

CAD Portfolio

Grant Goulart

Includes Internship, Class, and Personal Projects

Single Cylinder Engine Block Practice

I found this model on a YouTube tutorial to practice my modeling skills (CAD CAM TUTORIAL BY MAHTABALAM). I challenged myself to minimize my use of the actual tutorial and only use the provided drawing to create this.

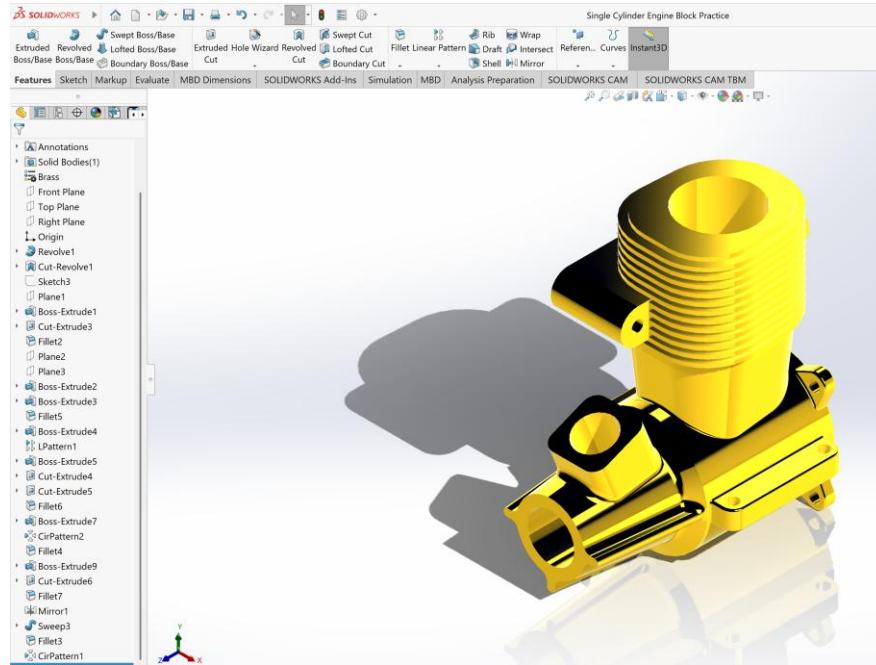


Figure 1: Single Cylinder Engine Block Practice

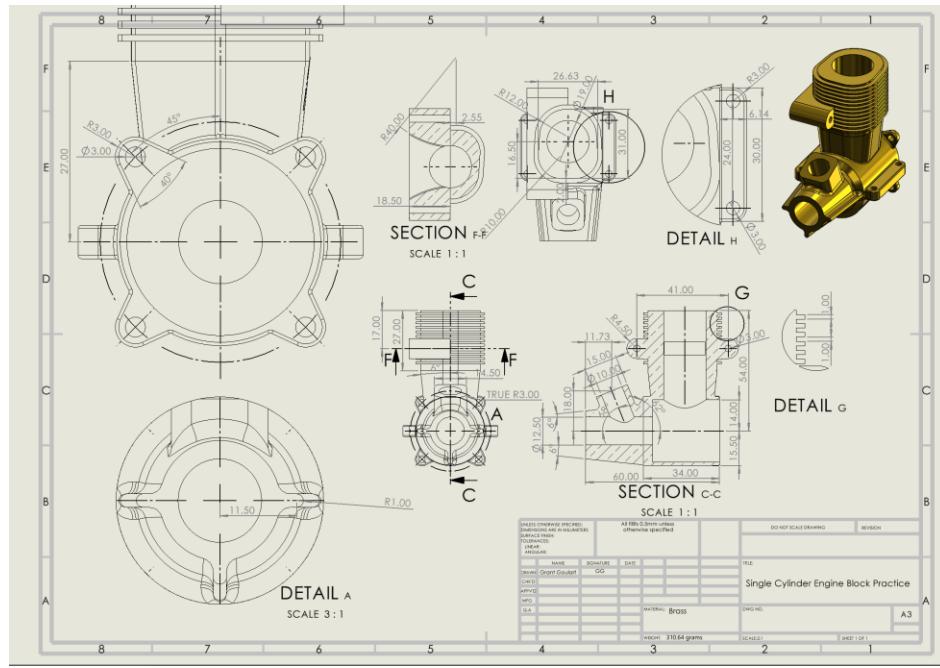


Figure 2: Single Cylinder Engine Block Drawing

Naval Research Enterprise Internship Program (NREIP)

Find all CAD documents for this project in my [GitHub Repository](#)

(Full assembly file excluded due to size limitations; see images below.)

