

Eric Peters

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Professional Profile

MIT-educated Aerospace Structures Engineer with 15 years of specialized experience in satellites, launch vehicles, and human-rated spacecraft. Expertise spans composite design and advanced simulation (multi-body dynamics; nonlinear structural FEA). Demonstrated ability to deliver complex aerospace projects from concept through operations. Currently expanding into software development, leveraging modern web technologies to build engineering analysis tools with enhanced user experience. Eager to apply this unique combination of technical expertise and innovative spirit to challenges in aerospace and adjacent industries.

Experience

Blue Origin

Senior Structural Analyst
Structures Design Engineer

Kent, WA
2024 - Present
2016 - 2023

- Structural Analysis & Technical Leadership
 - Conducted nonlinear static structural and fatigue crack growth analyses of solid rocket motor components for New Shepard Crew Capsule Escape system block upgrade.
 - Drafted means of compliance document for Crew Capsule Structures subsystem; defined analytical methods to comply with 100 structural requirements and provided component-specific safety factors based on load case family, verification approach, and material.
 - Developed Python scripts to automate safety factor selection, load case combinations, and post-processing of fastener forces from vehicle-level finite element model.
- Engineering Design
 - Authored analysis packages for 20 safety-critical metallic and composite components within Crew Capsule Structures subsystem in support of human flight certification process, culminating in the inaugural crewed flight in July 2021.
 - Redesigned aft primary beam assembly for CC2.1 design increment, leveraging lessons learned from certification process to simplify load paths and increase strength margins by 40% while reducing subsystem mass by 10%.
 - Sourced and maintained supplier relationships for high-value composite components (\$100k+ unit cost), ensuring compliance with AS9100 quality standards.
- Operations & Quality Assurance
 - Defined and implemented repair procedures for manufacturing and flight operations groups, resolving 300+ unique nonconformances across three vehicles and achieving program goal of a 50% reduction in turnaround time between flights.

Freelance

2021

- Conducted a conceptual design study for an ESPA-class weather radar satellite over a three-month period, culminating in the delivery of subsystem sizing tools, preliminary technical budgets, and a report comparing the merits of three architectural layouts against top-level mission requirements for ground coverage and mass/volume constraints.

Firefly Space Systems

Cedar Park, TX

Lead Design Engineer, Payload Segment Structures

2014 - 2016

- Led a team of three engineers to design and analyze payload fairing, payload attachment structures, and associated manufacturing tooling for the Alpha 1.0 launch vehicle.
- Instituted an elementary systems engineering process tailored around limited personnel and software resources to aid development of Design Reference Missions, technical budgets, and subsystem functional requirements.
- Cultivated the initial relationship between Firefly executive team and Seedinvest, an equity crowdfunding platform, that resulted in over \$1 million of seed round funding.
- Authored and maintained payload accommodations sections of the Firefly Alpha Payload User's Guide. Coordinated with customers to define mechanical and electrical interfaces, payload integration facility requirements, and multi-payload deployment CONOPS.

MIT Space Systems Laboratory

Cambridge, MA

Undergraduate / Staff / Graduate Researcher

2010 - 2014

- Designed motor assembly and chassis for Micro-sized Microwave Atmospheric Satellite (MicroMAS) 3U weather-monitoring CubeSat. Supported hardware fabrication, vehicle integration, and qualification/acceptance testing of flight hardware. Demonstration missions MicroMAS-1 and MicroMAS-2 launched in May 2014 and January 2018.
- Matured design of Regolith X-ray Imaging Spectrometer (REXIS) primary structure from initial concept to PDR fidelity. Sized detector electronics shielding to protect against space radiation environment using results from ESA SPENVIS model. Launched aboard NASA OSIRIS-REx mission in September 2016.

Education

Massachusetts Institute of Technology

Cambridge, MA

Master of Science, Aerospace Engineering

2012 - 2014

- Thesis: "Dynamic Instabilities Imparted by CubeSat Deployable Solar Panels"

Bachelor of Science, Aerospace Engineering

2007 - 2011

Projects

Engineering Blog - EPeters.io | Website

- Personal website showcasing portfolio of engineering tools along with blog posts inspired by niche technical topics encountered throughout my career.

Galvanic Compatibility Visualizer | [Website](#)

- Visualize the potential for galvanic corrosion between pairs of dissimilar metals and recommended surface treatments based on MIL-STD-889-C data.

Stressed | [Website](#)

- Plot Mohr's Circle for a given 2D or 3D stress state and calculate principal, Tresca, and von Mises stresses.

Countersunk Joint Data Visualizer | [Website](#)

- Visualize strength data and associated nondimensional knockdown factors for countersunk fasteners of varying materials and head styles based on MIL-HDBK-5J / MMPDS-01 data.

Self-Hosted LLM Pipeline | *Unpublished*

- Implemented a self-hosted LLM platform utilizing Ollama backend, Open-WebUI chat interface, n8n workflow automation tool, and a library of tailored prompts; created specialized AI agents for roles such as software development mentor, writing assistant, and librarian through advanced system prompt engineering; designed document summarization and keyword extraction automated workflow to support personal knowledge management database, showcasing skills in development and integration of custom AI workflow solutions.

Skills

Computer-Aided Design (CAD): Autodesk Inventor, Fusion; Dassault CATIA, SolidWorks; PTC Creo

Finite-Element Analysis (FEA): Altair HyperMesh, Optistruct, RADIOSS; Ansys Mechanical; MSC Adams; NASGRO; Siemens Femap/NASTRAN

Technical Skills: Matlab; Python; JavaScript/React; LLM prompt engineering

Publications

1. Blackwell, William et al. (2013). "MicroMAS: A first step towards a nanosatellite constellation for global storm observation". In: Proceedings of the AIAA/USU Conference on Small Satellites. Around the Corner, SSC13-XI-1.
2. Peters, Eric (2012). "Challenges of Mechanism Design for Small Educational Satellites". In: Mechanical Engineering Technology Symposium. Lexington, MA: MIT Lincoln Laboratory.
3. Peters, Eric et al. (2014). "Design and functional validation of a mechanism for dual-spinning cubesats". In: The 42nd Aerospace Mechanism Symposium. NASA Goddard Space Flight Center.