

3018V VEXcalibur CAD Challenge

How did we use CAD to design our part?

- We watched tutorials on how to use inventor at VEX.com to learn how to use the software
- We drew simple shapes such as cubes and put holes in them to get use to using the software
- We built a robot named Scout in the software from downloaded STEP files from VEX.com
- We removed internal parts and wire from the motor
- We sketched and extruded base
- We sketched/extruded/cut/revolved to make the plug
- We attached the clip onto the base
- We assembled the clips onto the robot and routed motor wires through them to the brain
- We created a part drawing(IDW) to explain the part in further detail
- We inserted title block, placed base projection section detail and isometric views
- Dimensioned the part
- Selected material and inserted a bill of material

How does this part work with other VEX parts?

- It plugs into square holes of the extrusion
- It orients the wires with the extrusion
- It can hold up to four pairs of wires

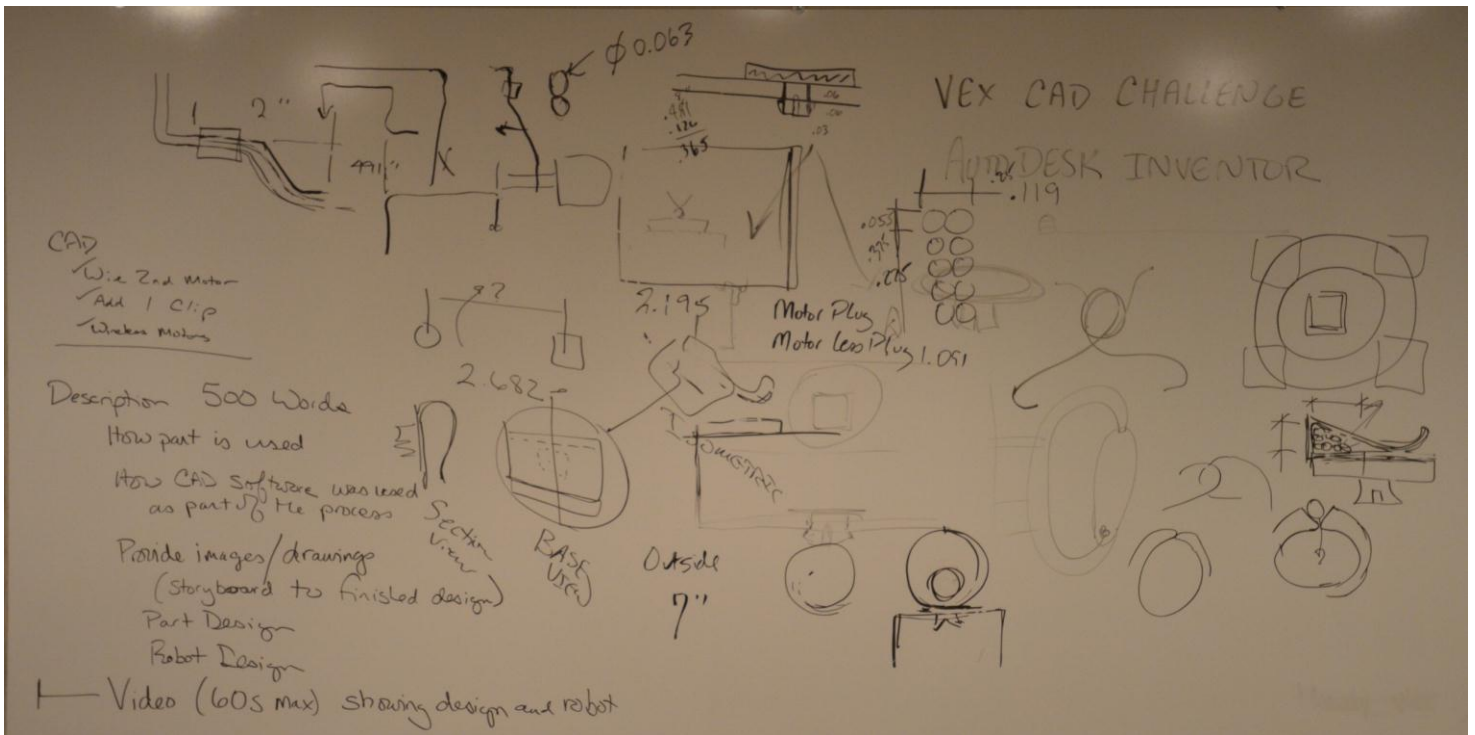
What does the part do?

- It reduces the waste of Zip-ties
- It makes wiring faster and easier
- It holds and routes wires
- It is easy to install wires in