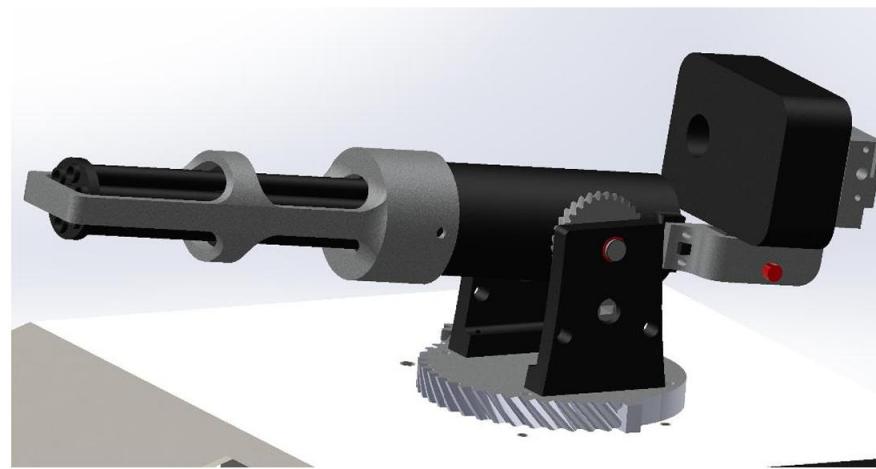
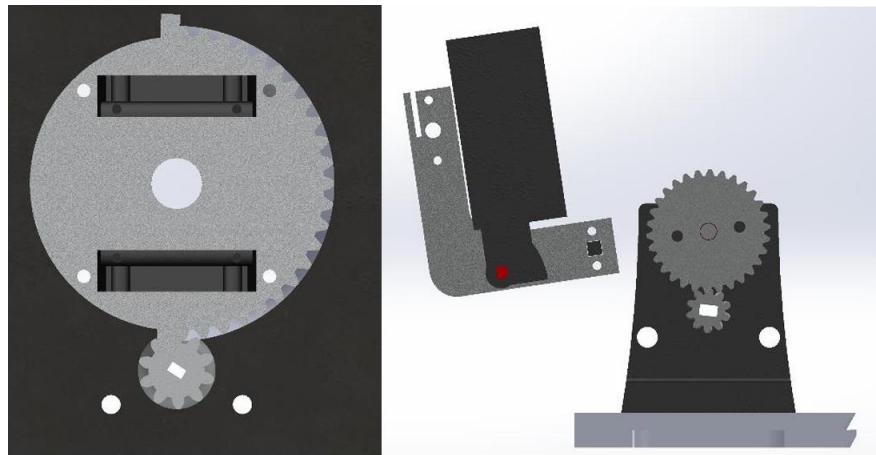


