

Nicholas Natsoulas

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EDUCATION

Cornell University, *The Sibley School of Mechanical and Aerospace Engineering*
Bachelor of Science in Mechanical Engineering

Ithaca, NY
Aug 2020- Dec 2023

Relevant Coursework: Spaceflight Mechanics (Teaching Assistant Fall 2023), Advanced Astrodynamics, Stochastic Adaptive Control, Space Systems & Technology, Advanced Dynamics & Vibrations; DTU Study Abroad Spring 2023

PROFESSIONAL EXPERIENCE

Varda Space Industries

Guidance Navigation and Controls Engineering Intern

El Segundo, CA
January 2024 – May 2024

- [Space-manufactured pharmaceutical payload reentry](#) trajectory analysis
- Trajectory Reconstruction of Reentry Flight with IMU Data and State Estimation
- 6DOF Satellite flight simulation development in Python and C++
- Ground Station tracking input file scripting for reentry
- Flight Safety Analysis for Reentry using Monte Carlo simulation and statistical analysis

SpaceX

Guidance Navigation and Controls Engineering Intern

Redmond, WA
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

Guidance Navigation and Controls Engineering Intern

Kent, WA
September 2022 – December 2022

- Lunar Mission Design in the [Advanced Development Programs](#)
- Development of Mission Design software tools for Copernicus using Julia, Python
- Automatic conversion of low-fidelity trajectory solutions to high-fidelity solutions
- Parallel computing for Mission Design tooling using Linux

NASA Glenn Research Center

Guidance Navigation and Controls Engineering Intern

Cleveland, OH
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.)

Cornell University Space Systems Design Studio

Attitude Control Researcher

Ithaca, NY
February 2022 – December 2023

- Dynamics simulations and control algorithm development for [Alpha CubeSat](#)'s ACS using MATLAB, Simulink, and C++, Monte Carlo simulation for detumbling algorithm, and native C++ high-performance EKF development.

SKILLS & INTERESTS

Software Skills: PYTHON | MATLAB | C++ | JULIA | SIMULINK | GIT | COPERNICUS | STK

Personal Projects: LQR Spacecraft Rendezvous 3-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