

Title: CAD - Think It, Make It

Team: 842T

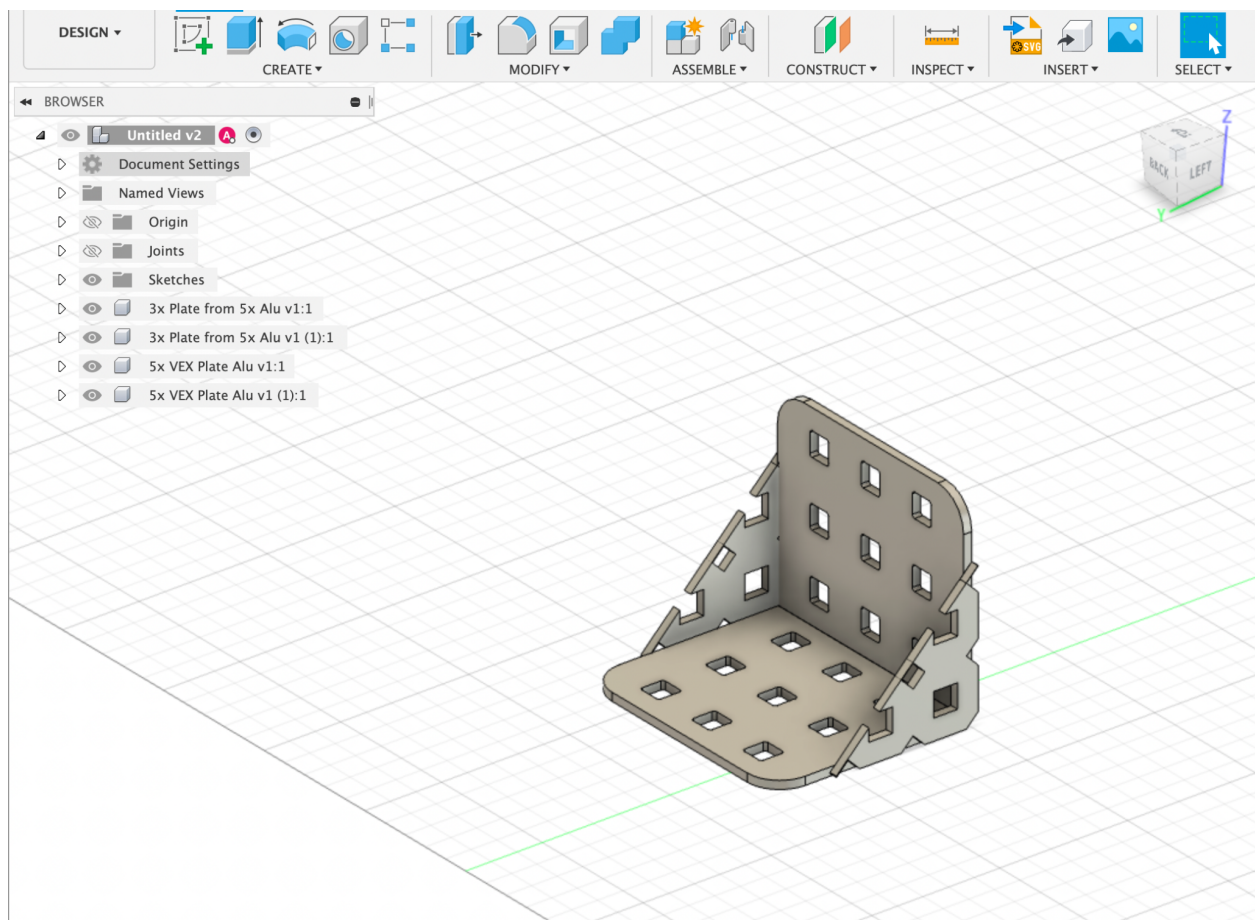
Team Members:

Chloe, Arya, Lily, Diya, Aanya

Location: Chester Springs, Pennsylvania

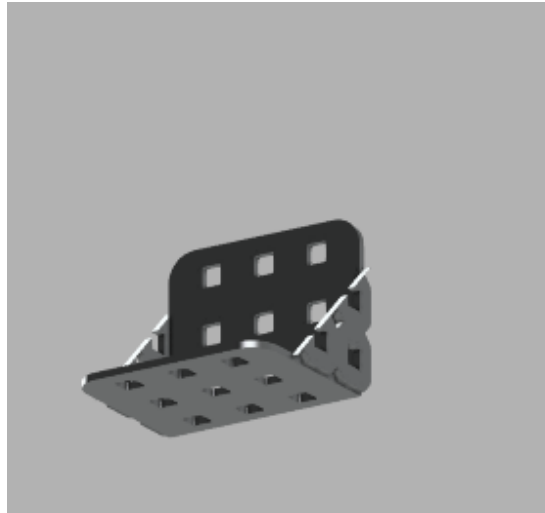


Our team, 842T, has always wanted a robotic component that could connect 2 (two) C-Channels facing horizontally and vertically simultaneously while building because sometimes, the task at hand would get quite frustrating because we could not join together specific parts. After all, there wasn't a piece for it. That's why, using Autodesk Fusion 360, we created a component that can solve our dilemma, and more!



This component doesn't look like much at first, but there is always more than what meets the eye. This new piece is sturdy and tough so that there's less of a chance the piece will bend, or worse, break. The triangular pieces on the side of the component help keep it strong so that it does not bend. As we said before, this new robotic improvement could make the building more easier and efficient because we can attach two C-channels with one facing horizontally, and one facing vertically. We came up with this idea by thinking about all of the challenges we faced while building. Then, out of all the problems we faced, we chose the one in which was the most frustrating problem. Next, we drew many designs and we drew out a C-Channel which was at a 90° angle. We discussed this design and thought about some improvements, such as the

triangular parts at the side to make it stronger. Lastly, we built it digitally in Autodesk Fusion 360 and we finally had our finished component. We are going to explain more in-depth what this robotic component can do.



Some ways our new piece could be used are connecting two C-channels facing opposite ways on the outside or inside of it. The good part is that this part doesn't have to be used for only C-channels. It could be used for long or short screws, bearing blocks, spacers, washers, etc. If this component actually existed, the component could have made the building process much more efficient because it would be easier to attach specific parts together. While building, our hands constantly get scratched and it is quite annoying. If this robotic component existed, we would not have to risk our hands getting hurt because we could screw other parts in easier, and we would not have to stick our hands into the small parts of the robot just to screw something in. By having this piece, we would not have to risk our hands, and the building and designing process could be much more efficient. Now, we are going to talk about which software we used to perform this challenge.

As we have already mentioned, the Autodesk design software we used is called Autodesk Fusion 360. We chose this software because one of our team members has worked with Autodesk Fusion 360 in the past, so she taught us some of her tips and tricks on how to use the software. We learned how to cut and connect pieces, how to make a moveable joint, and much more. Fusion 360 is also easy to use. We were given most of the basic parts beforehand and we started working from there. We have a specific spot for all of our components in Fusion 360 called the "Fusion Parts Library." We then insert the parts we need into the design and we start cutting and combining from there. The main parts we used to create our robotic element were C-channel plates. We used two 3x35 plates and two 5x35 plates to create this component.