Figure 3: Laser Modulator Assembly

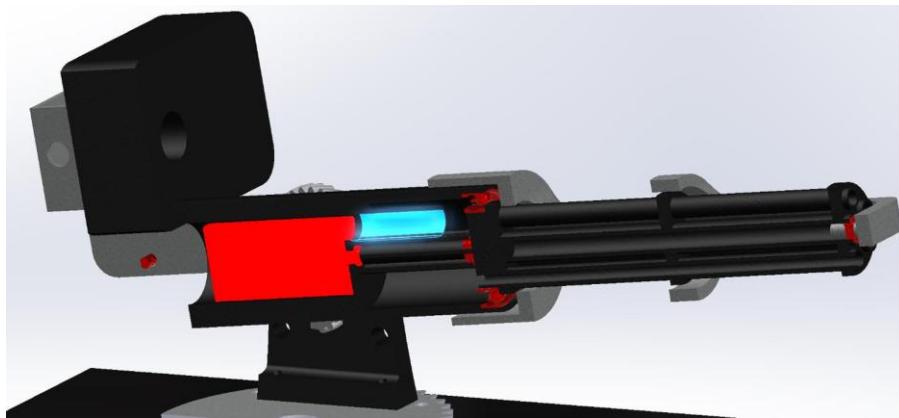


Figure 4: Section View of Laser Modulator

The primary focus of this project was designing and 3D printing a pan-and-tilt system to modulate a laser at preset frequencies, complete with live video feedback for the operator. In Figure 2, the red-highlighted component is the motor that spins the modulator

(shown in detail below), while the blue highlight indicates the laser diode. For a full project overview, please visit the “Projects” section of my LinkedIn:

[Grant Goulart's LinkedIn Profile](#)

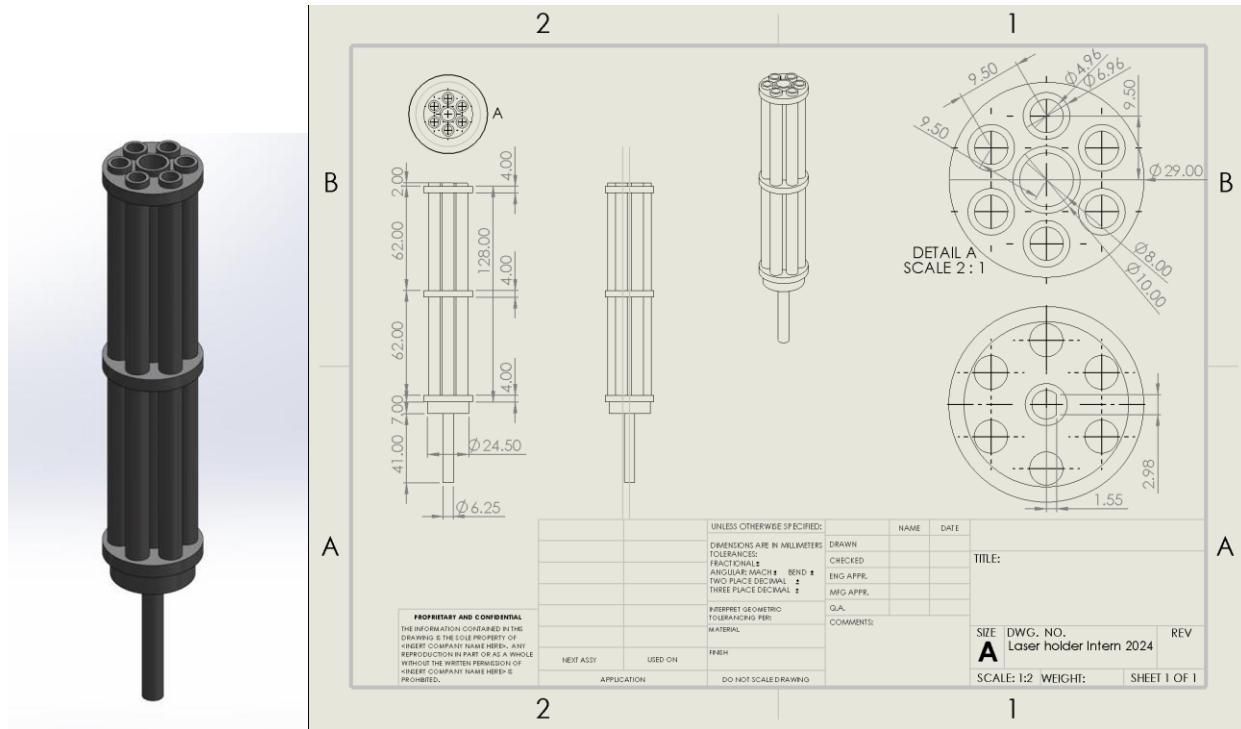


Figure 5: Laser Modulator Drawing

Rather than modulating the laser electronically through software-driven PWM, I designed a rotating mechanical cylinder—similar to a Gatling gun—to mechanically induce the modulation. As the modulator spins, a carefully spaced pattern of openings and solid sections allows the laser to pass through at exactly a 50% duty cycle.

