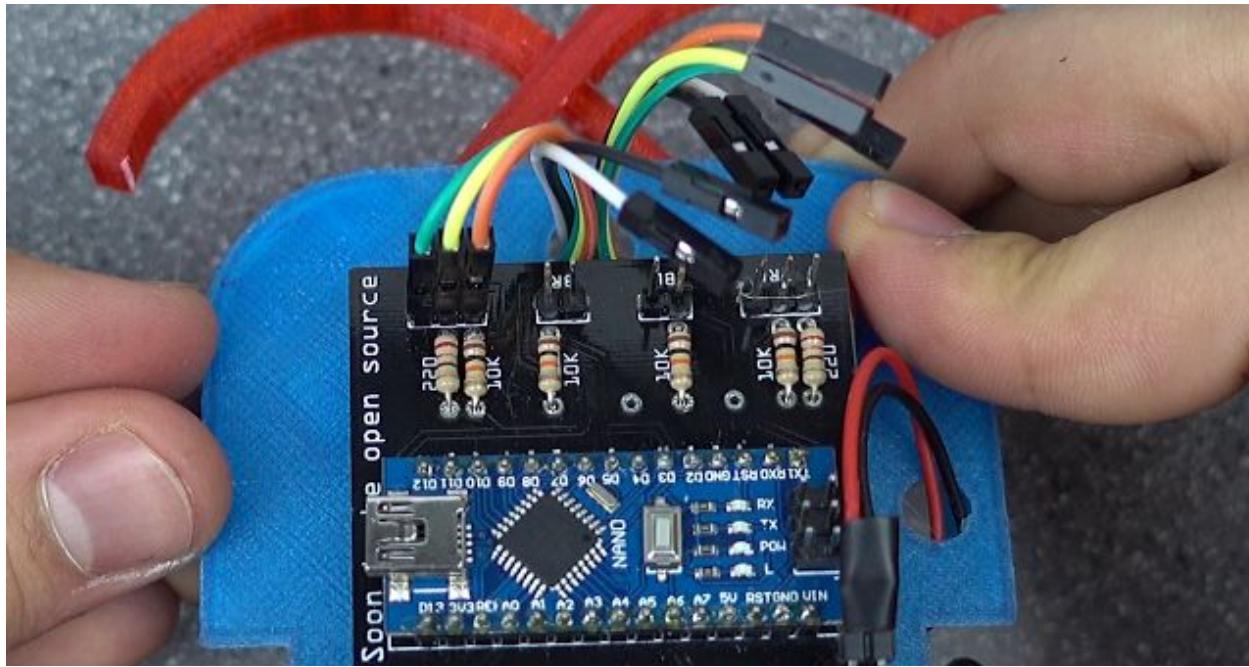
## Step 9



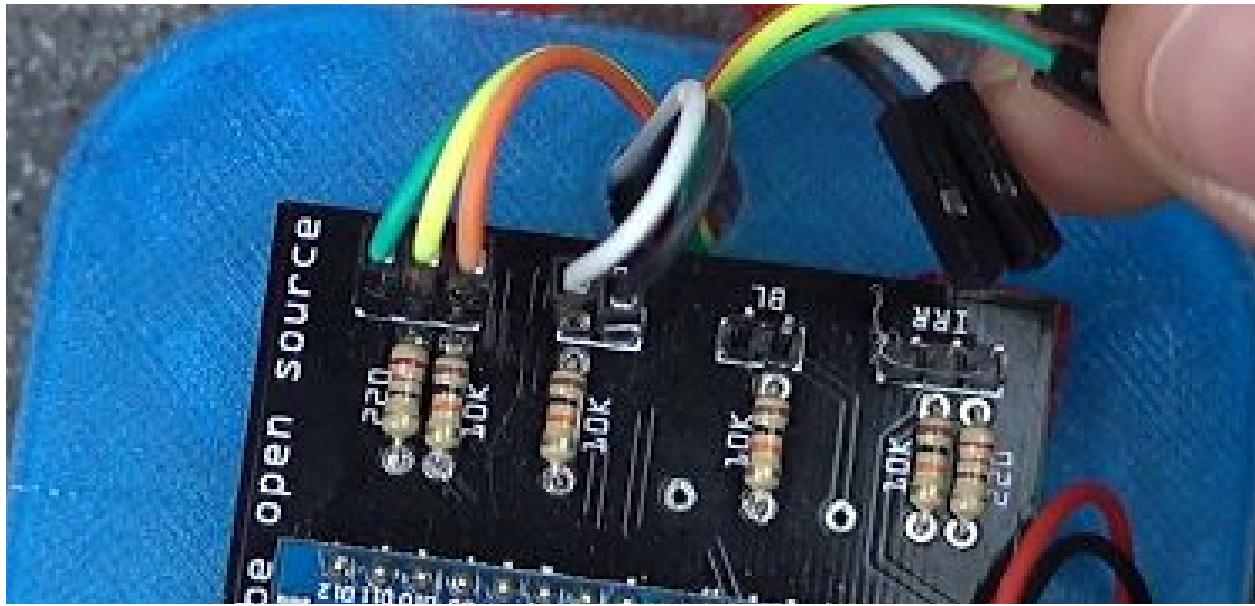
- Take the wires from the Left Motor, and plug them into the connector labeled either "ML" or "M1"



