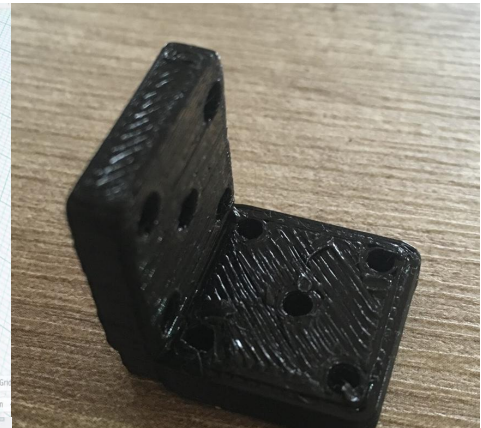
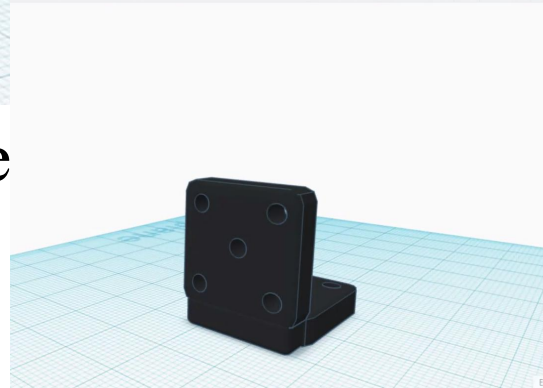
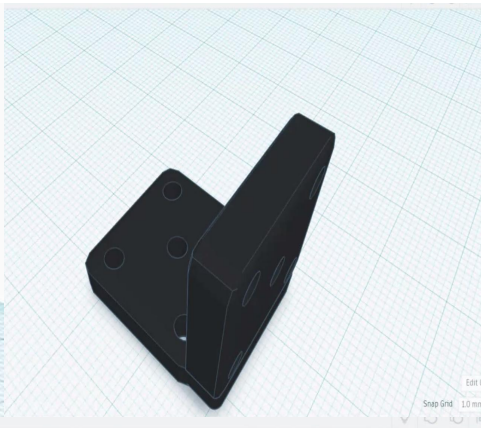
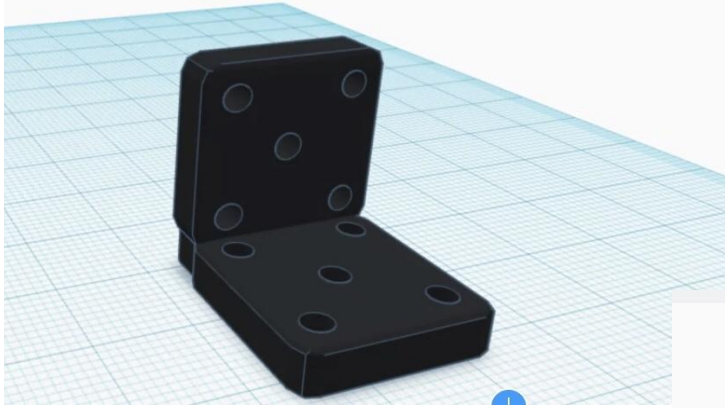


The background features a 3D illustration of nine colored blocks stacked in a 3x3 grid. The top row contains red, orange, and light orange blocks with the letters 'T', 'I', and 'N' respectively. The middle row contains green blocks with the letters 'K', 'E', and 'R'. The bottom row contains blue blocks with the letters 'C', 'A', and 'D'. The text 'VEX IQ CAD STEM Engineering Challenge' is overlaid on the blocks in a large, black, serif font.

# VEX IQ CAD STEM Engineering Challenge

By 5164A Marquez-Blue  
Members: Amelia Halpin, Logan Bird, and Hiyab Dunham

We used Tinkercad version 2019\_10\_14.



These are two photos of the 3D printed piece.

This is the piece that we made for the CAD Modeling Engineering Challenge. We call it the “2x2 Double Corner Connector.”

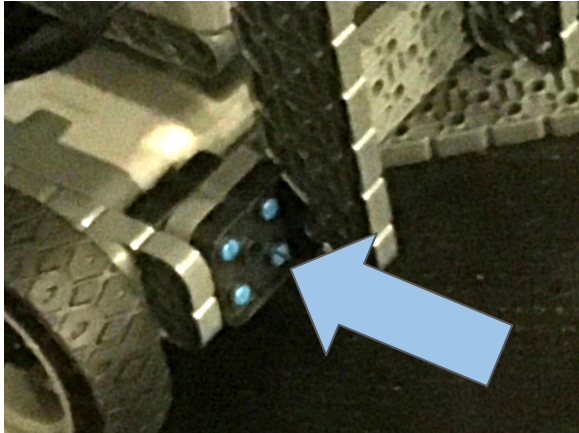
These are a few other pictures  
of the piece.



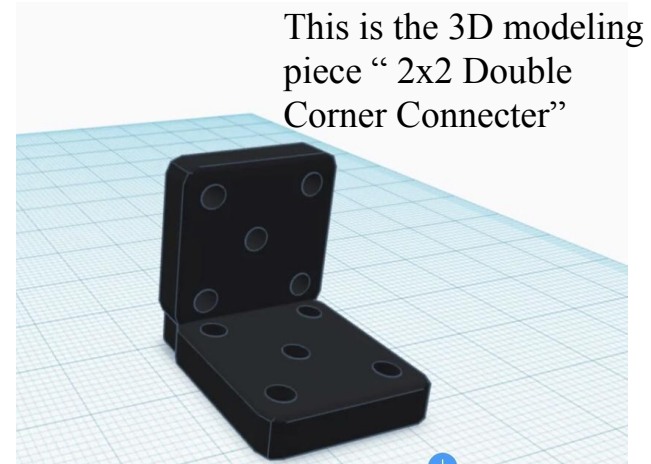


# Introduction

We made this piece, the Double Corner Connector, to connect horizontal and vertical bars on a robot. It could be used to connect a drive base to a vertical module, such as a four bar lift. You could put in connector pins (up to 5 per face) so you could use it as a rigid piece (if you use 2 or more connector pins) or have it be able to rotate at different angles (if you use only 1 connector pin). The problem which this piece would solve is that it would allow us to securely connect 2 beams perpendicularly.



