## Tools and Supplies

While not listed in the bill of materials, these items are necessary for putting the display together. You may have many of them on hand already. The only thing I didn't have in the lab already was the laser cutter, where I went to a local hobbyist group.

- *Hot glue gun with plenty of glue*
  The LEDs and dishes are glued into place on the middle layer. Hot glue worked great for me, but you're welcome to try other kinds of glue as well.
- *Philips screwdriver*
  All screws I used are Philips head. Also useful for the LED power supply ports!
- *Vice-grip*
  Good for tightening the screws. My middle board bent which made stacking the 3 boards together difficult without this.
- *Scissors*
  For cutting the labels after printing.
- *X-acto knife*
  Had its many uses, such as removing bad glue applications and cutting the foamcore.
- *GPIO female to male jumper cables*
  You'll need signal and ground cables running from the Pi to the LEDs. These specific jumper cables slip on to the GPIO pins smoothly and then insert into the LEDs plug.
- *Wire cutters and strippers*
  You'll need to make some custom wires that are long enough to power the LEDs towards the top of the display. I'll describe this more in the build guide.
- *Double-sided tape*
  For sticking the labels on the foamcore and the foamcore on the acrylic.
- *Electrical tape*
  I had 2 jumper cables connected end to end for both signal and ground. I used electrical tape to reinforce the joint between them.
- *Duct tape*
  You'll have 30 extra LEDs hanging out at the end of your string, unused. I taped these to the back side of the display so that they weren't piled up on the ground.
- *Soldering station, solder, heatshrink*
  Again, you'll need to make some custom wires.
- *3D printer*
  All the dishes are 3D printed. We used a Makerbot Replicator+.
- *Laser cutter*
  The 3 main boards are all laser cut for precision. You need a very large laser cutter, at least 30" by 35" (the size of the hex). I used a 31" by 48".