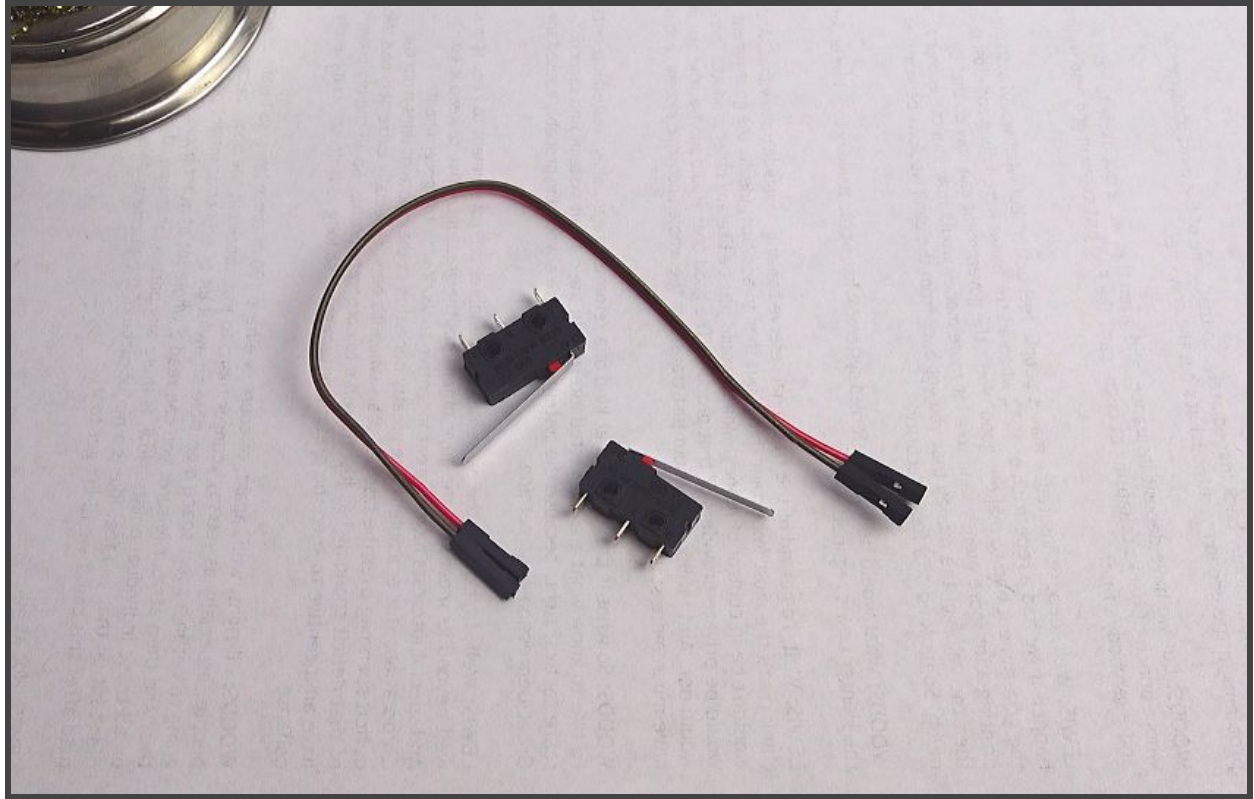# ProtoBot Bump Sensor Soldering Guide
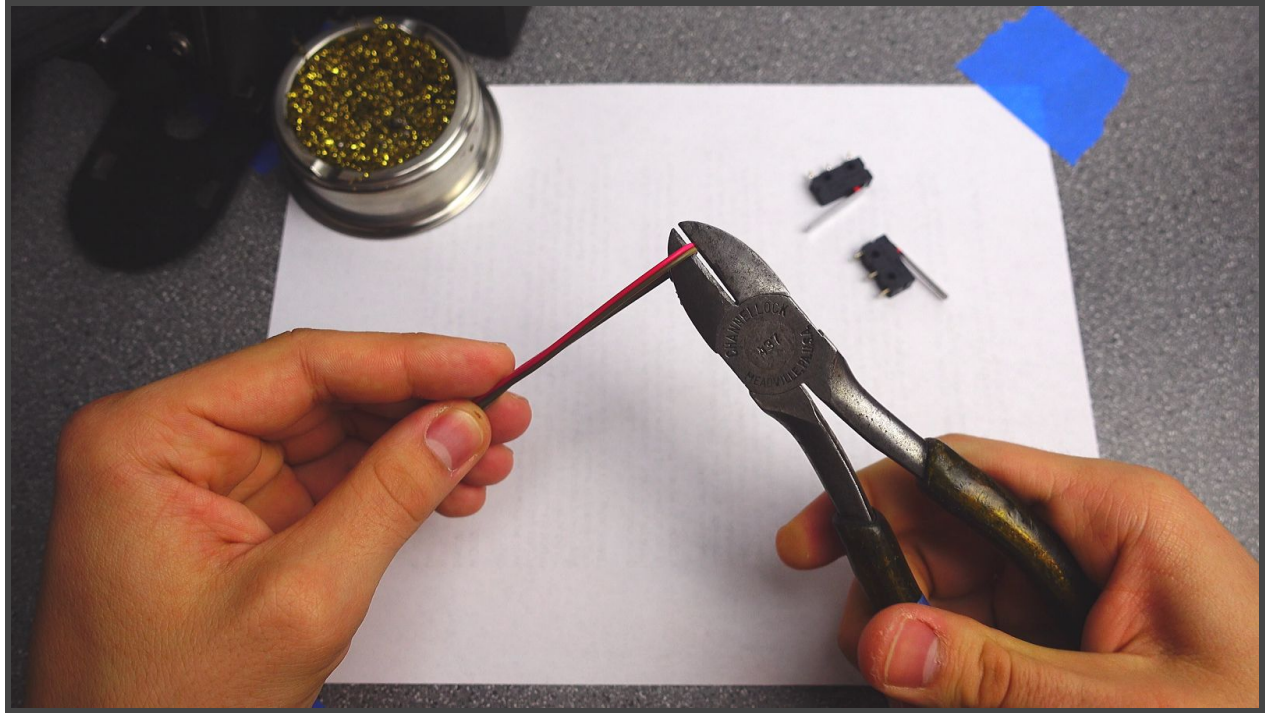

You will need:

Parts:
- 2 x Limit Switches
