

# Nicholas Delurgio

**Guidance, Navigation,  
and Control Engineer**

## EDUCATION

### Stanford University — *M.S. Mechanical Engineering*

September 2022 - June 2024

**GPA:** 3.94

**Coursework:** Advanced Space Mechanics, Optimal Control, State Estimation, Convex Optimization, Applied Control Design, Distributed Space Systems

### University of Texas at Austin — *B.S. Aerospace Engineering*

August 2018 - May 2022

**High Honors, GPA:** 3.97

**Coursework:** Feedback Control Systems, Attitude Dynamics, Orbital Mechanics, Flight Dynamics, Linear Systems, Spacecraft/Mission Design

## EXPERIENCE

### Space Rendezvous Lab — *Researcher (Advised by Simone D'Amico)*

October 2022 - Present

Stanford, CA

- Designed a conceptual Mars mission for high-resolution gravimetry, utilizing a swarm of three spacecraft.
- Generalized the use of relative orbit elements to include eccentric orbits, enhancing RPOD mission design capabilities.
- Derived state transition matrices for relative motion which include J2, solar radiation pressure, and third body perturbations.
- Developed analytical relative orbit control algorithms for spacecraft proximity operations and rendezvous.

### Blue Origin — *GNC Intern, Space Systems Development*

June 2023 - September 2023

Kent, WA

- Designed and integrated a satellite attitude guidance algorithm into the GNC FSW of a LEO/GEO transfer vehicle.
- Developed an attitude controller used for quaternion, vector, and planar tracking in a variety of spacecraft modes.
- Created a sun-acquisition scenario demonstrating ADCS capabilities and performance for critical design review.

### Rocket Lab USA — *Spacecraft GNC Intern*

May 2021 - August 2021, May 2022 - August 2022

Littleton, CO

- Designed and implemented an attitude and momentum controller for a LEO satellite with five failed actuators, salvaging the mission.
- Developed modular precession and nutation control algorithms for spin-stabilized spacecraft.
- Programmed a Monte Carlo simulation engine to analyze lunar landing scenarios for the Blue Ghost spacecraft.
- Created high-fidelity STK simulations for LEO and GEO satellites to model ADCS performance and power generation/consumption.

## CONTACT INFORMATION

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## SKILLS

### Programming

MATLAB (experienced)

Python (experienced)

Julia (experienced)

C++ (intermediate)

### Simulation

Systems Tool Kit (certified)

Simulink (experienced)

Gazebo (intermediate)

Trick (intermediate)

## INTERESTS

- ☐ Guidance, Navigation, and Control
- ☐ Rendezvous, Proximity Operations, and Docking
- ☐ Spacecraft/Launch Vehicle Trajectory Design
- ☐ Optimal Control
- ☐ Sensor Fusion/State Estimation