JUSTIN THOMAS SELF

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SUMMARY

Confident in technical abilities; humble, ready to learn and grow. Results and detail-oriented, motivated; strong problem-solving skills. Unwavering commitment to excellence and integrity; disciplined. M.S. degree in Aerospace Engineering (Astronautics) with 3+ years experience in hands-on laboratory testing in space environments lab; statistical and data analysis. Experience using computer software coding and mathematical modeling: MATLAB (3+ years), Simulink (3+ years), some Python (1 year) and C/C++ (< 1 year); CAD: Solidworks (3+ years), learning Creo. Experience leading a small team (Cal Poly Senior Design) in design, risk assessment, and Systems Engineering and concept development for a satellite mission proposal up to PDR maturity; propulsion, thermal, and space environments subsystem. Experience using Monte-Carlo ray tracing simulations for evaluating contamination transport factor in space systems and MMOD models for mission reliability analysis. Ability to develop solutions within cross-functional teams; team-oriented. Excellent oral and written communications skills. Willing and able to obtain and maintain a security clearance.

EDUCATION

California Polytechnic State University, San Luis Obispo, CA　　　　　　　Sept. 2021 - June 2025
Master's (M.S.) + Bachelor's (B.S.) of Science in Aerospace Engineering; *With Distinction; Summa Cum Laude*
Outstanding Scholar and Researcher, 2022

Cuesta Community College, San Luis Obispo, CA　　　　　　　August 2018 - May 2021
Associate of Science in Physics; Mathematics; *High Honors*
Engineering Student of the Year, Physics Student of the Year, 2021

RELATED COURSEWORK

Advanced Orbital Mechanics; Spacecraft Dynamics II, Orbital Mechanics I; Space Environments; Advanced Spacecraft Dynamics and Control; Numerical / Analytical Methods in Applied Math. Spacecraft Electrical Systems; Spacecraft Propulsion; Aerospace Gas Dynamics and Heat Transfer

PUBLICATIONS

Self, Justin. *Investigation into Silicone-Silicate Conversion Due to Atomic Oxygen in the Low Earth Orbit Environment* **Master's Thesis, 2025. Cal Poly Digital Commons.**

Self, Justin and Abercromby, Kira. *Investigation into Silicone-Silicate Conversion Mechanism and Atomic Oxygen Fluence Threshold in Low Earth Orbit Environment* **2025 AAS/AIAA Spaceflight Mech. Mtg., Lihue, HI.**

Hiremath, Nandeesh, Justin Self, and Nathan Eller. *System Architecture for De-orbiting Spacecrafts as a Platform for Experimental Aerodynamics Studies.* **2024 IEEE Aerospace Conference, Big Sky, MT.**

Hiremath, Nandeesh, and Justin Thomas Self. *Virtual Aperture Multispectral Imaging for Atmospheric Reentry Studies Using High-Altitude Reflective Arrays.* **102nd Am. Met. Society Annual Mtg. AMS, 2022.**

RESEARCH / TECHNICAL EXPERIENCE

Investigation into Silicone-Silicate Conversion Mechanism Due to Atomic Oxygen in Low Earth Orbit — Master's Thesis

· Quantified material surface morphology changes in MISSE-6 ISS flight samples exposed to LEO environment.
· Developed novel analytical on-orbit estimate of silicone to silicate conversion rate at ISS orbit and altitude through ground-based atomic oxygen testing, empirical modeling, and statistical analysis and regression techniques.

- Created engineering test plans, developed, executed, and reported results from novel testing strategies for research work in the Space Environments Laboratory; collaboration with NASA JPL contamination control engineers.
- Developed test and technical planning protocol for exposure and image analysis algorithms to quantify changes in thin film surface morphologies after atomic oxygen exposure; tested ISS-flown samples.

Cal Poly Spacecraft Design — Space Environments, Thermal Control, and Propulsion Subsystem Lead

- Reduced probability of space vehicle contamination transport factor to sensitive payload systems through Monte-Carlo ray tracing simulation and collaboration with other subsystem teams; developed technical documentation.
- Analyzed and simulated first-order thermal analysis and heat transfer effects in proposed satellite system.
- Performed systems engineering design and technical oversight of proposed spacecraft constellation for remote sensing mission; presented at design technical reviews and supported mission through subsystem management.
- Spearheaded and organized product requirements management, CONOPS, systems integration, trade studies, within spacecraft design team; supported and presented technical information at design reviews.

Virtual Aperture Multispectral Imaging for Atmospheric Reentry Studies Using High Altitude Reflective Arrays

- Developed novel framework and first-order flight mechanics study for proposed high-altitude aerial optics system that aims to capture IR signatures of hypersonic reentry systems in high-energy plasma environment.
- Presented technical documentation to interdisciplinary engineering research team and broader scientific/academic community between 2022 and 2025 (published peer-reviewed IEEE paper, 2025).

Clark College Aerospace Engineering Club — Team Lead (09/2017 - 06/2018)

- Team lead for hardware design, fabrication, and bench testing of airframe passive roll stabilization system.
- CFD and first-order airframe analysis for entry in the Experimental Sounding Rocket Association (ESRA) 10,000 ft apogee collegiate rocketry competition.

RECENT WORK EXPERIENCE

Cal Poly Space Environments Laboratory **02/2024 - 07/2025**	**Space Environments Test Engineer** Performing fee for service space environmental exposure testing for aerospace industry research. Test experience includes thermodynamic characterization and testing, CCP plasma asher used for atomic oxygen attack and UV radiation for synergistic effects studies.
California Polytechnic State University **09/2024 - 06/2025**	**Student Assistant Teacher** Teaching, assisting, and grading 50+ senior-level aerospace engineering students in systems and technical design solutions during Spacecraft Design capstone sequence.
California Polytechnic State University **12/2024 - 06/2025**	**Space Environments I-II Lab Instructor** Leadership experience teaching in Space Environments lab; streamlined and designed several test methods, fabrication and troubleshooting of a vacuum effusion cell for increased transport factor in thin-film contamination studies.
Kainos Global 501(c)(3) **03/2023 - present**	**Founder** Started and supported primary school serving 400+ families Maintain, lead, and develop current Kenyan mission programs

TOOLS AND SKILLS

MATLAB	JMP Pro	Solidworks	Python	Simulink
Creo	Statistical Modeling	Optical Microscopy	Vacuum Chambers	Monte Carlo Sims
FTIR, TGA, SEM	Thermal Chambers	Data Processing	ASTM Procedures	Data Analysis