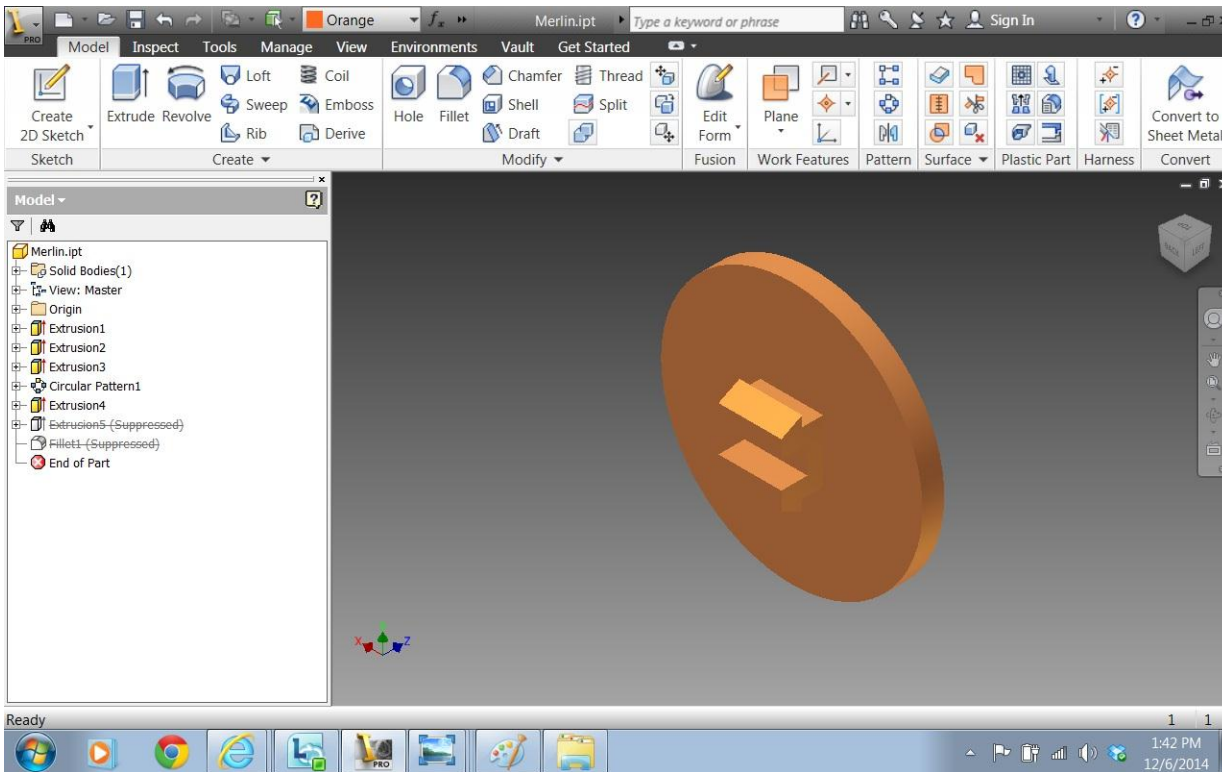
How would we make this part better?

- Reduce material by reducing size of base and clip
- Color-code for different motors?
- Make clip bigger for bundling wires together

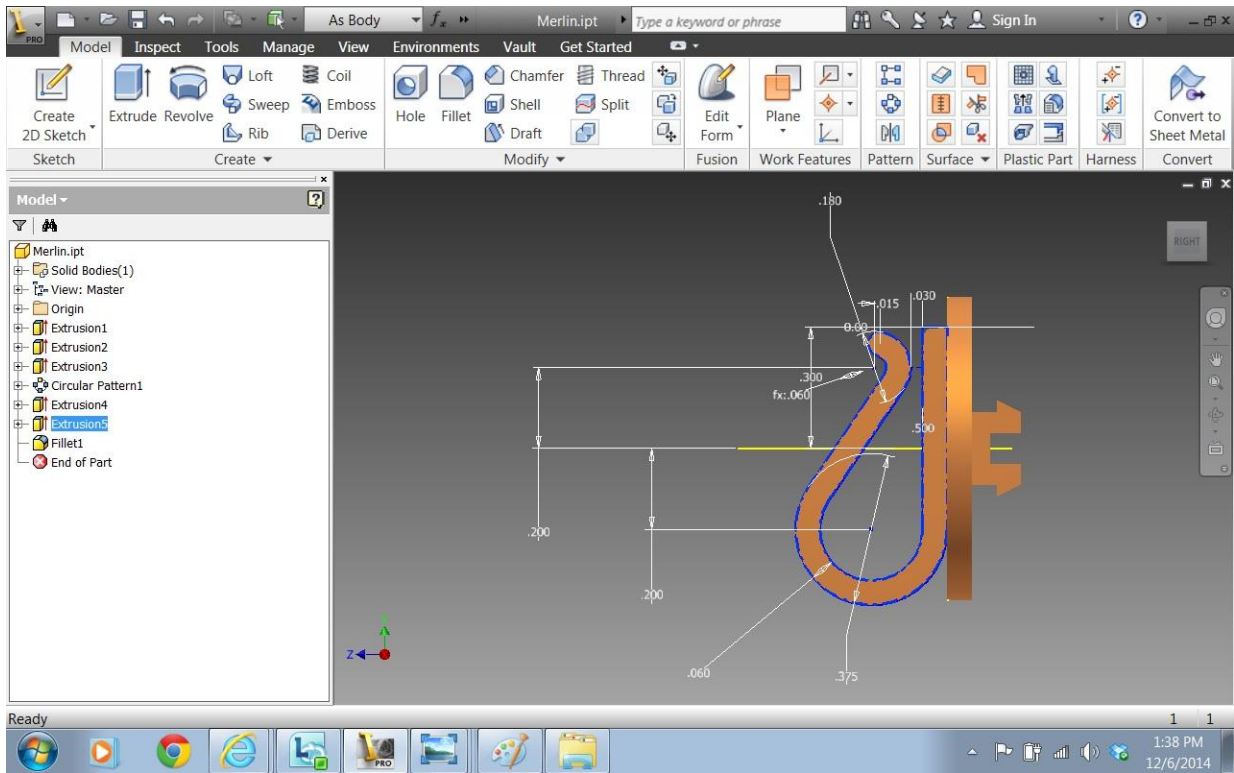
Design Process:



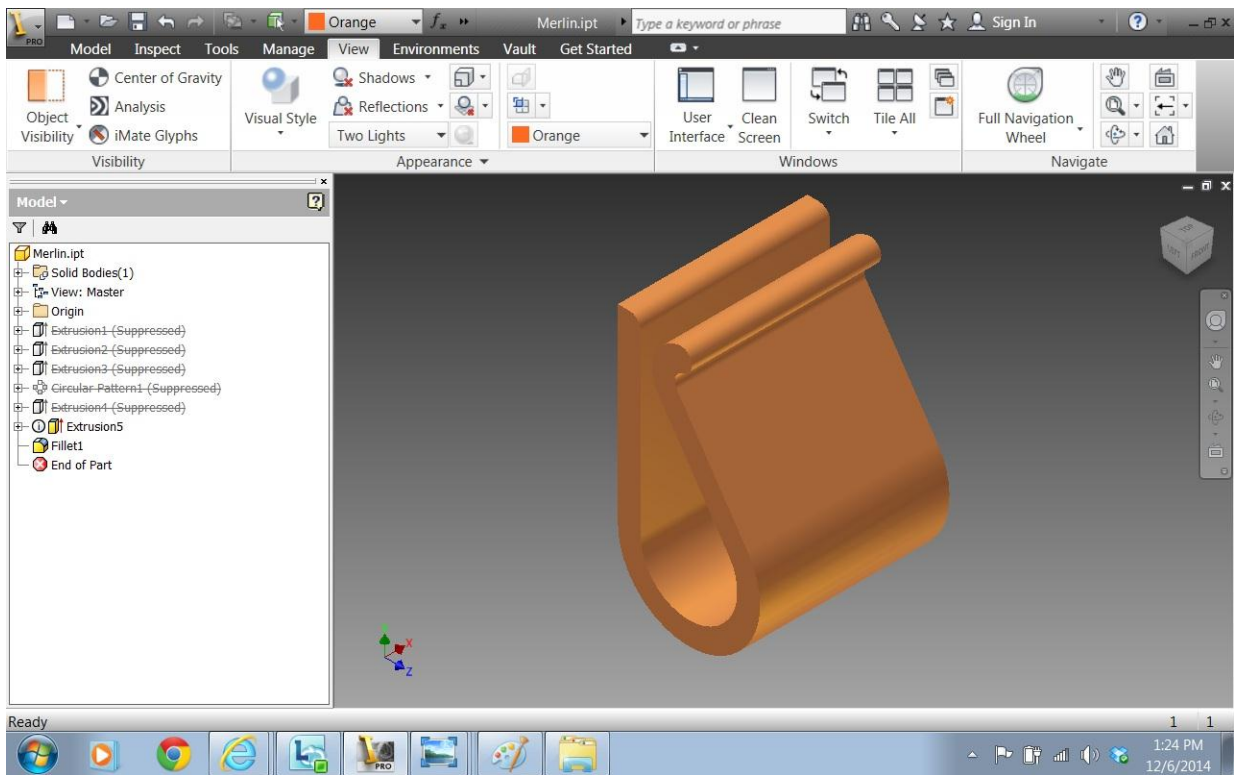
Step 1, Storyboard



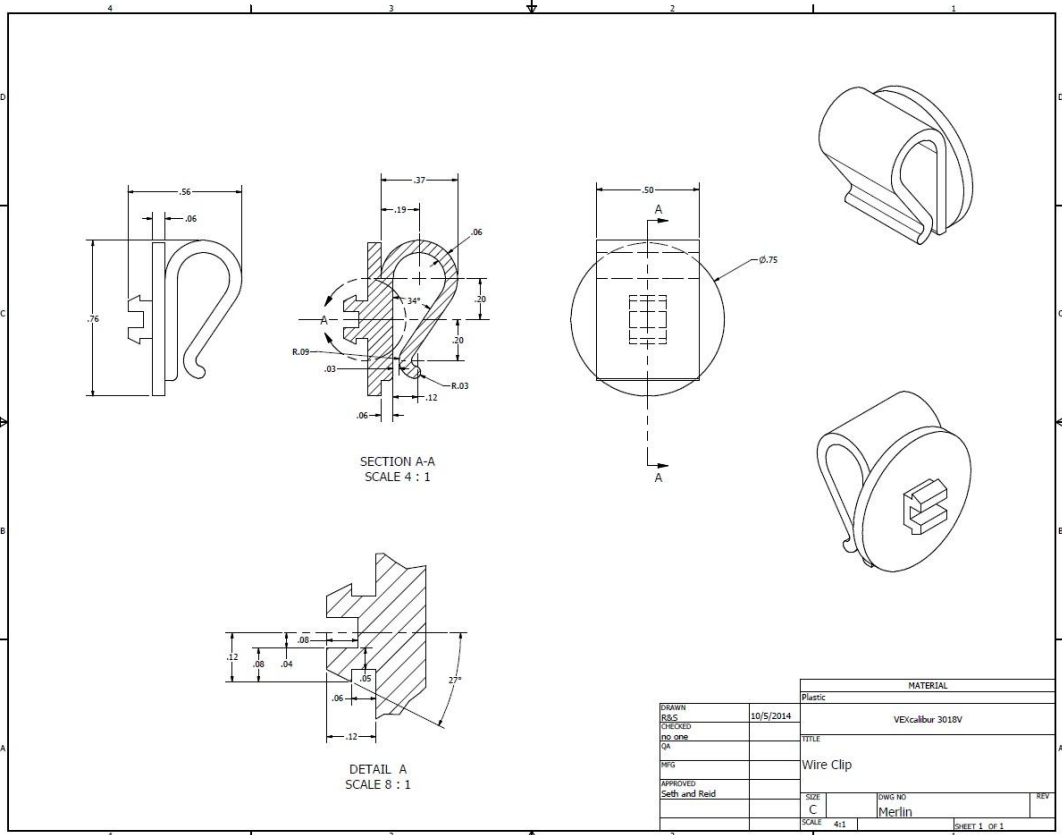
Step 2, Base