This is where we could have used the piece to make the connection between the two beams stronger. Without the piece, we had to use many different pieces to connect 2 beams, which made the connection less stable.



# How We Used Tinkercad

We used Tinkercad as our modeling software because it is easy to learn quickly. It has many good features that we used a lot! For example, the copy and paste tool is useful to get an exact replica of the vertical side to make the horizontal side of the piece. The massive library of blocks and polygons was also helpful. This program made it possible to design 3D models quickly.



This is the TinkerCAD logo sign

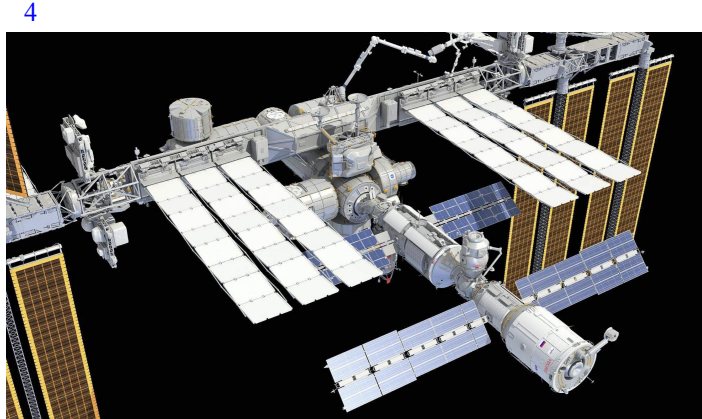
# Jobs with 3D Modeling

Some jobs we find interesting are Aerospace Engineering, Interior Designing, and Fashion Designing. 3D modeling would be helpful in Interior Designing because you could use it to plan the design of the inside of a house. It could be helpful in Fashion Designing because you could use it to design clothes or outfits you are trying to make. Finally, you could use 3D modeling if you are an Aerospace Engineer to help design new spacecraft.



1 This is a 3D model design of a house from TinkerCad.

ISS International Space Station 3D Model to show how you can use 3D modeling to design a new spacecraft .

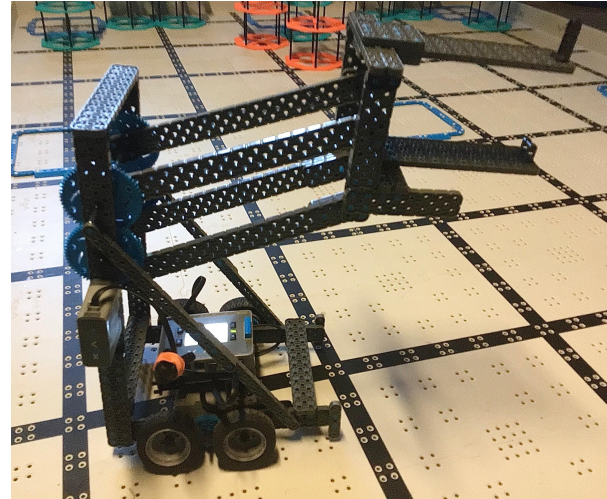


2 This is a 3D shirt and pants. 3D modeling helps you see it from every angle.



# Conclusion

As a team, we learned many things by doing the Vex IQ Challenge “Make it Real” CAD Engineering Challenge, sponsored by Autodesk. We learned how to use TinkerCad and 3D modeling. We also learned how to do a project together virtually because of COVID-19. We got to be creative about how we wanted the piece we designed to work and look. We think we might use 3D modeling in the future to make 3D art. TinkerCad might help us if we were on a competitive robotics team because we can use it to make pieces we need for our robot.



This is the double Corner Connector at work



## Photo Credits

Page 4, picture 1 and page 5 picture 1

<https://www.tinkercad.com/dashboard>

Page 5, picture 2

<https://img-new.cgtrader.com/items/1993486/b32a0585db/shirt-and-pants-checkered-shorts-and-t-shirt-3d-model-obj-mtl-3ds-fbx-stl-blend-dae.jpg>

Page 5, picture 3

<https://www.renderhub.com/3d-horse/iss-international-space-station>

Page 7, picture 1

<https://explorelausd.schoolmint.net/school-finder/schools/1532/marquez-charter>

Figuring out how to do this project as a team virtually was a big challenge because we can't meet in person as a result of quarantine. We had to use Google Classroom and Google Slides to communicate and schedule Zoom meetings just to work on our project together.

## Credits

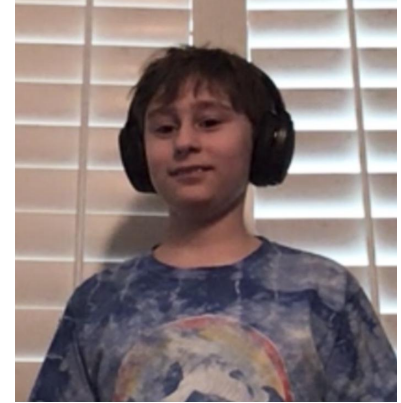


Hiyab Dunham



Marquez Logo

Logan Bird



Amelia Halpin