- 1 set of two DuPont Female-Female jumper wires

Tools:
- Wire cutters/Strippers
- Soldering Iron with Fine tip
- Helping Hands, or something to hold the bump sensors in place (I used tape)
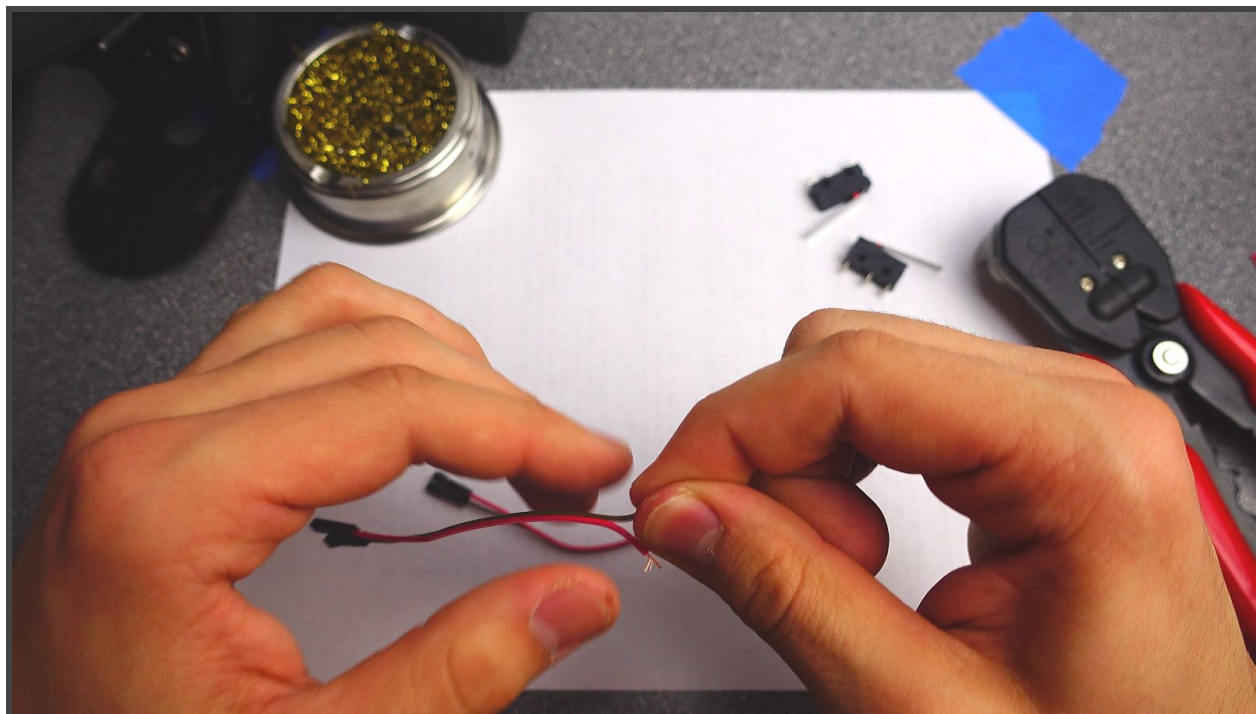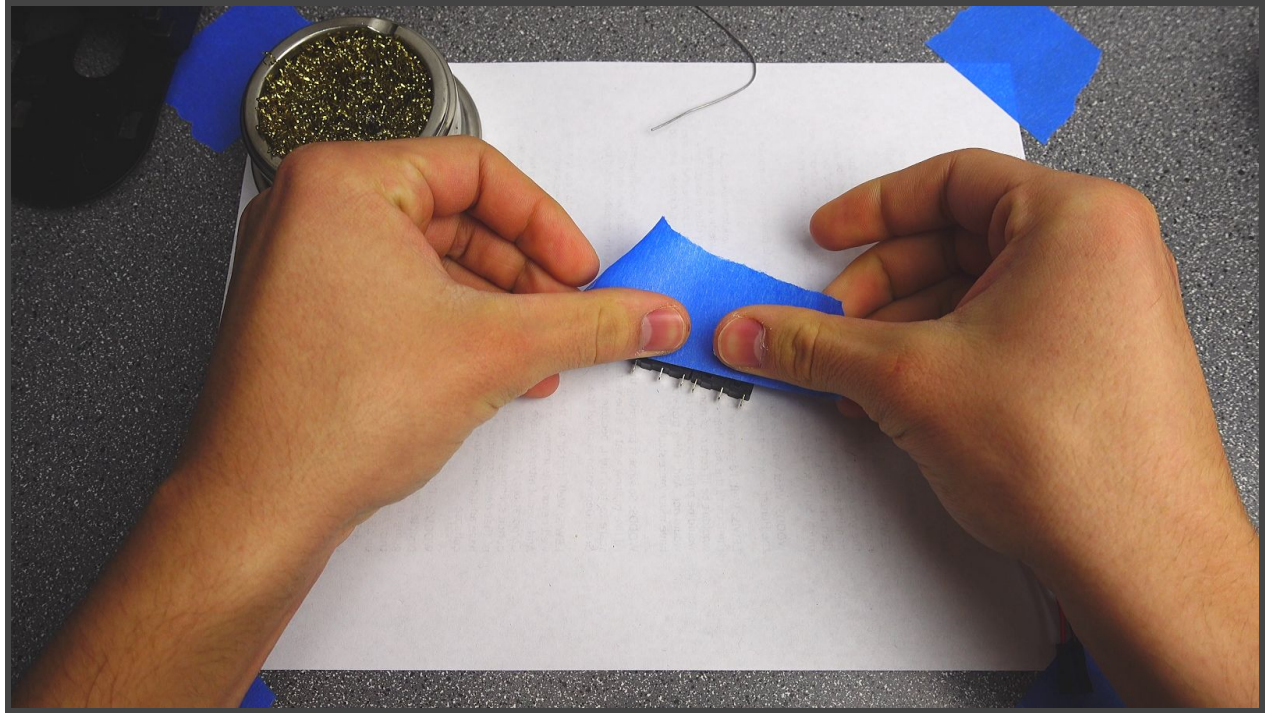
- Cut your pair of wires in half

- Use your wire strippers to strip about 5MM or ¼" insulation off the ends
