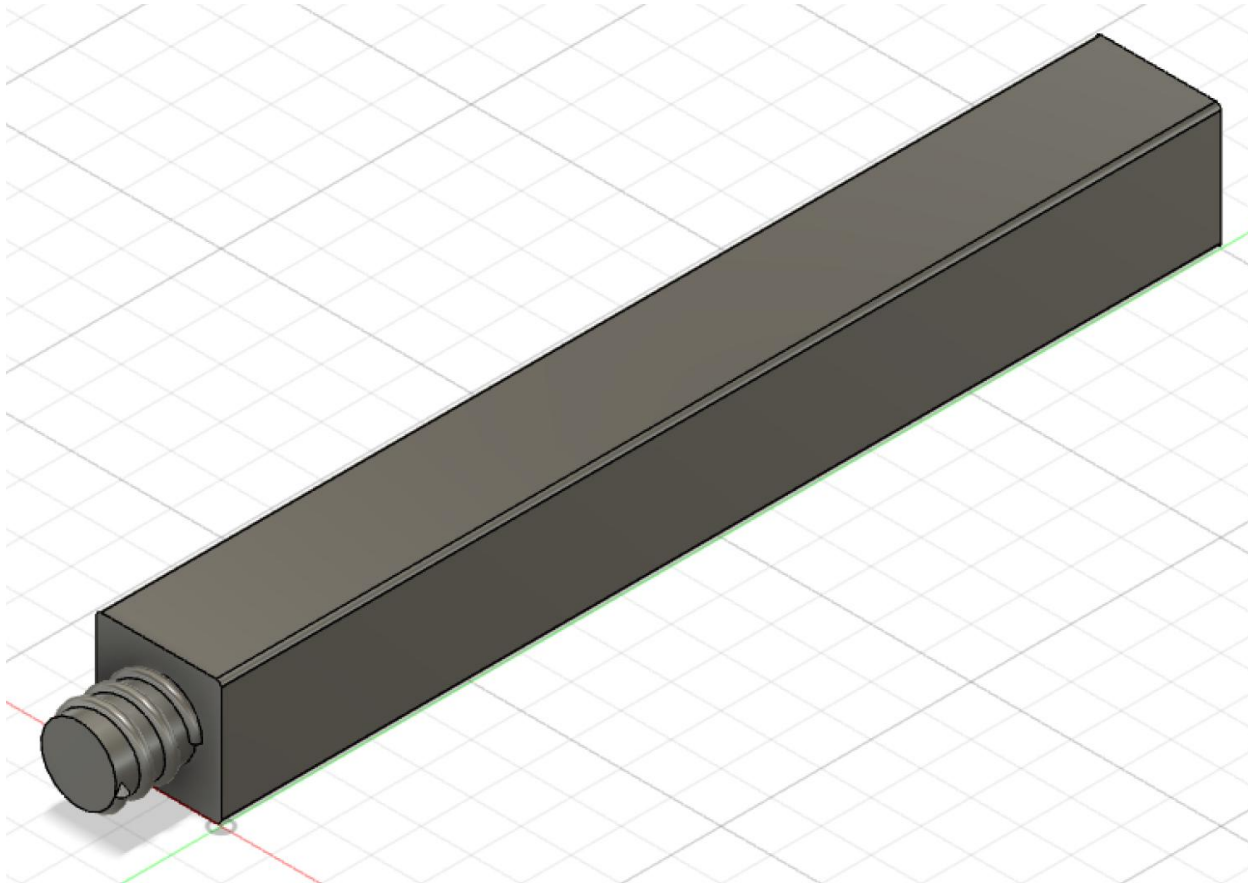# CAD Part Design Report

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The CAD Part

The CAD software I used was Fusion 360, version 2.0.11685. The part which I created was a square shaft that can be attached to other shafts of the same type through a screw which is built into it as well as a hole on the other side. Much like the normal shafts, these shafts also have rounded corners and are made of steel. The screw system allows for other VEX parts to be placed on the shaft easily while leaving its ability to connect with other shafts unhindered. In order to secure the connection between two different shafts, a builder can place a shaft collar on the area in which the two parts connect. The main advantage that comes with this part is that it allows builders to easily adjust the total length of a shaft in a robot by combining shafts together to increase the overall length of the shaft and separating the shafts to decrease it. This prevents builders from having to cut the shafts if the length is too long. The newly designed shaft parts are one inch long, ⅛ inch tall, and ⅛ inch wide, allowing them to be interchangeable with normal shaft parts. The features I used to model the part are extrusions, helixes, and sketches.

My Experience

There were numerous things which I learned from this project. For example, I learned how to view the version of different softwares. In addition, I learned how to use different functions in fusion, which will be useful when I pursue a career in engineering. This is because knowing how to perform different tasks in CAD will help me design models more efficiently in the future. One of these functions is the helix function, which I used to make the screw mechanism of the part.

References

- https://fusion.online.autodesk.com

- https://kb.vex.com/hc/en-us/articles/360046701172-Building-with-VEX-V5

The CAD design for the part

https://a360.co/3mRoJrF