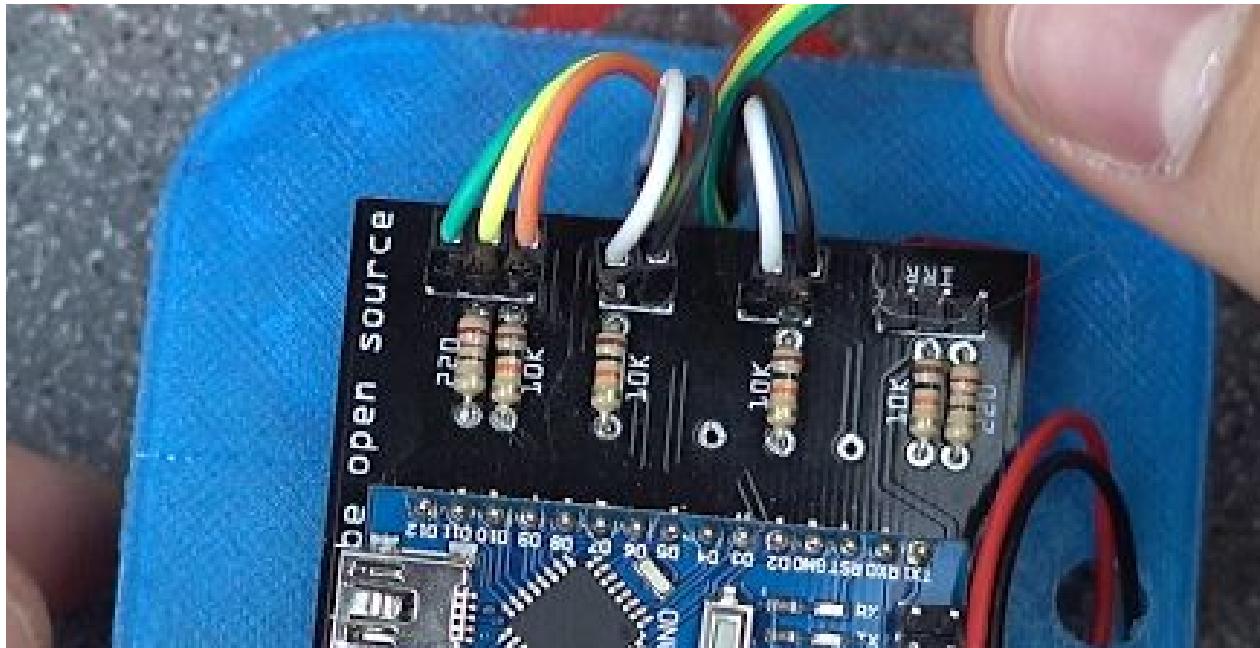
- Take the wires from the Right Motor, and plug them into the connector labeled either “MR” or “M2”



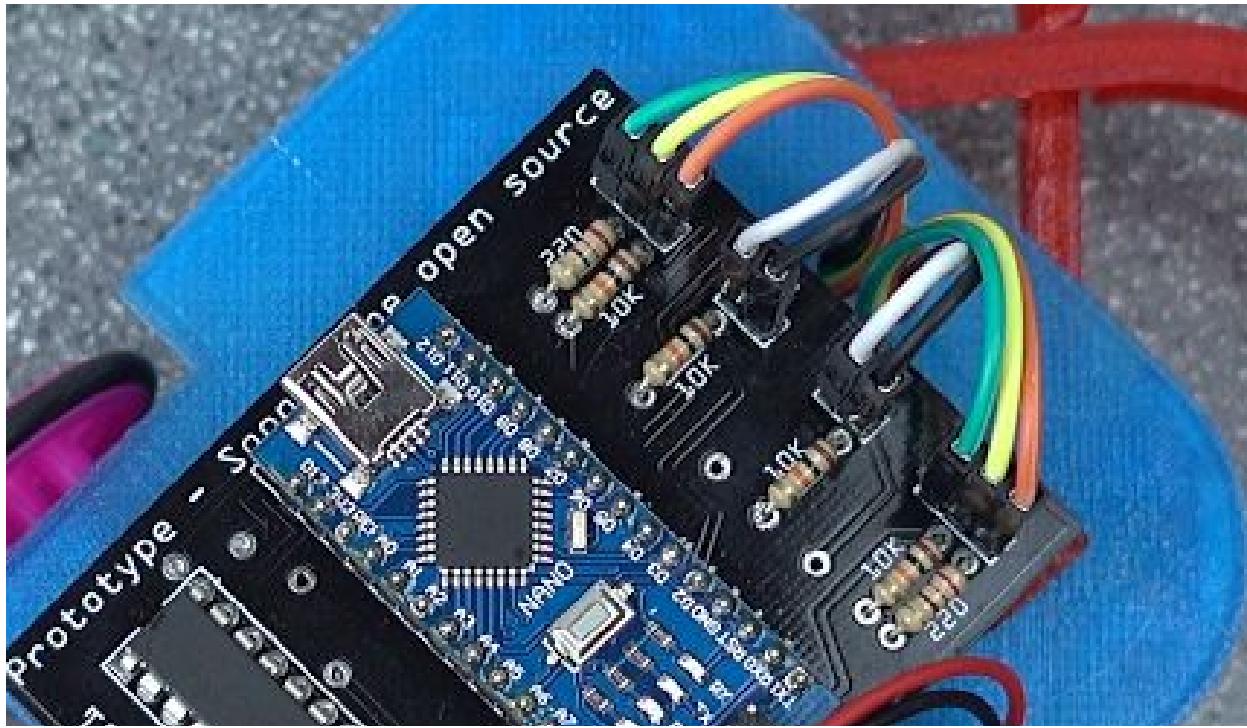
- Take the darkest end wire from the left Line Sensor, and plug it into the end connector pin of the connector labelled either “IRL” or “IR1”, as shown. The other wires follow in order, as shown.



