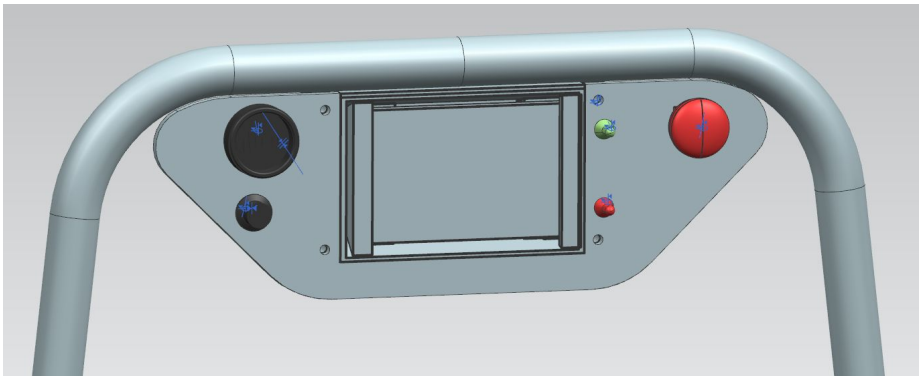
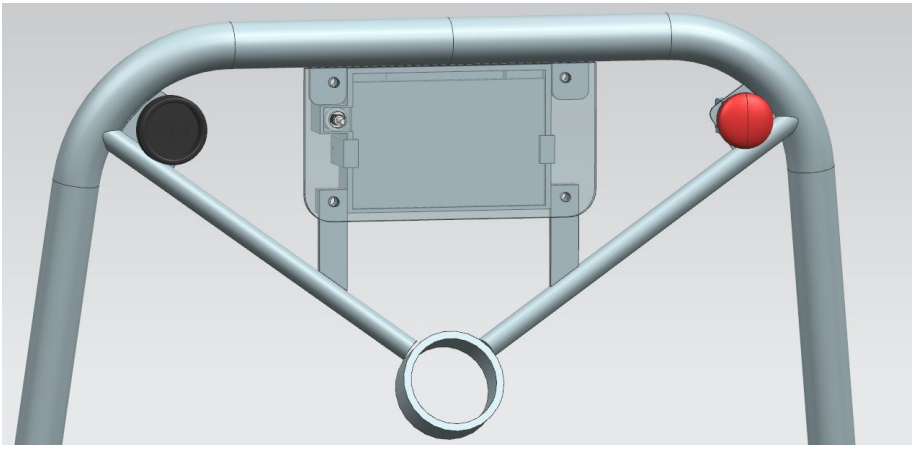
Michigan Electric Racing Dashboard

I am currently responsible for designing the dashboard of the next MER racecar. This involves integrating the dashboard controls, display, and electronics in an ergonomic and sturdy package. The highlight of this project is the 3D-printed shockproof and waterproof enclosure which will contain the electronics for the dashboard display.

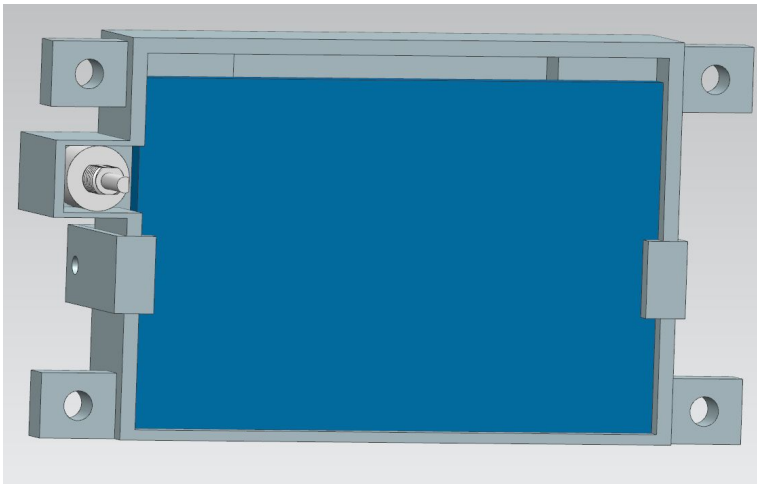
The original, bulkier dashboard (all parts designed in Siemens NX).



The smaller and lighter final concept.

