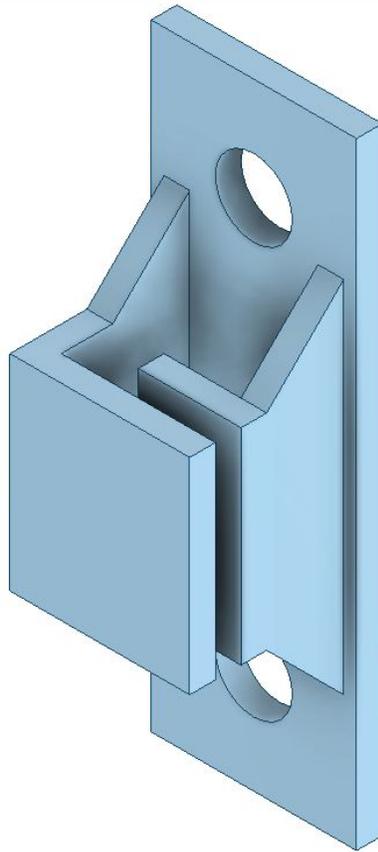


The Mountable Wire Clip

IronMechs 99157A

2021 “Make it Real” CAD Engineering Online Challenge

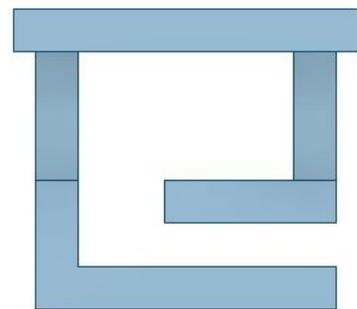


The Problem

After building a robot, wiring it can be one of the most cumbersome parts of the process. Keeping the wires organized is even more difficult. Not to mention having to remove all the wire ties from the very top of a lift all the way down to the base if a wire becomes frayed. To offer a solution, our team came up with this part:

The Mountable Wire Clip

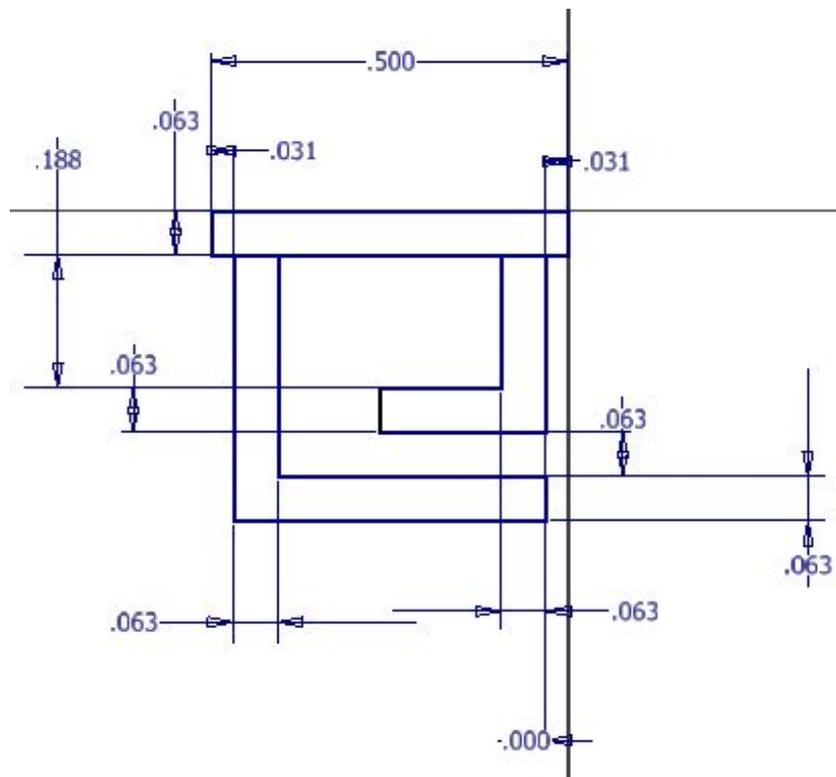
The Mountable Wire clip is an incredibly useful part for wire management. The clip can be attached to c-channels, angle bars, and other types of pieces. To insert or remove wires from the clip, simply slip the cable through the slot. While this part was designed for the new VEX Smart Cables, it can also work with the legacy cables.



