VERENA PADRES

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY**. GPA: 4.145** **Expected May 2026**
Bachelor of Science, *Major*: Mechanical Engineering
Relevant Coursework: Mechanics of Materials, Fluid Mechanics, Heat Transfer, Mechatronics, Intro Aeronautics
Awards: Dean's List (All Semesters), Bill Nye '77 Award in Undergraduate Research, 2023 National Merit Scholar

ENGINEERING EXPERIENCE

Space Systems Design Studio, Cornell University, *Sailing to the Stars Mission Lead* **July 2023-Present**

- Leading a mission to develop different types of deployers for free-flying light sails by conducting testing on the International Space Station. The experiment was successfully conducted in August 2025 after launch on Crew-11.
- Guided the team through the development and qualification of the needed CAD, circuitry, and software.
- Conducted meetings with NASA and our implementation partner to validate our hardware is safe to fly.

SpaceX, Hawthorne, CA, *Dragon Fluids Components Intern* **May 2025-Aug. 2025**

- Owned and implemented a change to a valve to increase its corrosion resistance on a tight timeline.
- Conducted thorough analysis on the modified valve using ANSYS simulations, hand calculations to determine the effects of CTE mismatch in the valve, bolted joint calculations, and fracture and fatigue analysis.
- Developed and executed testing on the modified valve to validate it after concerns arose for external leakage.
- Worked with the team of Manufacturing Engineers and technicians for that hardware to manage the new valve assembly timeline and to make sure the design is fully analyzed before testing was conducted on them.
- Designed a test and performed calculations to validate the thermal conductivity of hardware used in the thermal control system for the SpaceX boost kit that launched with CRS-33.

SpaceX, Hawthorne, CA, *Dragon Propulsion Components Intern* **May 2024-Aug. 2024**

- Developed and personally executed a thorough set of pressure tests and destructive tests to investigate the root cause of issues that occurred with a valve both during flight and during qualification testing.
- Persevered with the intensive and initially inconclusive investigation to eventually determine the root cause when the full-time engineers could not determine the issue. Collaborated with the engineering teams to make sure the root cause was fully understood and that all potential consequences of such an issue were insignificant.
- Initiated a change for a valve component on-vehicle to cut hours out of maintenance for crew Dragon vehicles. Modified CAD, made drawings, completed hand calculations to verify the new design, created and successfully executed development testing, and finalized needed qualification testing to finish the change implementation.

NASA - Jet Propulsion Laboratory, Pasadena, CA, *Mechanical Engineering Intern* **June 2023-Aug. 2023**

- Supported the team of engineers that designs and tests the separation mechanisms for Entry and Descent of the Sample Retrieval Lander for NASA's Mars Sample Return mission.
- Created a custom bolt installation tool by defining the requirements and "desirements" for the tool, brainstorming and designing a variety of concepts, developing a cohesive trade, developing CAD for a select few ideas, and then verifying the tool functioned as expected by assembling and testing a 3D printed prototype.
- Redesigned a bracket for a dynamic test bed and performed an analysis on the new bracket using NASTRAN.
- Developed a custom bracket to house components from a previously created attenuator to reduce the shock from pyrotechnic cutters used to sever HRS lines connecting the Entry Vehicle's Backshell and the Lander.

ADDITIONAL EXPERIENCE

First Author: Padres, Verena et. al. 2025 "Sailing to the Stars: Free-Flying Light Sails in Microgravity", *Proceedings of the AIAA/USU Conference on Small Satellites*, Poster Session 1, SSC25-P1-54.
https://digitalcommons.usu.edu/smallsat/2025/all2025/74/
Other: Women of Aeronautics and Astronautics (Co-President), Coptic Club (Vice President), Quill and Dagger, Salsa Pa'lante, Orthodox Christian Fellowship

SPECIALIZED SKILLS

Programming Languages: MATLAB (Intermediate), C++ (Beginner), Python (Beginner)
Fabrication Skills: 3D printing with PLA and PETG, drilling, sawing, grinding, and using drill presses and Dremel tools.
Programs: Siemens NX, EPDM, ANSYS, SolidWorks, Fusion 360, GrabCAD, Shapr3D, Excel, Word