

STERLING PEARSON

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EDUCATION

University of Central Florida | B.S. Aerospace Engineering | Expected Dec. 2027 | GPA: 3.5

AEROSPACE ENGINEERING EXPERIENCE

SpaceX | Starship Thermal Hardware Engineering Intern | Cape Canaveral, FL

Jan. 2026 - Aug. 2026

- Developed non-contact bondline verification testing for tile qualification, authoring requirements and seeded-defect articles; ran vendor campaigns across X-ray, CT, and cryogenic soak at **-196 °C**; found defects ambient inspection missed.
- Replaced a manned semi-automatic ink marking station with an automated laser part-marking and traceability cell, scrapping my own in-progress ink redesign once a better approach emerged; owned it from concept through vendor evaluation, NASA laser-safety review, and **ANSI Z136.1** nominal hazard-zone analysis to an **~11s** mark step, then built and installed it.
- Owned end-to-end design of an automated adhesive deposition cell, characterizing nozzle-limited flow and setting valve, purge, and flush cycling to hold constant bead volume under a moving head; ran gantry-vs-robot trades and carried the package through critical design review, where it was adopted as the cell contract for a **~10x** production-rate scale-up.
- Ran a DOE on a two-stage, dual-line evaporator fluid skid flowing **~120 LPM**, comparing micron pairings on cost per 1,000 L; traced losses upstream and chose the pairing that cut element cost **roughly 90%** at a manufacturing readiness review.
- Released **~10** production thermal-protection assemblies in **Siemens NX** using model-based definition, and designed check-gauge tooling with stack-up analysis and **GD&T** per ASME Y14.5 to verify attachment location at final assembly.

Firehawk Aerospace | Propulsion Design Engineering Intern | Addison, TX

May 2025 - Aug. 2025

- Designed, built, and tested parachute bay assemblies with a shear-screw breakaway and black-powder charge on a **3,500-lbf N2O/ABS** hybrid IRAD campaign, owning test plans and hardware and the 5-Why failure investigation.
- Prototyped hybrid, solid, and back-bleed propulsion hardware, machining igniters and test fixtures for U.S. Army programs (GMLRS, Stinger, Javelin) in **Creo Parametric 9** with **GD&T** and CNC machining; authored test plans in **Epsilon3**.
- Designed propulsion test facility hardware, including water-flow and **50,000+ lbf** horizontal thrust test stands, in **Creo** with **Ansys structural FEA** and trade studies that verified load paths to a **3.0** ultimate factor of safety.
- Developed one-time-use FDM tooling for propellant production with Parker O-ring gland design and vacuum-capable iterations; testing validated seal integrity, bond-layer uniformity, and cure performance for a projected **360%** capacity gain.

Space Resource Technologies | Manufacturing Engineering Intern | Orlando, FL

May 2024 - Jul. 2024

- Redesigned regolith-simulant cells for NASA, Blue Origin, and SpaceX with Lean Six Sigma, cutting same-batch active-processing time from **4 weeks** to **6 hours** and raising throughput an estimated **600%**; validated and transferred to production.

PROPULSION & FLUID SYSTEMS EXPERIENCE

Propulsion and Energy Research Laboratory | Undergraduate Researcher | Orlando, FL

Sep. 2024 - Present

- Plumbed and instrumented the Swagelok high-pressure fluid system and DAQ hardware, proof- and leak-checking before each hot-fire series and automating solenoid timing with **Python/Arduino**; reduced data in **MATLAB** for wave speed.
- Executed liquid pre-detonator hot-fire campaigns from **100-1,000 psi** on a **6 in** dual-mode rotating detonation engine, characterizing injector spray and verifying deflagration-to-detonation transition at the exit plane.

Knights Experimental Rocketry | Liquid Bi-Propellant Fluid Systems | Orlando, FL

Sep. 2025 - Dec. 2025

- Designed the P&ID for a nitrous-oxide/propane feed system, integrating **850 psi** relief, remote solenoid control, and PCTFE/PEEK seat trades screened against LOX/GOX oxygen-compatibility and cold-temperature data.
- Developed **MATLAB** tools to size run tanks and pressurant lines from mass-flow targets; modeled injector internal flow and spray formation in **Ansys CFD** to define preliminary fluid-system requirements.

LEADERSHIP

Jet and Aeronautics Society at UCF | Founder & President | Orlando, FL

Oct. 2023 - Jan. 2026

- Founded and scaled a **500+ member** engineering organization, leading 6 officers and a **30-engineer** technical core through reviews, workshops, projects, and partnerships with Blue Origin, AMD, and Northrop Grumman.
- Led technical reviews for a jet-engine flame-tube combustor and drove **SolidWorks** trades to manufacturable geometry.

TECHNICAL SKILLS & CREDENTIALS

Design & Analysis: Siemens NX, Creo, SolidWorks, Ansys FEA/CFD, Teamcenter, GD&T (ASME Y14.5), stack-up analysis, P&IDs, DFM/DFA

Test Engineering & Fluids: Proof and leak testing, Swagelok high-pressure plumbing, cryogenic conditioning (-196 C), NDE (CT/X-ray), DAQ,

Epsilon3, LabVIEW, MATLAB, Python, C, Arduino, Grafana

Manufacturing & Credentials: CNC/manual machining, additive/FDM; Siemens NX Certified, NAR Level 1, Lean Six Sigma White Belt