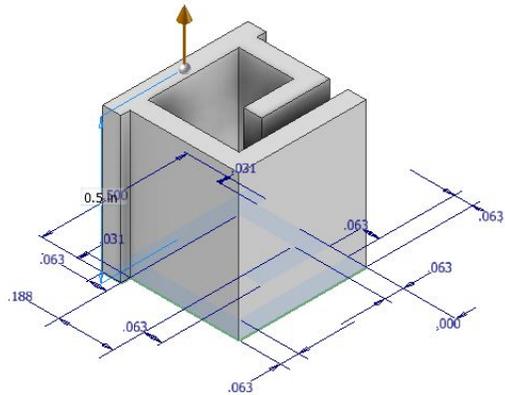
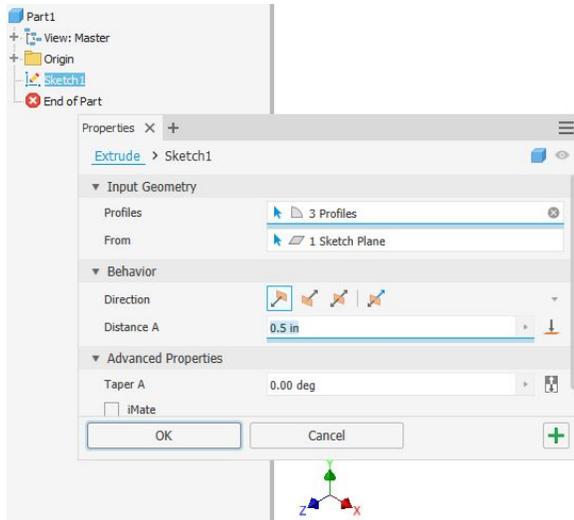
Part Design

We designed this part using Autodesk Inventor Professional 2020. Below are the basic steps in making this part:

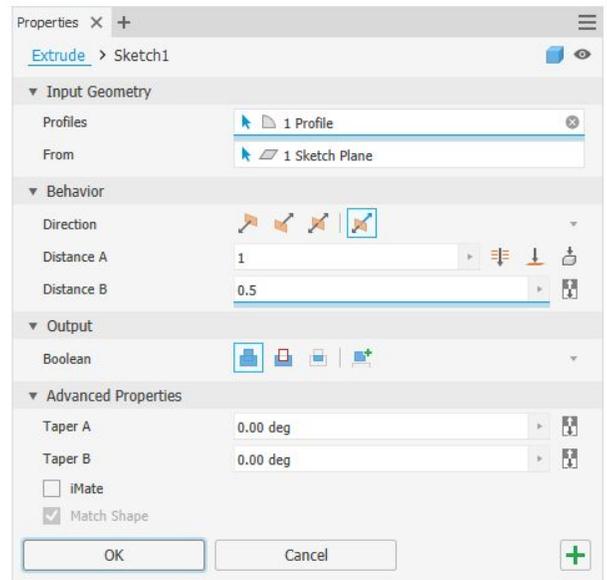
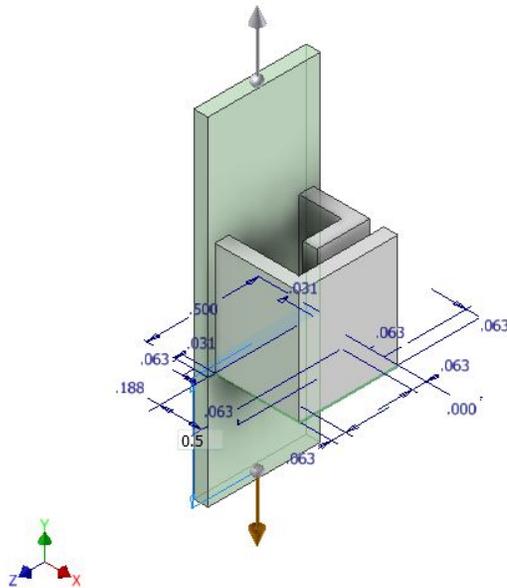
1. Making initial sketch



