Nicholas Natsoulas

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https://nicholasnatsoulas.com/ | https://github.com/Natsoulas

EDUCATION

Cornell University, *The Sibley School of Mechanical and Aerospace Engineering* — Ithaca, NY
Bachelor of Science in Mechanical Engineering — **Aug 2020- Dec 2023**

University of Colorado Boulder, *Smead Department of Aerospace Engineering Sciences* — Boulder, CO
Master of Science in Aerospace Engineering Sciences (Incoming Student) — **Aug 2024 - May 2026**

PROFESSIONAL EXPERIENCE

Vast Space — Long Beach, CA
Guidance Navigation and Controls Engineering Intern — ***May 2024 – August 2024***
- Crewed Space Station (Haven-1) GNC subsystem engineering
- 6DOF flight simulation refactoring and organization in C++

Varda Space Industries — El Segundo, CA
Guidance Navigation and Controls Engineering Intern — ***January 2024 – May 2024***
- Space-manufactured pharmaceutical payload reentry trajectory analysis
- Trajectory Reconstruction of Reentry Flight with IMU Data and EKF State Estimation
- 6DOF Satellite flight simulation development in Python and C++
- Ground Station tracking input file scripting for reentry
- Reentry data review using Grafana and Influx
- Flight Safety Analysis for Reentry using Monte Carlo simulation and statistical analysis

SpaceX — Redmond, WA
Guidance Navigation and Controls Engineering Intern — ***May 2023 – August 2023***
- Member of Starlink's Collision Avoidance GNC team
- Cradle-to-grave GNC algorithm development that yielded a 10X performance increase
- Honing software development skills such as Git, Linux, and use of the Pandas and NumPy Python libraries
- Developed Monte-Carlo simulation to test algorithm performance and robustness
- Analysis using fundamental orbital mechanics, dynamics, and optimization
- SQL and Grafana for data analysis

Blue Origin — Kent, WA
Guidance Navigation and Controls Engineering Intern — ***September 2022 – December 2022***
- Lunar Mission Design in the Advanced Development Programs
- Development of Mission Design software tools for Copernicus using Julia, Python
- Parallel computing for Mission Design tooling using Linux

NASA Glenn Research Center — Cleveland, OH
Guidance Navigation and Controls Engineering Intern — ***June 2022 – August 2022***
- Development of 6-DOF Spacecraft Flight Simulation featuring Lyapunov-Stable reference-tracking control laws tuned for a monolithic Flexible-Structure Spacecraft in MATLAB, used for rapid design in the Compass Lab
- Focus on Robust Attitude Control given uncertainties in mass and controlling attitude actuators with real-world limitations to accomplish subsystem mission requirements (i.e., slew time, pointing accuracy, etc.)

SKILLS & PROJECTS

Software Skills: PYTHON | MATLAB | C++ | JULIA | SIMULINK | GIT | COPERNICUS | STK
Personal Projects: Spacecraft Flight 6-DOF Simulation (C++), Kalman Filtering Software (Python) [See Github]

HOBBIES

Music: Oud (Arabic Music Club), Viola (Baroque Ensemble), Accordion (Norteño), Bouzouki (Rempetiko)
Exercise: Running (4-hour marathoner), Weight Training, Hiking **Games:** Backgammon, Foosball, Ping Pong, Chess