

EE/CprE/SE 491 WEEKLY REPORT 07

10/23/2024 – 10/30/2024

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:

- Decide if active or passive net.
- Determine team members' specialized roles if needed.
- Create and Practice Lighting Talk Presentation.

○ **Past week accomplishments**

- John Beuter: Met with industry and NASA advisors to receive design feedback and advice for how to proceed with the project.
- Daniel Sprout: Research on existing or developing deorbiting services. Such as an FCC legal requirement for satellite operators to dispose of satellites within 5 years of the end of its mission. Additionally did brainstorming on potential net designs in regards to reuse.
- Maheeka Devarakonda:
Researched existing net deployment and different materials used for the net. Did comparative studies between electromagnetic nets and dyneema nets. Proposed possible net deployment strategy.
- Tanvi Mehetre:
Researched net deployment procedure. Learned more about mechanisms that can be helpful in deploying the net from the payload. Found a possible mechanism that can be feasible for our project.
- Riley Heeren: Researched net materials. Mainly carbon fiber sheets. Also did a little

brainstorming for a launching/ deployment mechanism.

- Ben Swegle: Researched net launching mechanisms for in-space use. Found multiple articles on the subject and took notes, which are saved in a net deployment research document.

○ **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	Gathered information from advisors and brain stormed research ideas for net deployment.	2	10
Daniel Sprout	Performed Market research to determine how our concepts compare to existing products or those in development for the use of deorbiting.	2	15
Maheeka Devarakonda	Researched net deployment strategies and proposed a possible solution.	2	18
Tanvi Mehetre	Researched net deployment procedures and possible mechanisms.	2	15
Riley Heeren	Research possible net materials.	2	10
Ben Swegle	Researched net launching mechanisms designed for use in space.	3	11

○ **Plans for the upcoming week:**

Discuss and finalize net deployment ideas. Create slides and practice for in class presentation of our project.

- **Summary of weekly advisor meeting:**

Discussed the viability of nets and how we can improve, revise, and redesign our initial ideas for defense.