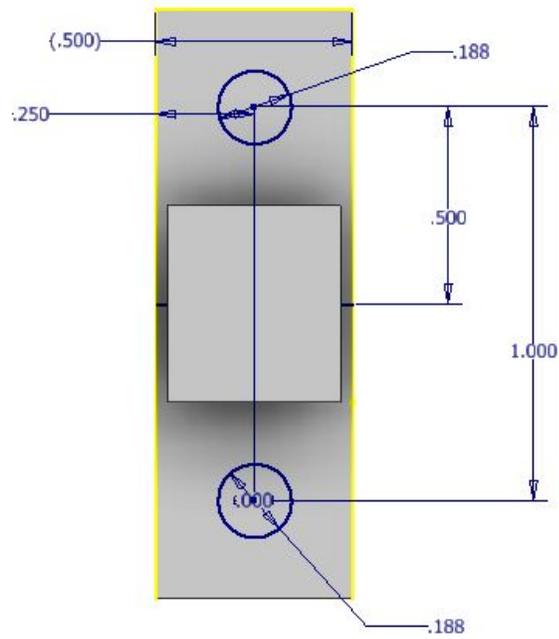
2. Extruding initial sketch



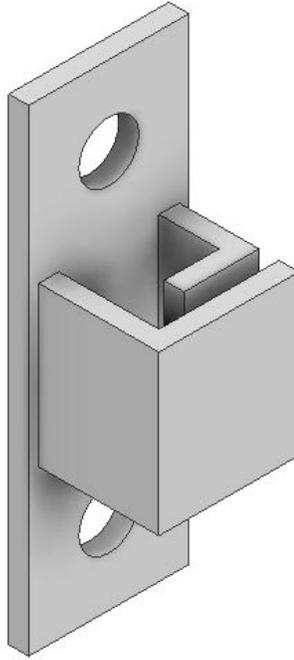
3. Extruding back plate of wire clip



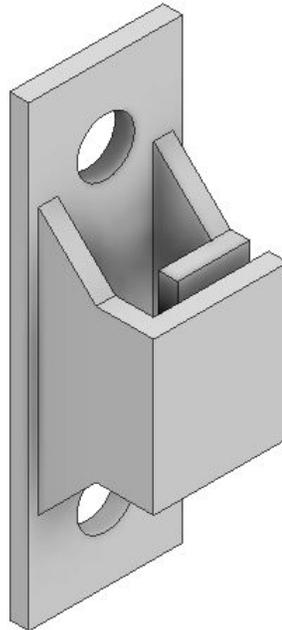
4. Creating sketch on the back plate, drawing two circles for the holes in the sketch