Engine Manifold

Class project to design an engine manifold within given parameters. I used sweeps to create most of the part, enabling me to efficiently simulate multiple designs.

For a full project overview, please visit the “Projects” section of my LinkedIn

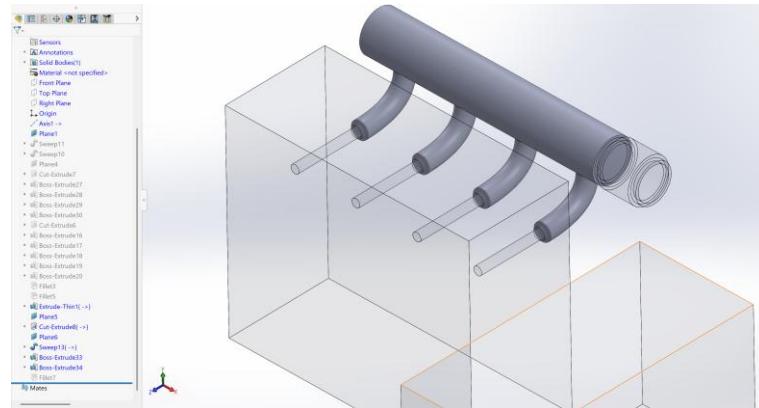


Figure 6: Engine Manifold

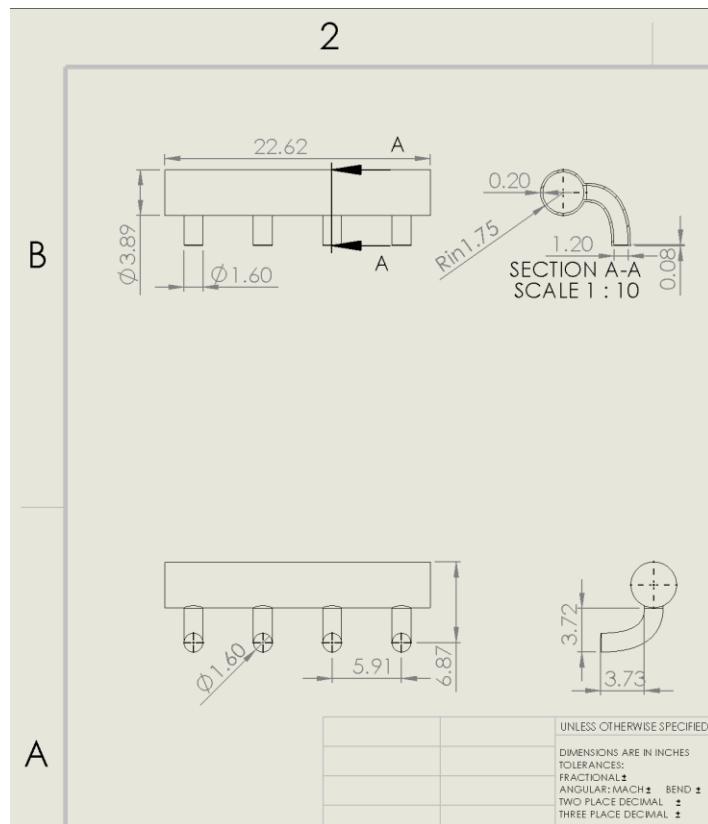


Figure 7: Engine Manifold Drawing

Five Intersecting Tetrahedra

Personal project imitating an origami model. In order to accurately assemble the model in SolidWorks with the proper mates, I sketched a 3D wire-frame dodecahedron with an equation driven side length.