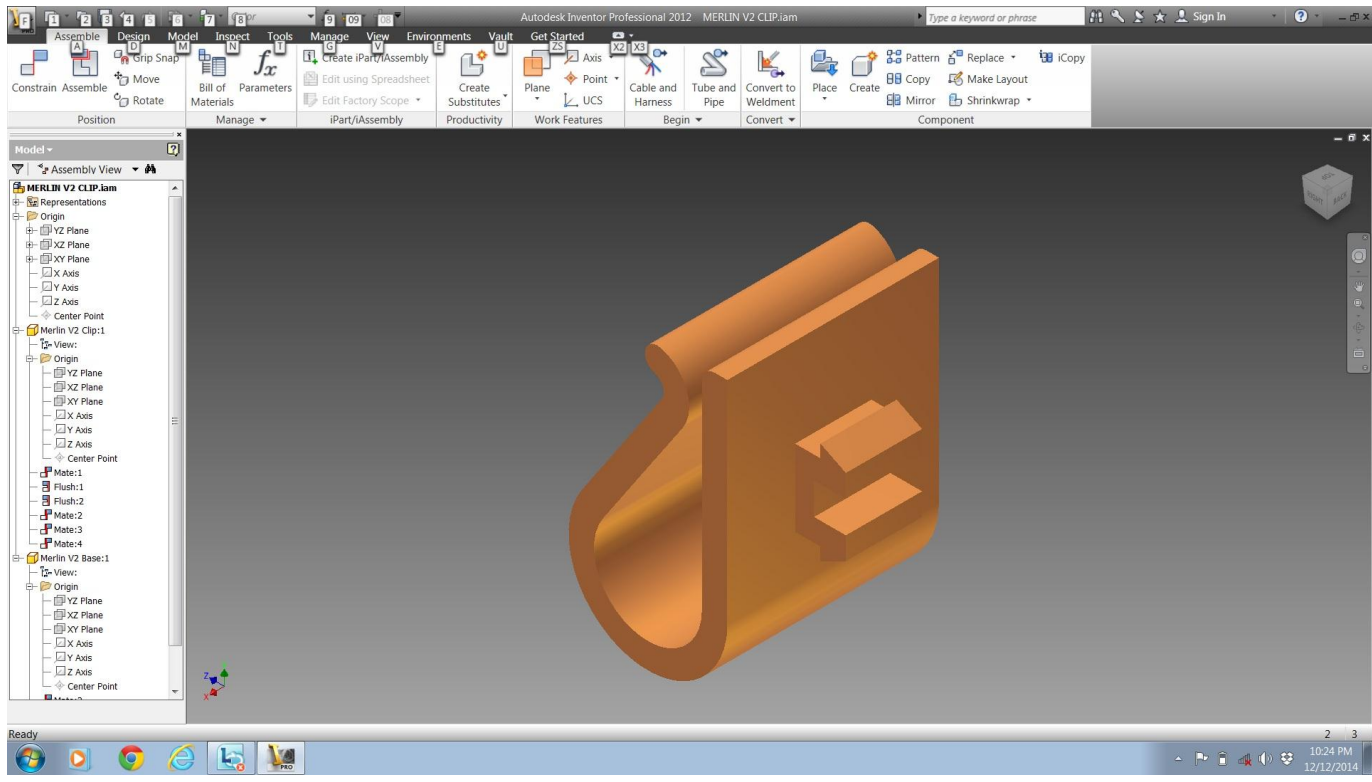
Step 3, Clip Sketch



Step 4, Clip Extrusion

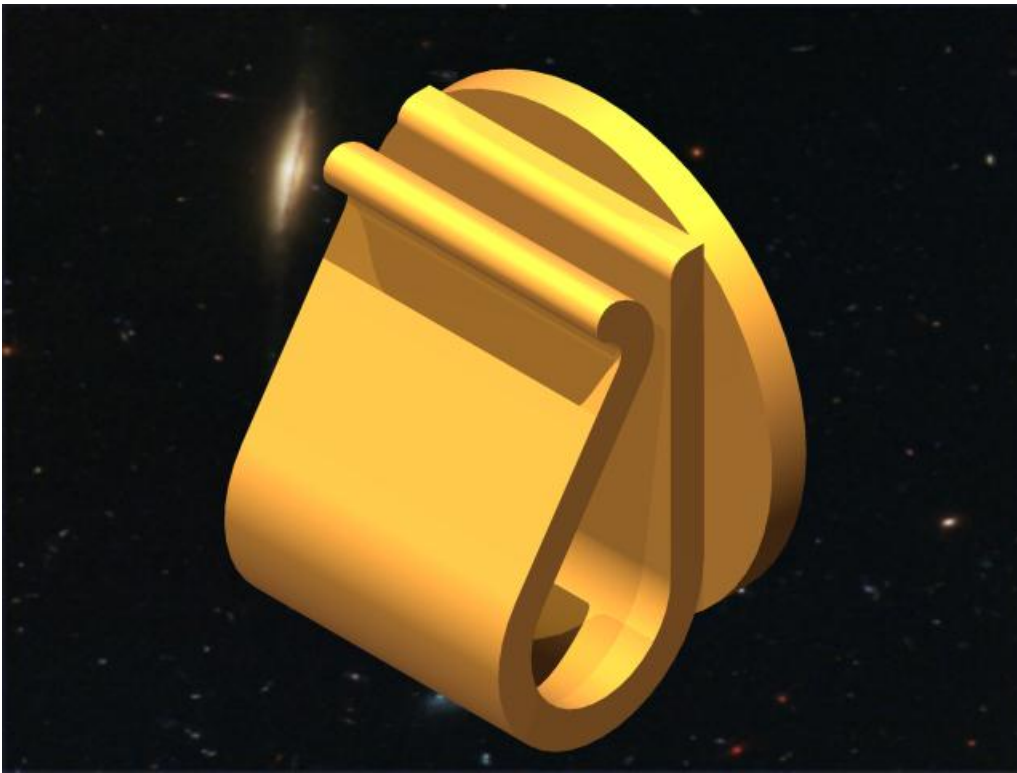