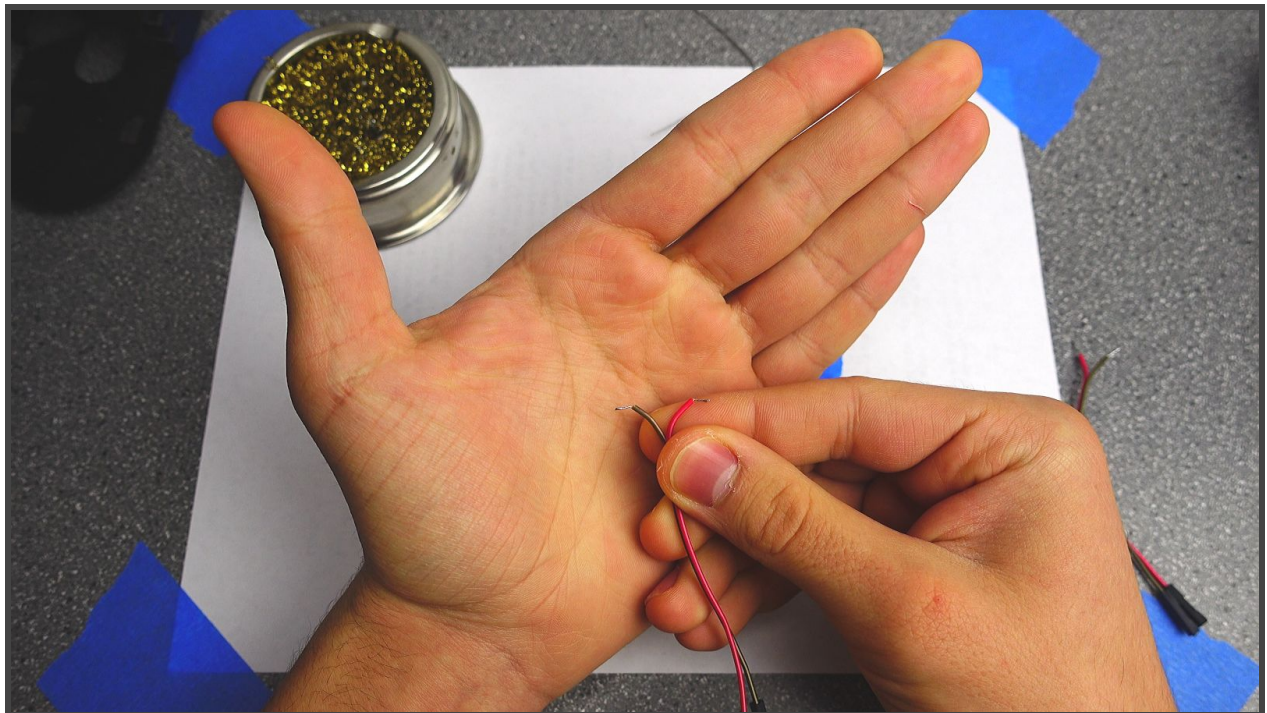
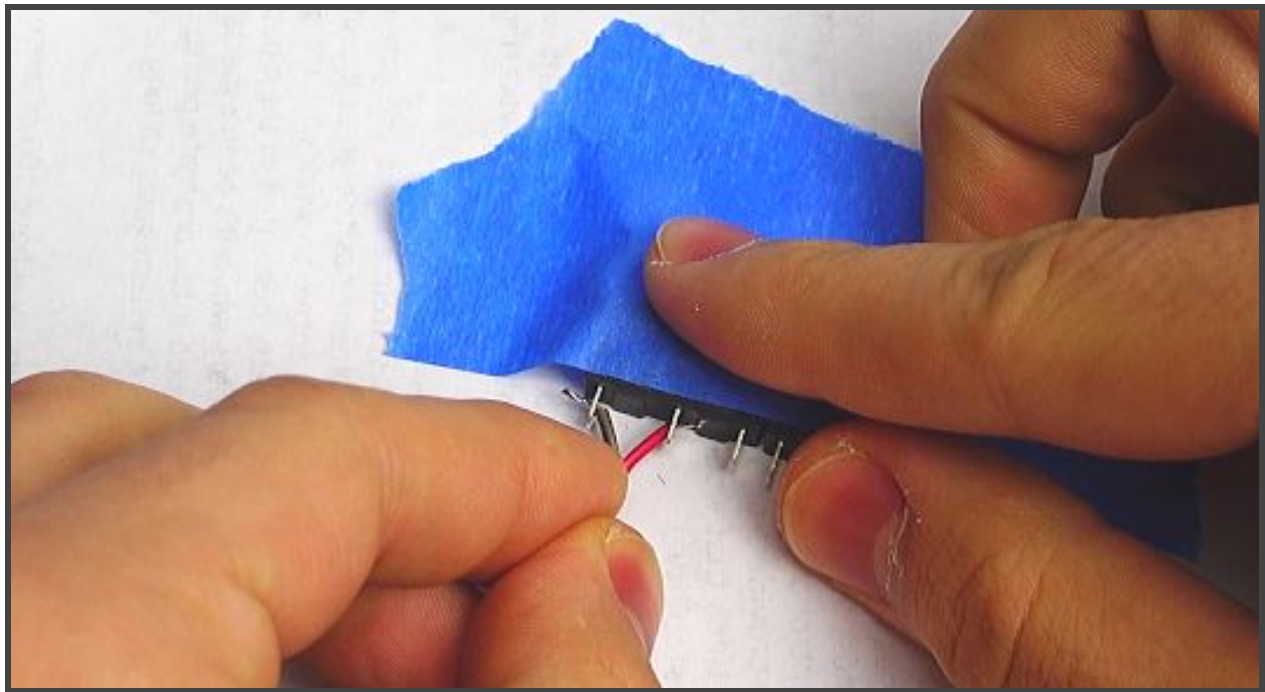- Split the ends apart, then twist the loose strands on each wire end together
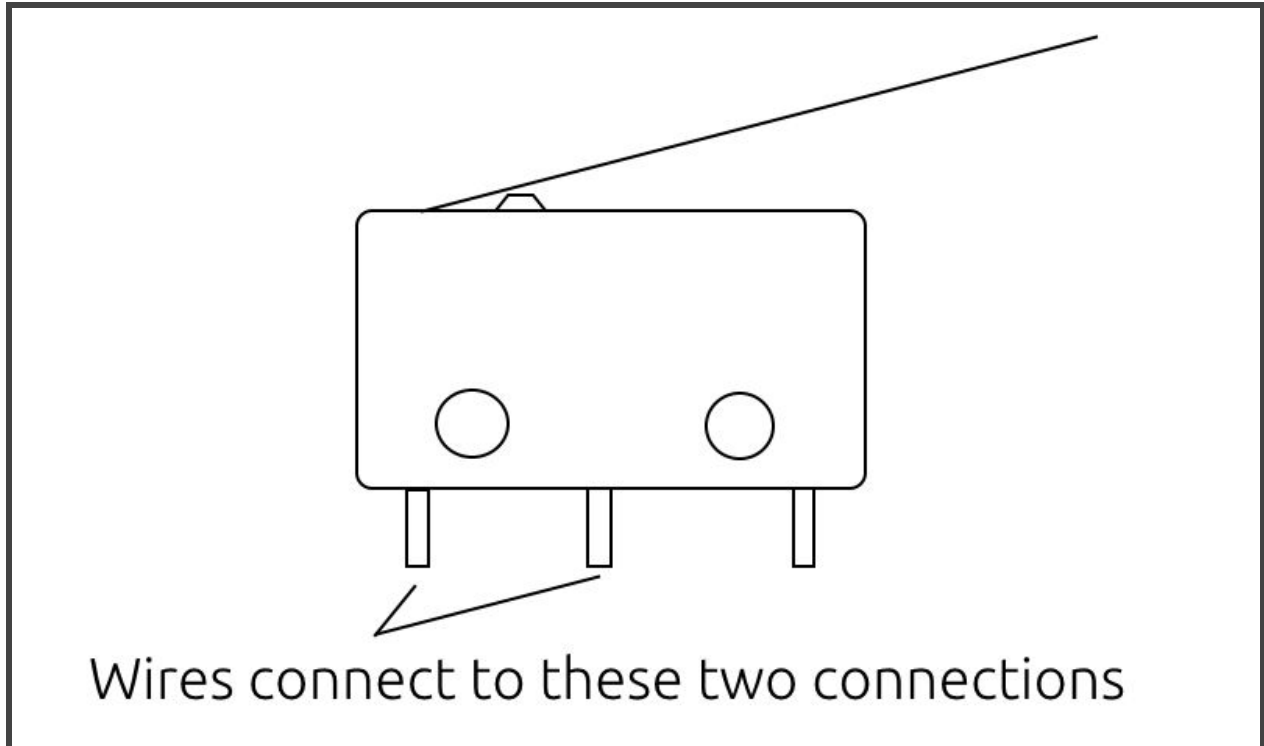