For a full project overview, please visit the “Projects” section of my LinkedIn

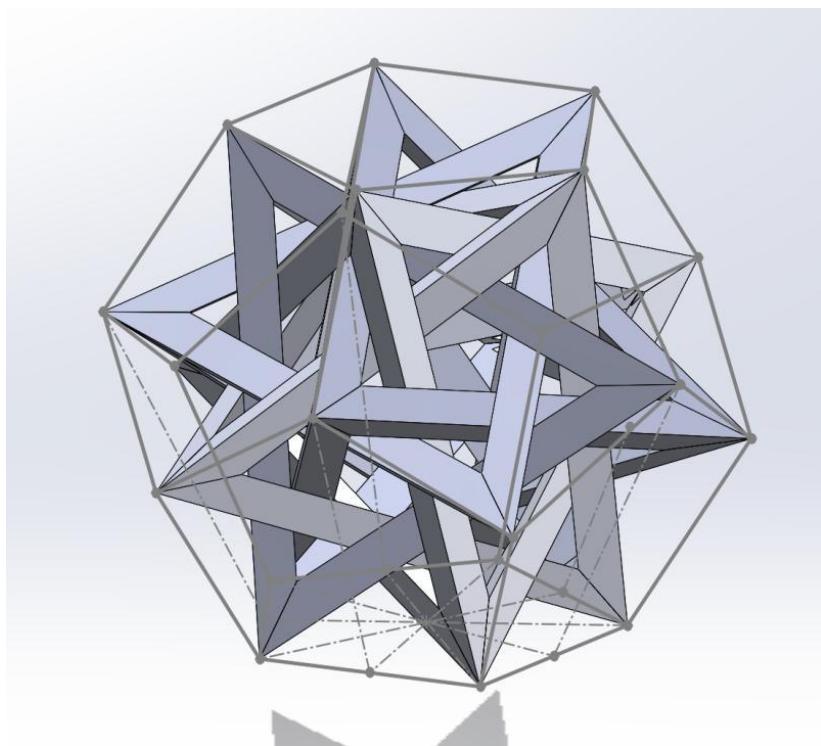


Figure 8: 5 Intersecting Tetrahedra Assembly

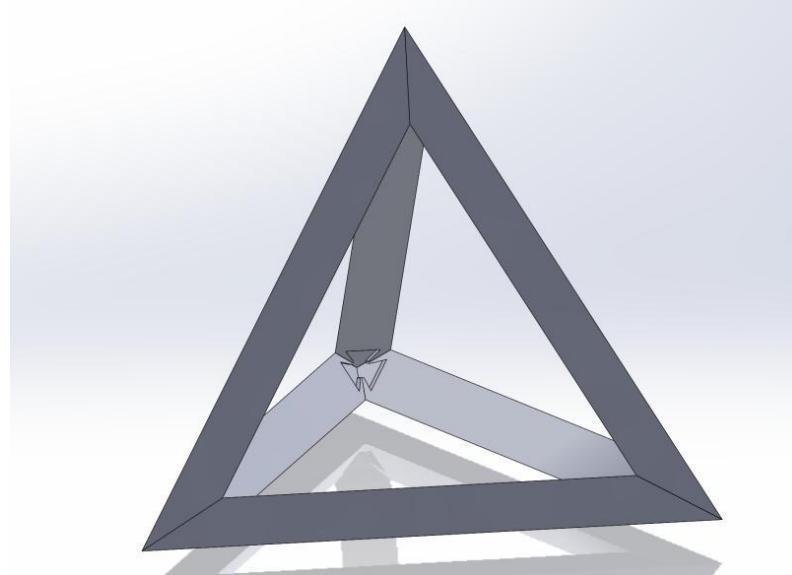


Figure 9: Tetrahedra Sub-assembly

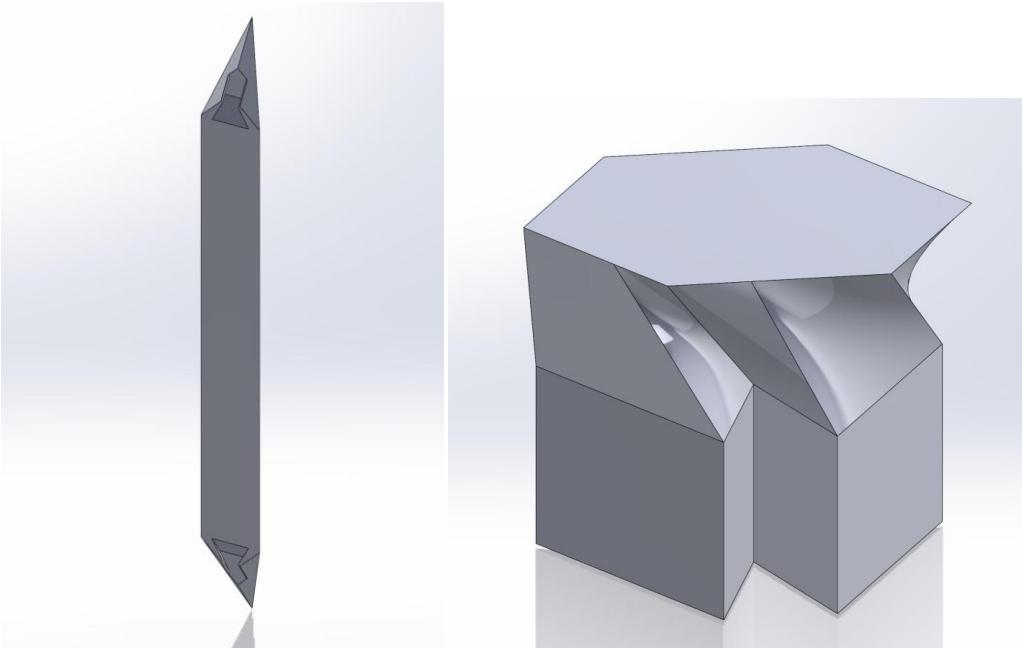


Figure 10: Base Unit and Connector Unit

Soap Dispenser Bottle

This is a personal design challenge to create a soap dispenser bottle