Scott Nguyen

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EDUCATION

Master of Science in Electrical Engineering |Space Systems Engineering **Summer 2026**
University of New Mexico GPA: 3.94/4.00

Master of Science in Aerospace Engineering **Fall 2024**
University of Illinois Urbana-Champaign

Bachelor of Science in Aerospace Engineering **Spring 2022**
Iowa State University

SKILLS

Programming Languages: MATLAB, Python, C/C++, Ruby
Frameworks / Libraries / Tools: NumPy, SciPy, Matplotlib, Astropy, Poliastro, bpy, git
Applications: Simulink, Blender

WORK EXPERIENCE

Student Co-Op, Electronics for Contested Space Group **September 2025 – Present**
MIT Lincoln Laboratory

- Implemented an ***Unscented Kalman Filter (UKF)*** for precise optical sensor measurement fusion and state estimation
- Built a probabilistic detection tool to compute observation likelihoods based on resident space object properties and optical sensor performance

Guidance, Navigation & Controls Engineer Intern **May 2025 – August 2025**
Blue Canyon Technologies

- Verified functionality and polarity of IMU, Nano Star Tracker, Reaction Wheels, Torque Rods, and Sun Sensors via hardware testing and data checks
- Performed regression analysis of two-axis ***Solar Array Drive Assembly (SADA)*** momentum management and validated command interfaces for precise control and reliability
- Automated ***SADA*** validation by developing ***Ruby*** test scripts and mapping telemetry channels to ***COSMOS***

Guidance, Navigation & Controls Engineer Intern **January 2025 – April 2025**
Blue Origin

- Integrated ***Active Disturbance Rejection Control (ADRC)*** and ***Sliding Mode Control (SMC)*** to develop a robust algorithm for stabilizing the nonlinear MIMO dynamics of the BE-7 engine
- Evaluated control performance by injecting various disturbances, demonstrating effective rejection and improved accuracy in setpoint tracking
- Integrated flight software into ***Simulink*** using ***S-functions*** programmed in ***C*** to enable testing and verification

Guidance, Navigation & Controls Engineer Intern **May 2024 – August 2024**
Varda Space Industries

- Conducted trade studies to optimize gravity models for mission requirements and select the best filter (***Extended Kalman Filter (EKF)*** vs. ***Unscented Kalman Filter (UKF)***)
- Created Monte Carlo simulations to perform flight safety analysis and develop reentry criteria for capsule reentry
- Implemented an ***EKF*** for state estimation, optimizing ground station data timing to minimize residuals and enable precise delta-v planning
- Implemented unit testing for the code base and introduced CI/CD pipelines using Bamboo

Guidance, Navigation & Controls Engineer Intern **May 2023 – August 2023**
Space Dynamics Laboratory

- Implemented a UKF with range iteration and least squares orbit determination methods using optical navigation
- Performed Monte Carlo analysis on relative orbits to identify challenging scenarios and refine the algorithm
- Programmed and developed unit tests for ***Lambert Solver*** to be utilized with ***Initial Orbit Determination (IOD)***

RESEARCH PROJECTS

Delta-V Minimization from Geostationary Orbit to Mars

- Applied trajectory optimization techniques to minimize delta-v for an Earth-to-Mars transfer orbit, enhancing fuel efficiency
- Generated pork-chop plots using Lambert solutions and cross-validated optimizer results with the plot's global and local minimum regions to ensure consistency
- Utilized Blender's Python API to visualize the optimized trajectory and animate planetary motion