

HyperRail Team 9 Executive Project Summary

Our team is working on the OPEnS Lab HyperRail, a motion control system developed for agricultural sensing of large areas. We are developing a 3 axis motion control system for this project, similar to a typical 3D printer movement system, but on a larger scale. The system was developed to Integrate with existing software and systems used by OPEnS Lab. This included using consumer components that are readily accessible to order online rather than specialized and custom components.

Our first step as a team was to identify the current issues with the system as designed, and which parts we found most interesting and were comfortable that they would be within our technical abilities. We decided that using an approach where we would help each other on the blocks in case we struggled or needed help would be the most effective way to use our time and solve issues if they arose. There were three phases to our project that coincided with our first and second block checkoffs and the system verification. Within each phase, each group member completed a singular block that was assigned to them until completion. A multitude of revisions and changes were made to our system as we had to find the right PCB to perform the functions we wanted as well as had to redesign our 3D printed components to better accommodate our system. Each week we would get together for a meeting, to discuss what parts of the project had been completed that week, and what would be done during the next week. We would also take this time to ask for help from each other, problem solve issues that may have come up during our time working, and recording the progress made.

Throughout the project there were several difficulties and lessons learned. One large lesson that the team learned was the need to clearly share information about individual portions of the project. This allows others to see and help point out problems that will crop up during the system integration process. A second lesson learned was how to handle working when the finished work is reliant on a 3rd party, as we were dependent upon the work of the OPEnS lab and their timeline. We learned that we needed to develop alternative methods to test our systems, and that it requires regular communication with the 3rd party to understand the system status, and what we can do about it.

Members:	First Block (Hrs)	Second Block (Hrs)	System Verification (Hrs)	Overall (Hrs)
Zach M.	10	20	20	50
Rene N.	14	18	15	47
Ryan C.	12	20	25	57
Ryan D.	8	15	21	44

HyperRail

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