compatible with an existing pump I had. I had seen many parametric 3D printable models before and wanted to give it a try myself. I included a design constraint that the 3D model must not require support during printing.

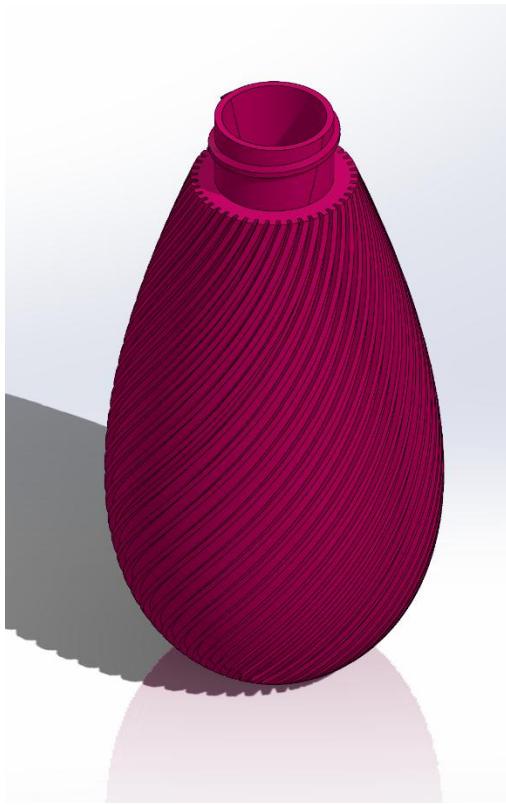


Figure 11: Soap Dispenser Bottle



Figure 12: Section View Soap Bottle

Plate Surface Modeling

A project following a YouTube tutorial to explore surface modeling.