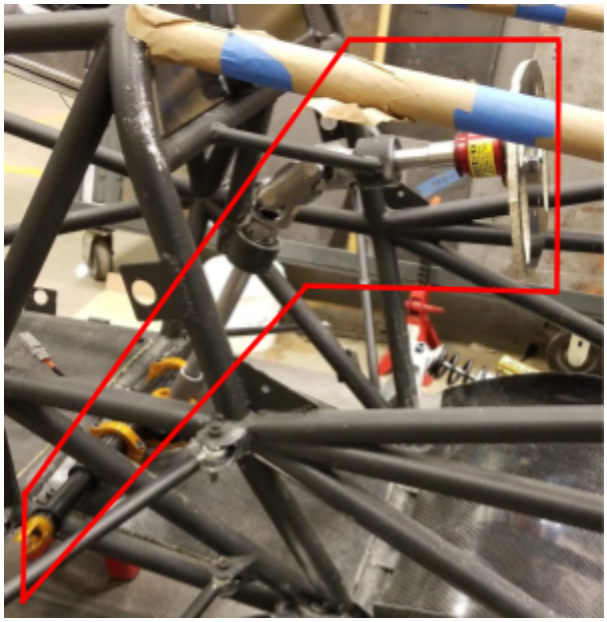


The 3D-printed enclosure holding the display, PCB, and a rotary switch.



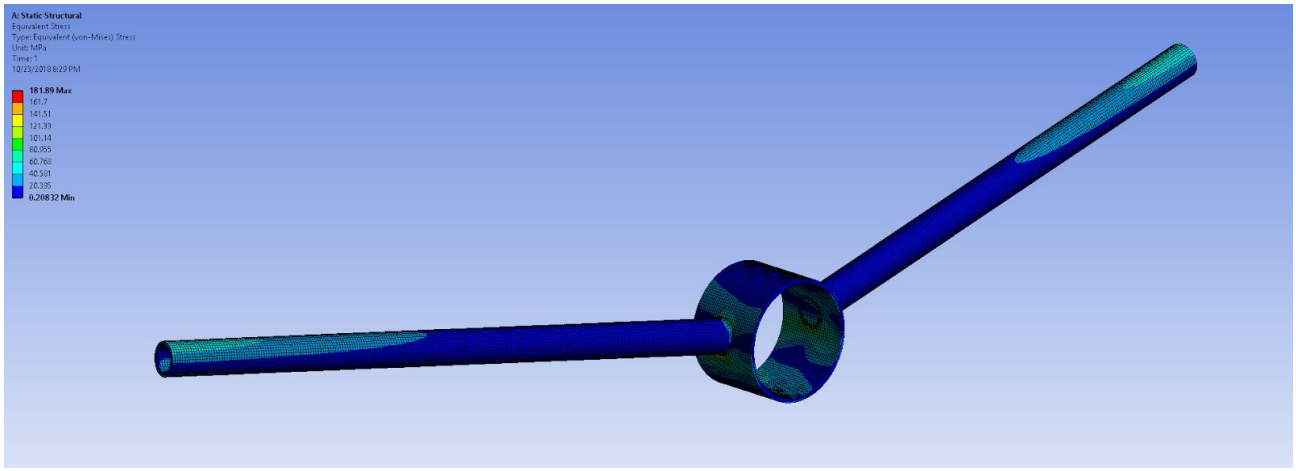
MER Steering System

I was the steering design lead for Michigan Electric Racing's 2019 car. I used Siemens NX to design it, ANSYS to analyze it, and Teamcenter PLM software to manage the CAD. Major changes from the previous year included a lighter and easier to mount steering rack, a double u-joint instead of a bevel gearbox for increased reliability, and tighter manufacturing tolerances thanks to new manufacturing jigs. The final product was under budget, reliable, and contributed to the car's 2nd place finish at the Formula North competition.