- Tin the wire ends, by holding them over the solder, then applying your tinned iron tip
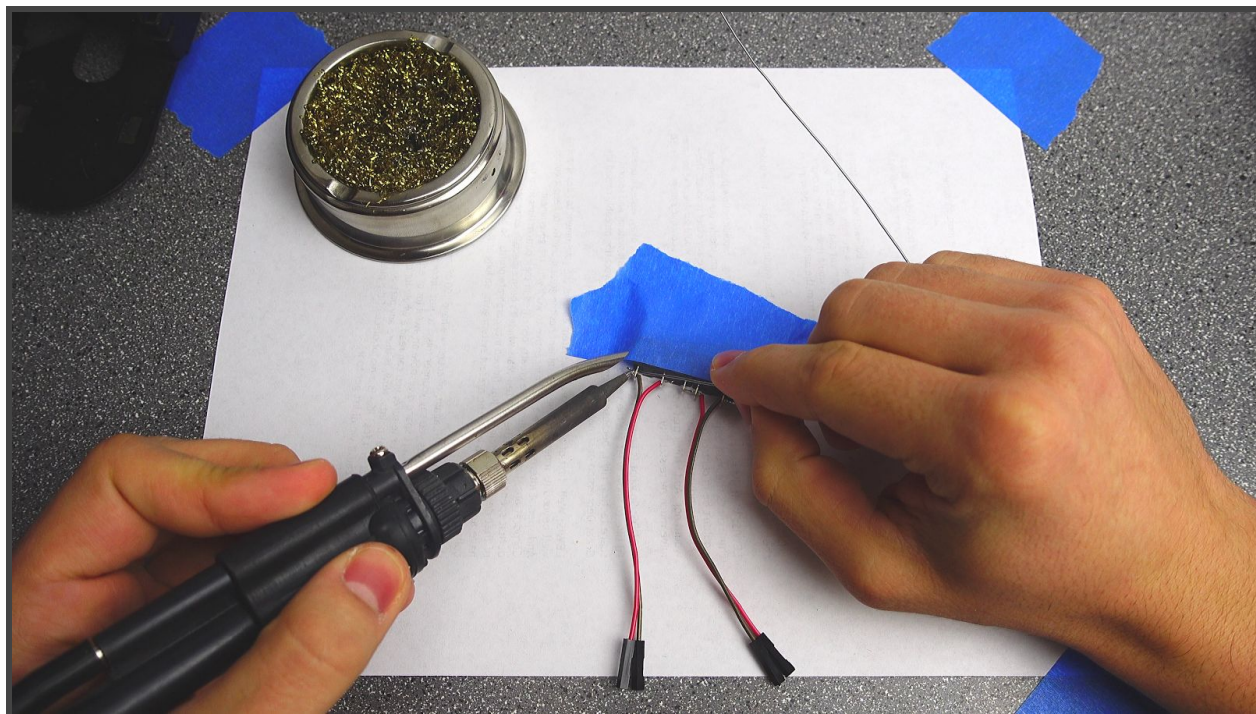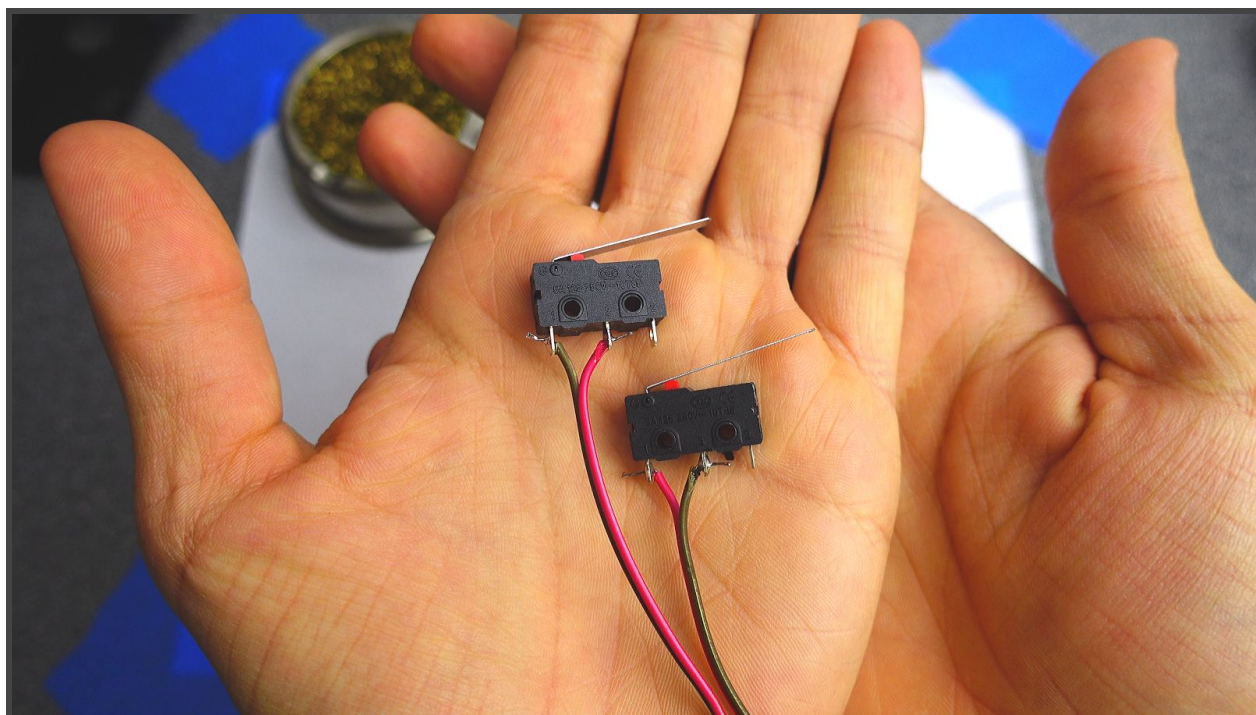
- Secure the sensors so they won't move around

- Bend the tinned ends of each wire so the wires are 180 degrees apart from each other

Wires connect to these two connections

- Insert the wires into the correct metal tabs on each of the sensors, as shown.

- Solder each of the wires to the metal tabs

Your bump sensors are now ready to be used on a ProtoBot!