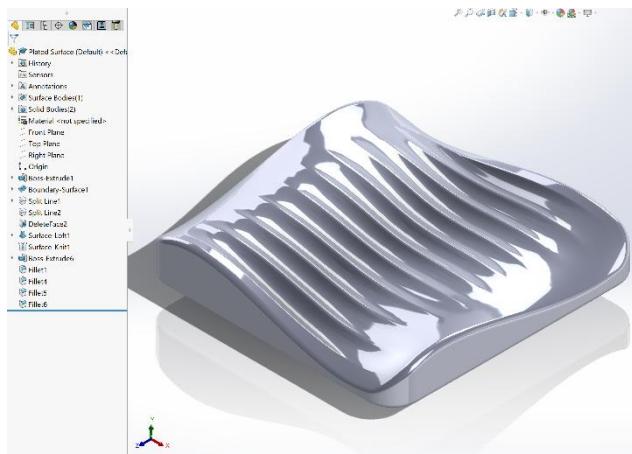


Figure 13: Plated Surface

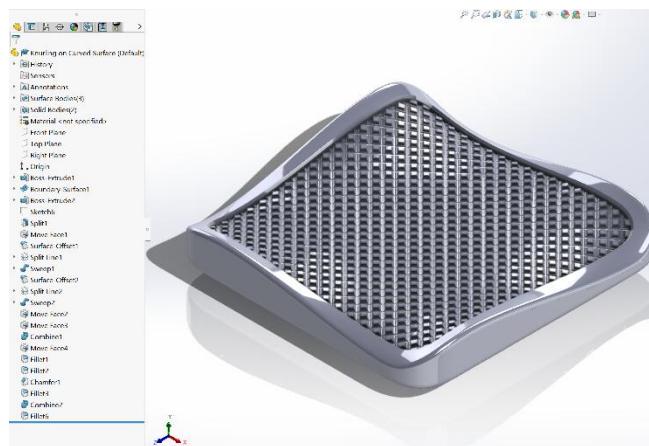


Figure 14: Knurling on a Curved Surface

Cubic Surface Modeling

More exploration of surface modeling with a cubic surface.

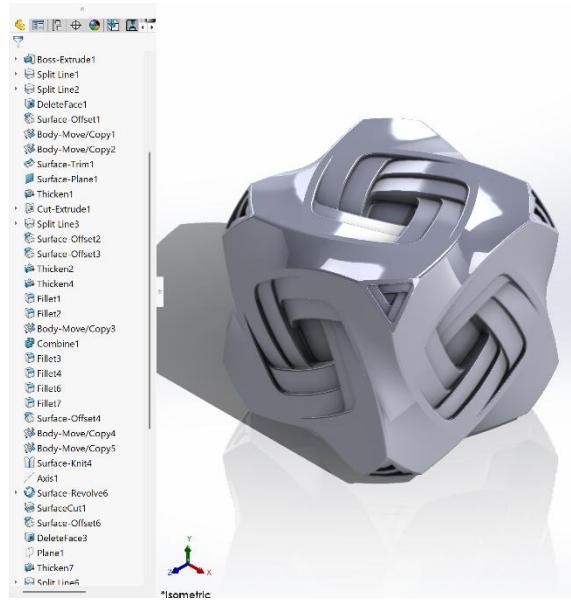


Figure 15: Magic Cube

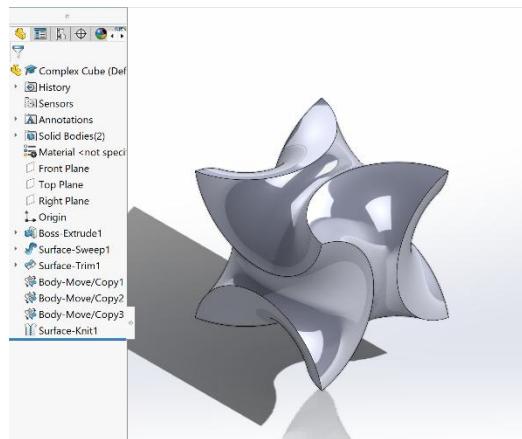


Figure 16: Complex Cube

Volkswagen Logo for Car

I designed this to replace the VW logo on my brothers car, because his broke.