5. Extruding holes into clip

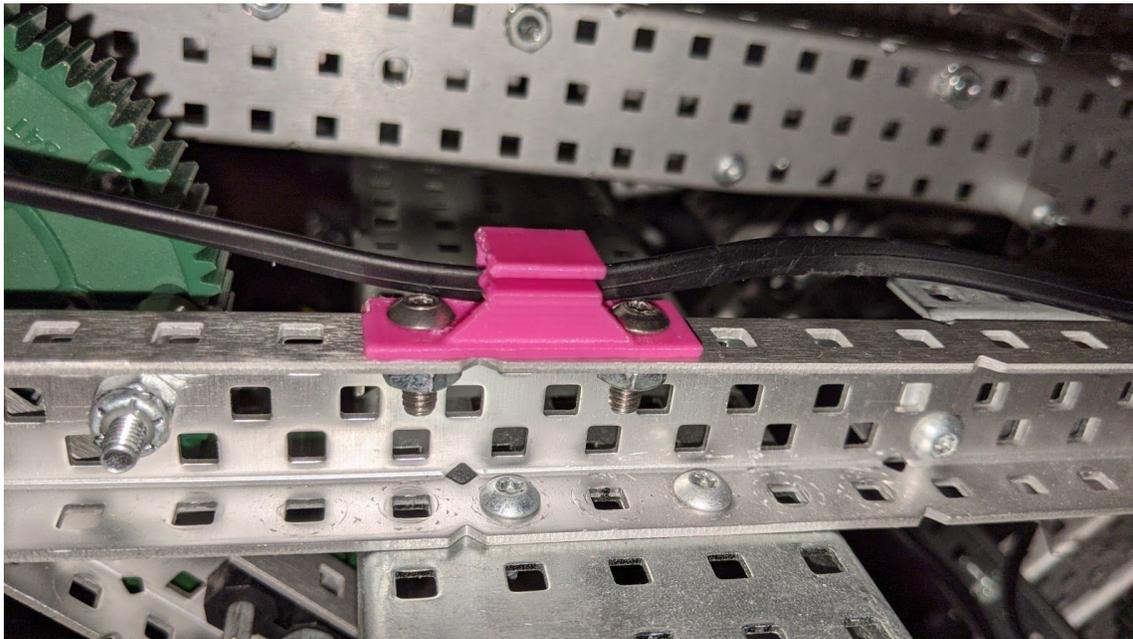
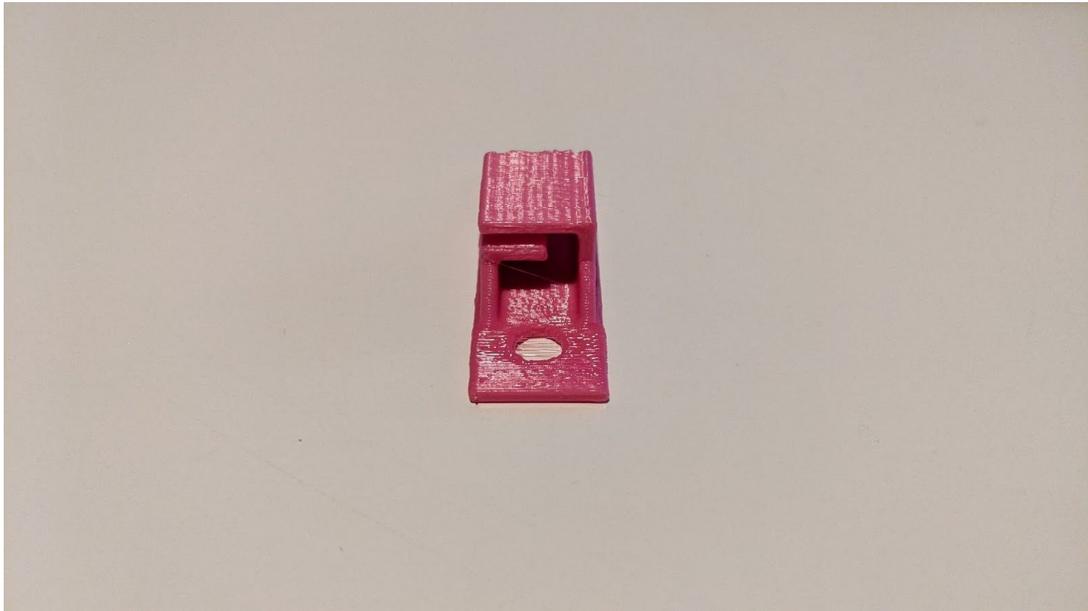


6. Apply chamfers



3D Printing

We 3D printed this part to test on a robot. Below are some images of the product:



Conclusion

Through designing the Mountable Wire Clip, our team developed collaboration skills and adapted to our new environment. Due to the pandemic, we had to meet virtually, which made it more difficult to work on projects together and share them. To overcome this problem, we all prototyped a design separately and then congregated during meetings to share our designs. During the meeting, we spent time taking the best aspects of each person's design and incorporating them in a part that was a hybrid of all our designs.

Additionally, this year our team decided to get everyone involved in designing things in CAD. During the previous years we competed in, there were only one or two people proficient in CAD. Now using these skills, everyone on our team can now confidently say they can use Autodesk Inventor.