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Executive Project Summary

Original design goal/problem:

The Spydercam was intended to be a challenging design process in which a group of three students was tasked with creating a suspended drawing system that could create shapes and lines with minimal deviation.

Team development process:

The first step of the design process was to discuss the big picture of what we wanted to design. We had to come up with 2 additional engineering requirements. One of which was to ensure that the depth sensor could draw objects at a consistent height. The other was to add functionality for drawing certain shapes. We were able to divide the design of the project into 6 components. Every member was tasked with creating 2 each. Leif manufactured the enclosure for the project, including the mechanical aspects of the payload movement. He manufactured the payload as well which involved attaching and testing the depth sensor. Aleksi handled the software aspects, including the user input for what was to be drawn as well as how this input would move the motors. Ryan created the power supply and the motor control hardware, putting all of the electrical components of the design onto a single PCB. We worked collaboratively to meet all of our individual goals and to keep on the project timeline. In the final weeks we were able to put everything together with minimal issues.

Project Timeline

In the first weeks, we discussed the general design of the project. By the end of second week we had official artifacts that showed the blocks we would each design. We all finished our first blocks in week 4, and then we finished our second blocks in week 7. In week 9 we put all of the blocks together, completing the project as well as the documentation.

Lessons learned

In a project where group member’s assignments are very interconnected, constant communication is necessary. There were modifications that needed to be made to the PCB so that the depth sensor could be connected. This could have been avoided with better communication and documentation. Overall this project proved to be very educational for how to work in a team setting. It showed that great things can be accomplished with teamwork.