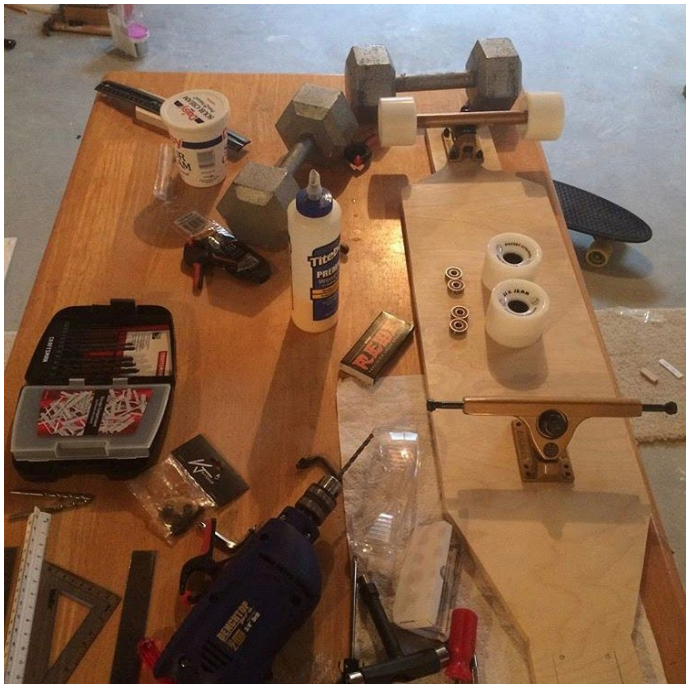
MER Steering System ANSYS Simulation

One of the ANSYS simulations that I ran on the components of the steering system to ensure it would not fail. This simulation taught us that while the overall structure would not fail, special care would have to be taken to ensure good welds as that was a likely failure point.



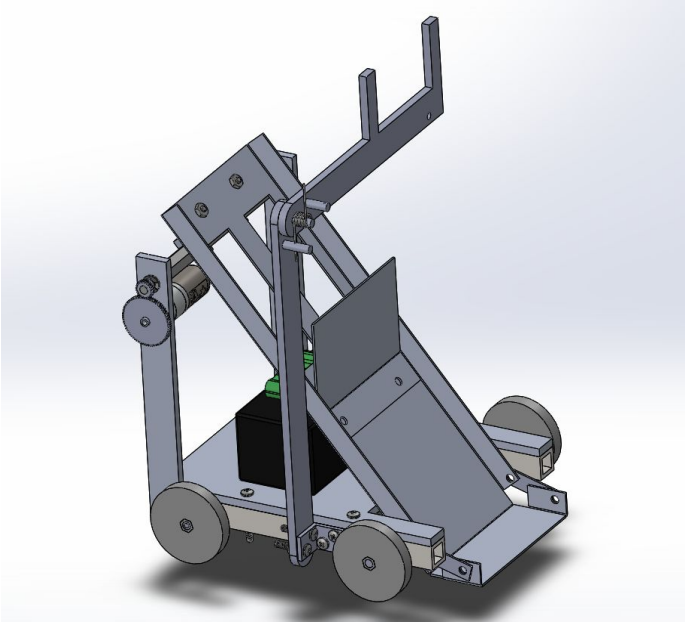
Longboard Project

I decided to build my own longboard from scratch in the summer of 2018, both as a fun project as well as a means of transportation between classes. Starting with a sheet of Baltic Birch plywood, I created a deck, assembled the trucks and wheels, and painted it.



ME 250 (Design and Manufacturing I) Robot

My sophomore year design project involved creating a robot for a competitive game in a team of 5 people. 60% of the final CAD design was my work. I also manufactured a number of parts, using tools such as a mill, lathe, and laser cutter. Furthermore, I contributed in a leadership role by scheduling meetings and setting deadlines.



March Madness Predictor

I decided to combine my love for coding and basketball by creating a predictor for March Madness games with Python. A file with teams, basic statistics, and the winner of each matchup is fed in and used to create a model which will pick the winner of matchups fed in from the second file.

```
C:\Users\droha\PycharmProjects\MMP2\Scripts\python.exe C:/Users/droha/Documents/Code/MMP2/Main
What file? (data)r64full.csv

PPG has the largest positive percent difference (56.69794585778%).
PPG difference = 0.566979458577
FG difference = 0.286652303742
FT difference = 0.274983677474
3P% difference = 0.514656992262

What file? (prediction)r16full.csv

Kentucky is more likely to win.
Difference = 0.159877658096

Nevada is more likely to win.
Difference = 0.0533264791213

Gonzaga is more likely to win.
Difference = 0.0760433881643

Michigan is more likely to win.
Difference = 0.0412261264281
```

Personal Website

Using HTML and CSS with Bootstrap, I created a personal website to display my skills and experiences, while furthering my knowledge of HTML and CSS coding. The website features information about my experience, contact information, and examples of my work (including this portfolio).

Stock Tracker

After learning how to use APIs in a class at college, I was eager to apply them in a coding project of my own. This project uses the Alpha Vantage financial data API to obtain information about the price for a given stock and store it in a SQL database. An interactive web app built with Plotly's Dash is used to display the change in price over time.