Step 5, Dimensioned Part Drawing

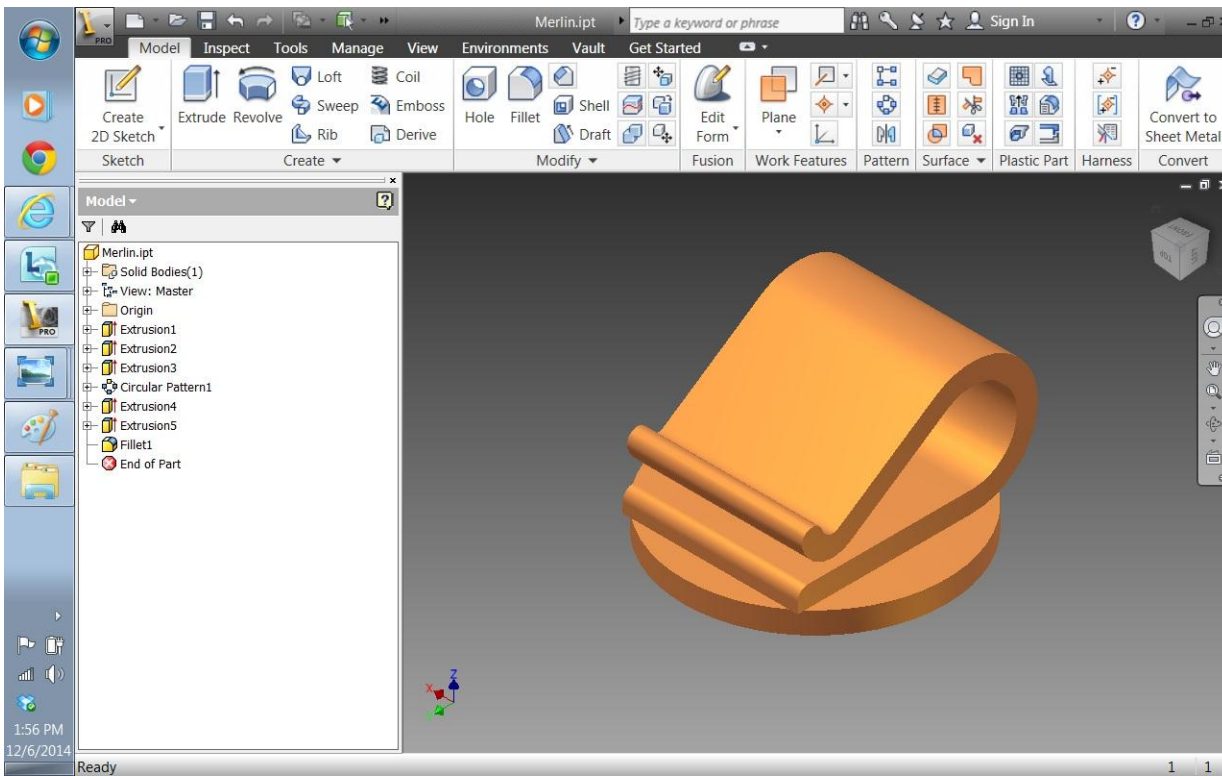


Step 6, Modified for 3D Printing

Completed Part Design:

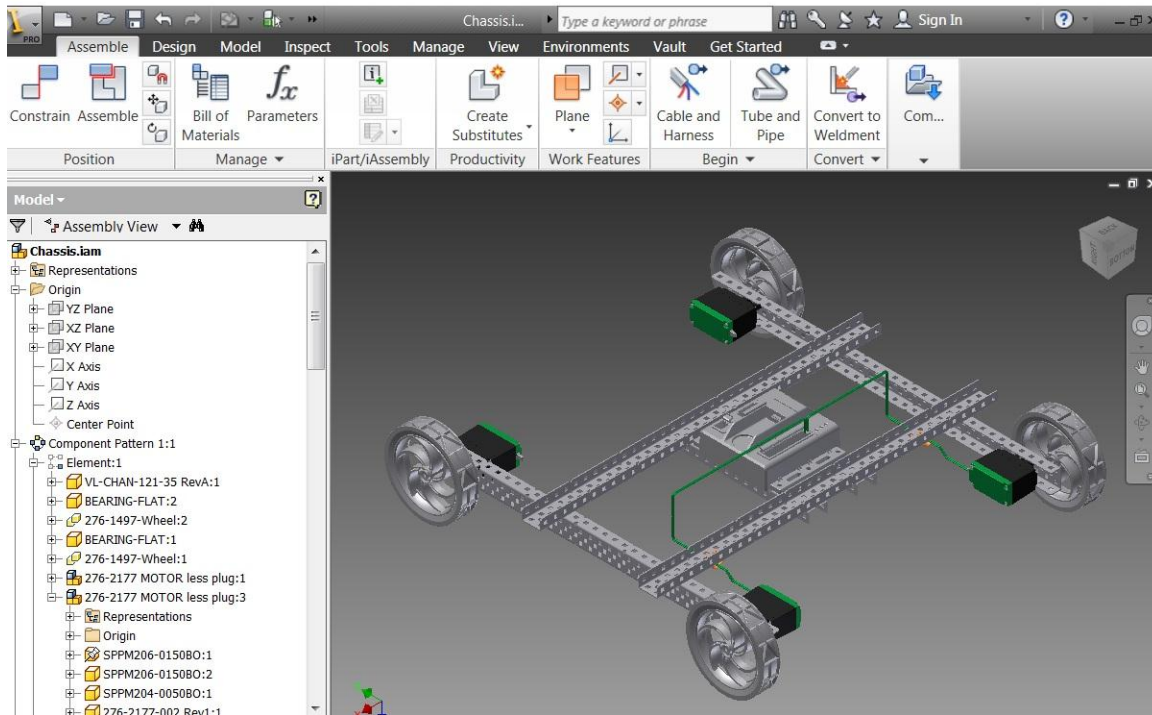


Wire Clip, Rendered Isometric View

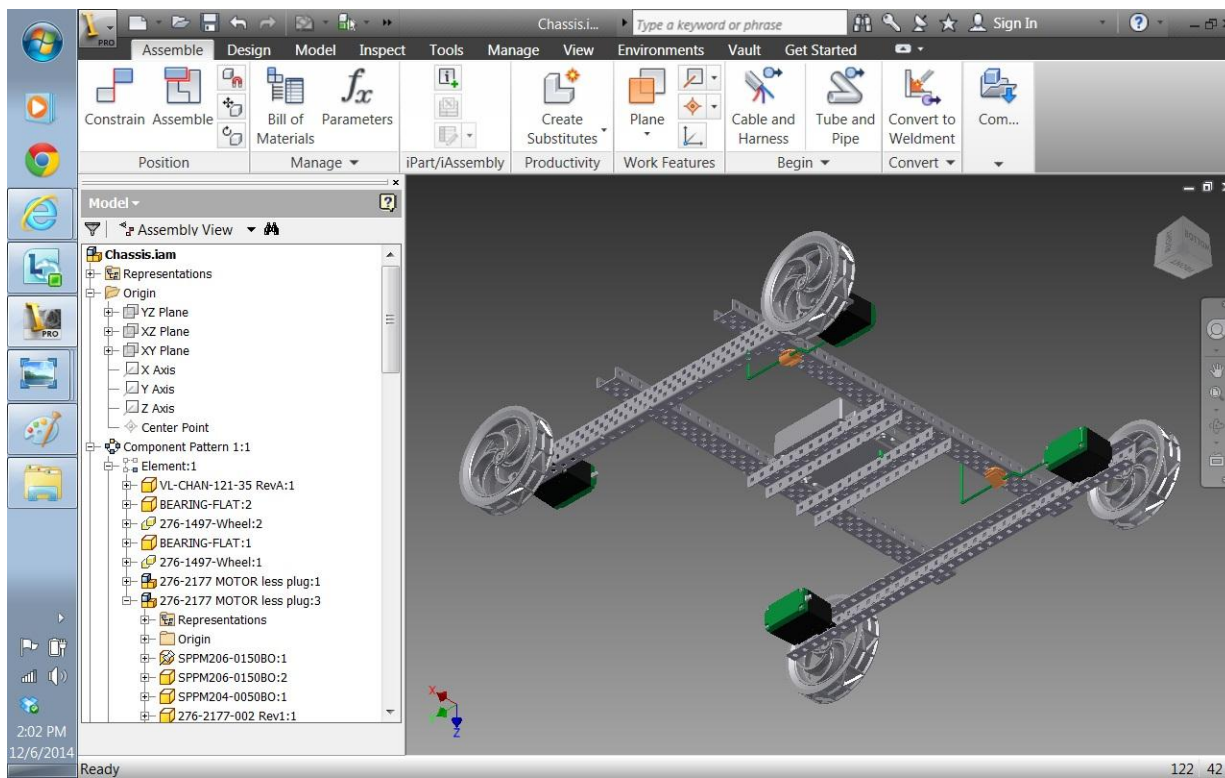


Wire Clip, Isometric Top View

Completed Robot Design

