Project Summary

The HyperRail needed a way to be controlled by user input. The original design did not have an organized way to actually control the HyperRail. Our team decided to have a manual control system as well as an interface that allows more precise control over the HyperRail using g code commands (as per customer request). The HyperRail also required a way to install a utensil to the rail that would move with the HyperRail.

We split the tasks to individual team members to efficiently complete the project. During our development process we decided to make the manual control separate from the HyperRail so that it would be easier for a user to control the HyperRail. We also included buttons like a speed switch and emergency button on the manual control enclosure so that everything would be in one place. As for the main enclosure we made one large PCB that would be able to connect all the motors and Arduinos into one place. The main PCB was operated by an Arduino Nano that would be connected to a computer via USB. We originally wanted to only have one arduino device for the whole system but later decided to make the manual control module separate from the HyperRail to simplify the design. The enclosure design had to be revised to finetune how all the components fit together and adding more spacing between components for easier installation of all the components within the enclosure. The mount designed also underwent multiple design phases and was printed multiple times to achieve a user friendly install while also securely holding the utensil to the mount

Throughout the project the team learned the importance of the design phase. Spending more time on the design phase would have saved our team money and time by reducing the amount of possible mistakes or miscalculations. The team learned that communication is one of the most important aspects of team projects and with good communication the project will be completed more efficiently.