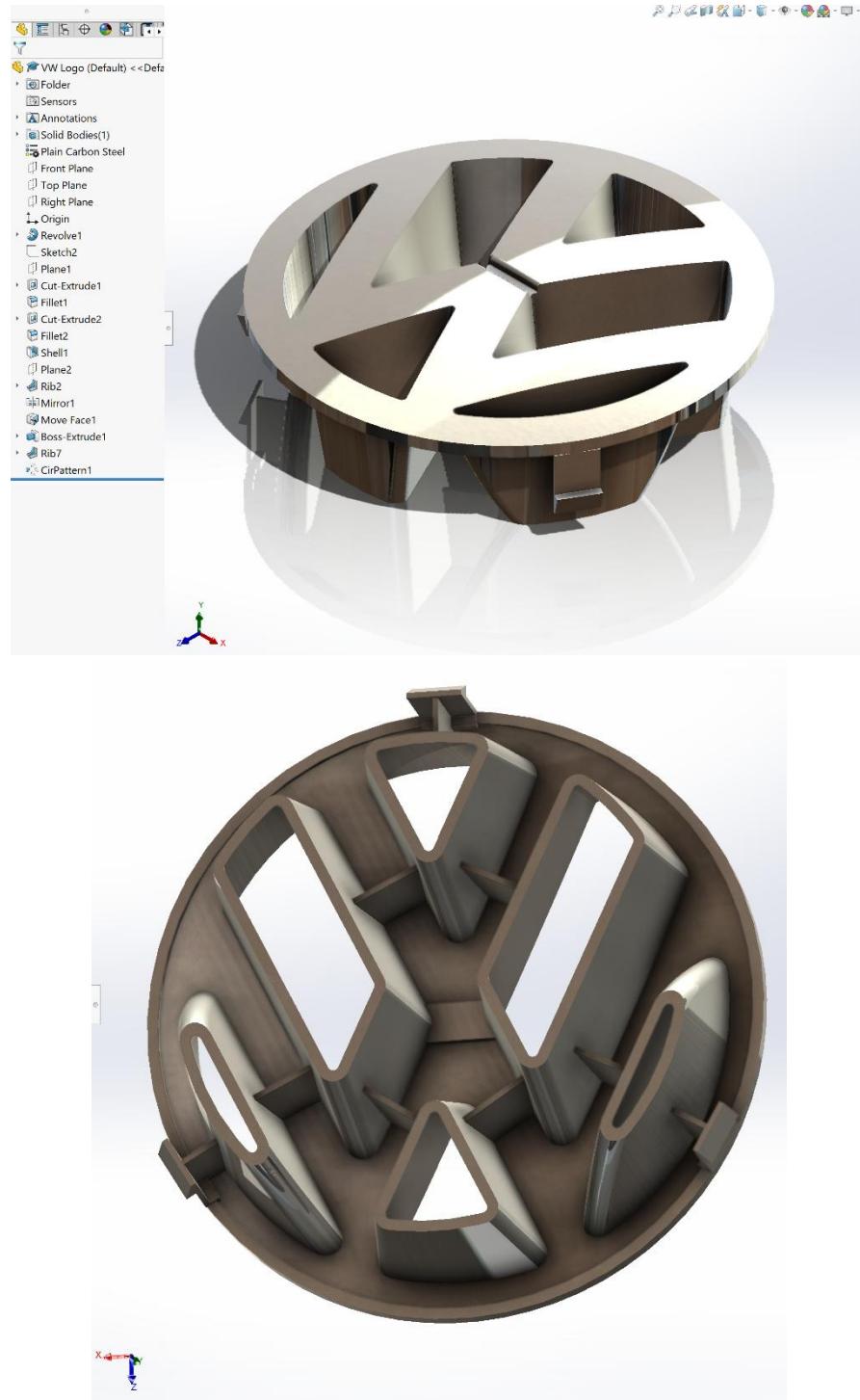


Figure 17: VW Logo

Thank you for reviewing my work!

I'm currently seeking CAD drafting or design-focused opportunities—remote or local—where I can contribute my modeling, prototyping, and documentation skills.

ggoulart@my.gcu.edu | [linkedin.com/in/grant-goulart-826621320](https://www.linkedin.com/in/grant-goulart-826621320)