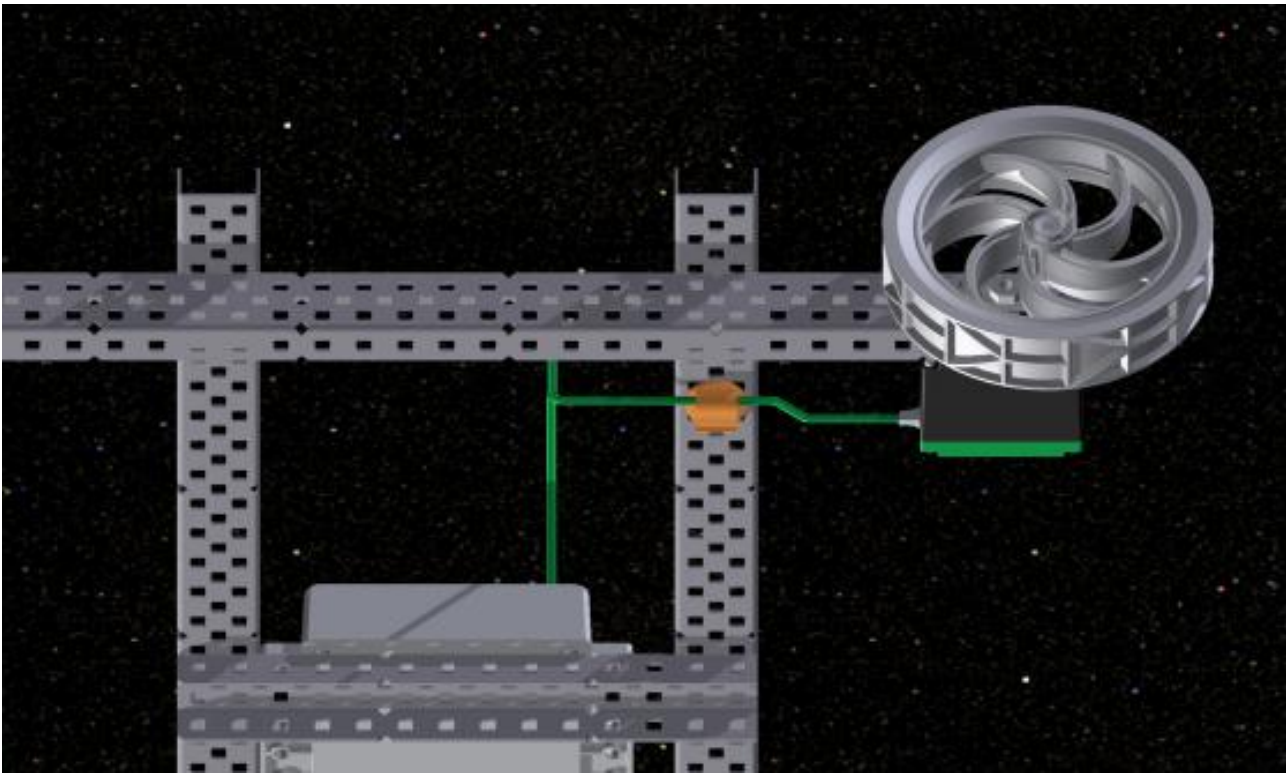


Scout (Push-bot), Top Isometric View

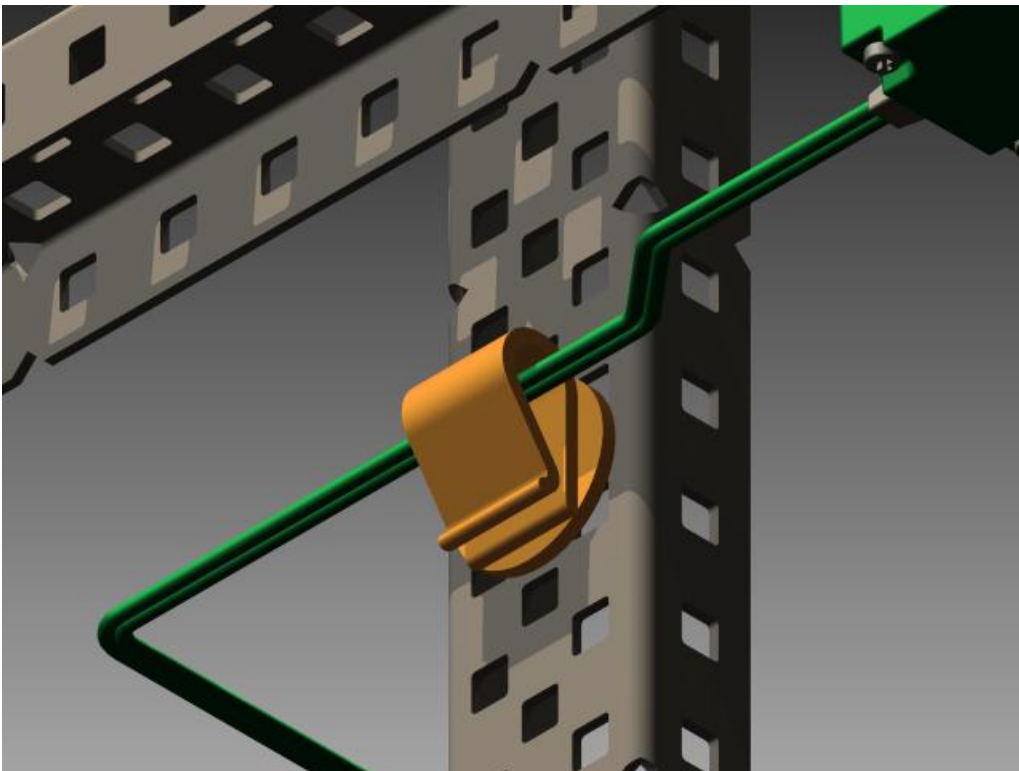


Scout, Bottom Isometric View

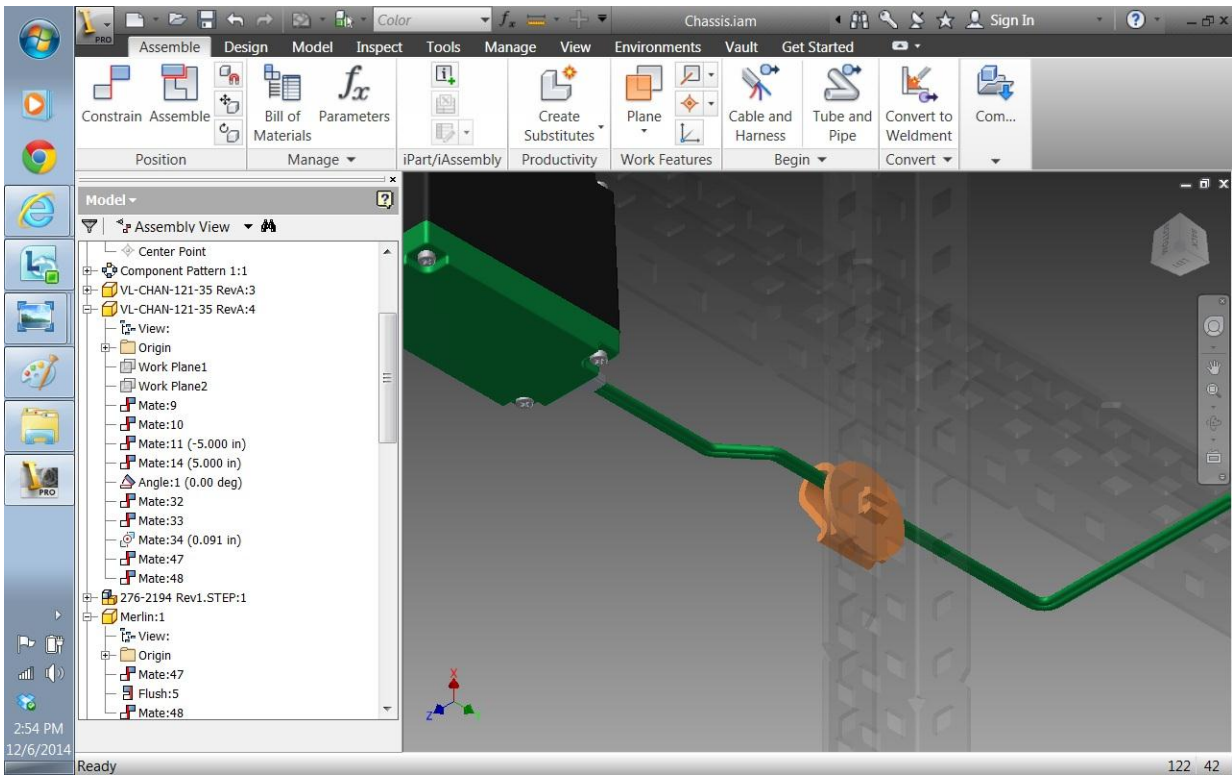
