

EE/CprE/SE 492 STATUS REPORT 3

02/14/2025 – 02/27/2025

Group number: 9

Project title: Space Cyclones - COSMIC CAPSTONE CHALLENGE 2024-2025

Client &/Advisor: Bo Varga, Benjamin Rupp, Rachel Shannon

Team Members/Role: John Beuter (Team Lead), Daniel Sprout, Maheeka Devarakonda, Tanvi Mehetre, Riley Heeren, Ben Swegle

○ **Weekly Summary**

Week Objectives:

Over the past two weeks, we have focused on developing a physical prototype for our design. In the past week, we ordered spring components for our prototype and sent in a print request for a 3D print our design.

○ **Past week's accomplishments**

- John Beuter:

Started a draft of our final paper and included relevant information from the previous semester. Collaborated with Bo to model how to counteract the force of launching our net projectile. Developed a progress report slide deck for industry advisor Ben Rupp.

- Daniel Sprout:

Worked on prediction modeling for objects. This should allow us to determine an intercept time and angle based on a projected launch of our projectile.

- Maheeka Devarakonda:

Worked on integrating the IR sensor to the electrical model. Currently building the sensor to rotate in order to detect moving objects. Helped with power estimation on the payload. Looked into LiDAR sensors to narrow it down.

- Tanvi Mehetre:

Estimated the total power consumption of the payload and how much each component will be using. Narrowed down specific components that will be used and found a way to mount the sensors on the prototype with Maheeka.

- Riley Heeren:

Started putting together a cost estimate for all of our materials as well as a rough weight estimate to add to our final paper.

- Ben Swegle:

Made CAD model for 3D printing. Ordered a spring for the launcher mechanism. Submitted 3D print parts to additive manufacturing lab.

- **Pending issues** *(If applicable: Were there any unexpected complications? Please elaborate.)*

- John Beuter: N/A

- Daniel Sprout: N/A

- Maheeka Devarakonda: N/A

- Tanvi Mehetre: N/A

- Riley Heeren: N/A

- Ben Swegle: N/A

- **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
John Beuter	Created the final report paper template and started drafting. Designed a check in presentation for Ben Rupp.	4	31.5
Daniel Sprout	Worked on coding the predictive model	5	29.5
Maheeka Devarakonda	Worked on integrating the IR sensor to the electrical model. Currently building the sensor to rotate in order to detect objects.	3	32
Tanvi Mehetre	Power consumption estimate.	4	28
Riley Heeren	Cost and weight estimates	5	25
Ben Swegle	Made a 3D CAD model for a 3D printed prototype. Submitted a project request to the additive manufacturing lab for parts to be 3D printed.	10	40

- **Plans for the upcoming week:**

Continue development of the prototype. Assemble a working prototype using the 3D-printed model and spring materials ordered from Grainger. Collect electrical load and cost estimate sections of the paper and draft corresponding written material to describe how we generated these estimates.

- **Summary of weekly advisor meeting:**

N/A