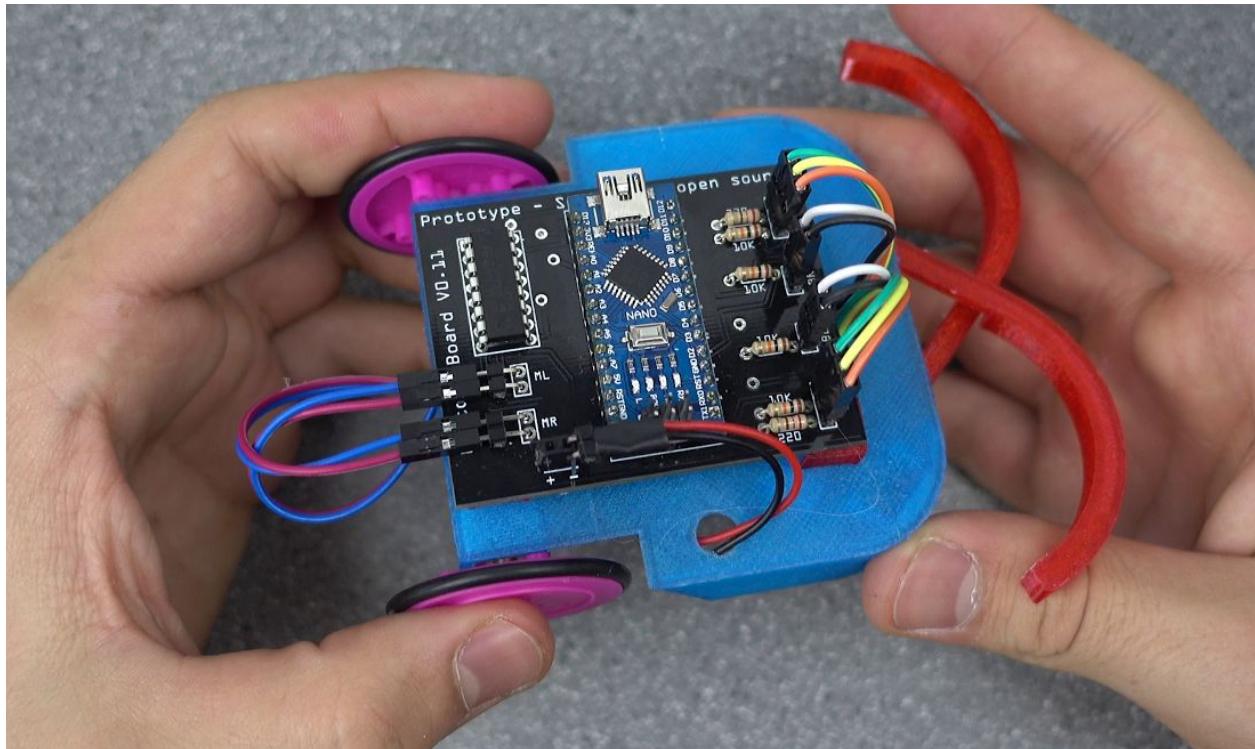
- Take the wires from the right Bump Sensor, and plug them into the connector labelled either “BR” or “B1”



- Take the wires from the left Bump Sensor, and plug them into the connector labeled either “BL” or “B1”



- Repeat what you did for the right line sensor, for the left Line Sensor, which plugs into the connection labelled either “IRR” or “IR2”.
- Plug the battery wire into the connector labelled “Bat.”, making sure that the red wire is aligned with the + mark (to the left) and the black wire is aligned with the - mark (or to the right).



Congratulations! You're done, and your ProtoBot should now be fully assembled and working.

**Tip!** If your ProtoBot doesn't turn on, make sure the battery is plugged in the right way.

**Tip!** If one or both of the motors are driving backwards, try reversing how the motor wires are plugged in on the connector.

**Tip!** If one or both of the Line Sensors isn't sensing lines or edges, try reversing how the wires are plugged in on the connector.