Assembly Views



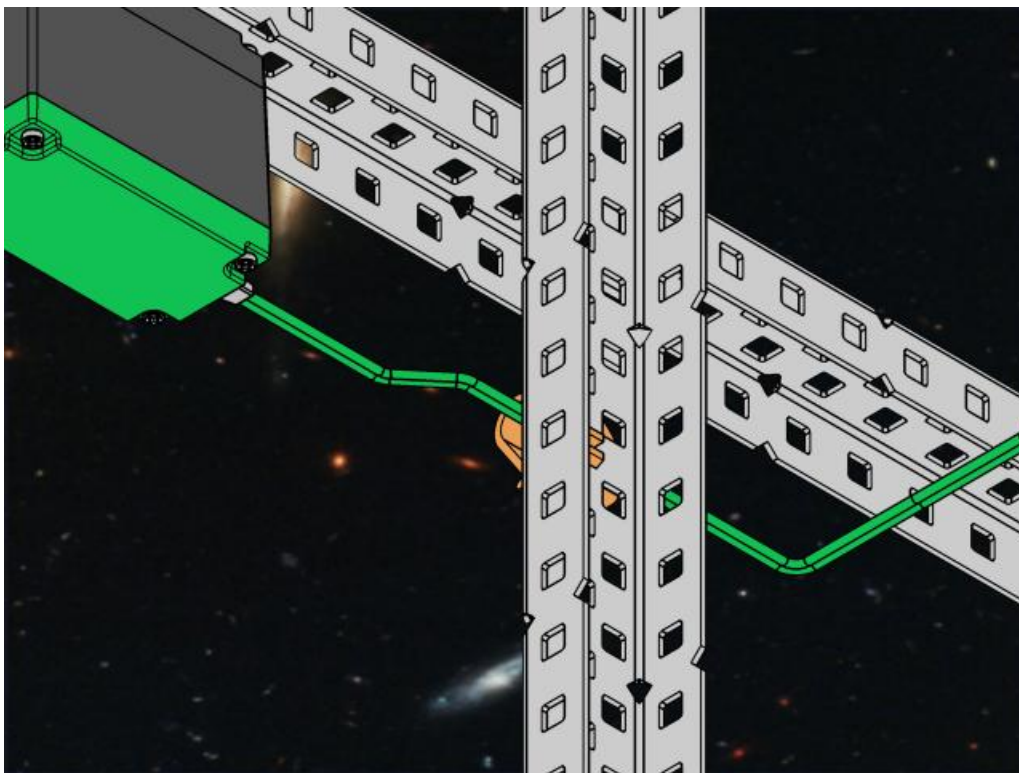
Assembly, Zoomed View 1



Assembly, Zoomed View 2



Assembly, Zoomed View 3



Assembly, Zoomed View 4