

# Govind Chari

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## EDUCATION

### CORNELL UNIV.

GPA: 4.19 / 4.0

Mechanical Engineering  
May 2022 | Ithaca, NY

## LINKS

LinkedIn:// [govindchari](#)

Github:// [govindchari](#)

Website:// [govindchari.com](#)

## COURSEWORK

Advanced Astrodynamics (g)

Stochastic Controls (g)

Model-Based Estimation (g)

Linear Systems (g)

Feedback Controls (g)

Numeric Analysis

Spaceflight Mechanics

Probability and Inference

Mechatronics

Dynamics

Mechanics of Materials

Fluid Mechanics

Heat Transfer

(g) indicates graduate coursework

## SKILLS

### SOFTWARE

Matlab • Simulink • C++

Python • ANSYS •

HOOTL/HITL Testing

Simulation • Flight Software

Solidworks (CSWA Cert)

HSMWorks

### GENERAL

Controls

Dynamics

Estimation/Filtering

Orbital Mechanics

Autonomous Vehicles

Machining (Mill/Lathe)

## HOBBIES

Tennis • Badminton

Stargazing • Hiking

Weightlifting

## EXPERIENCE

### SPACEX | INCOMING ASSOCIATE GNC ENGINEER

Jun 2022 - Aug 2022 | Hawthorne, CA

- Accepted 12-week internship offer for Summer 2022

### SPACEX | PROPULSION ANALYSIS INTERN

Jun 2021 - Aug 2021 | Hawthorne, CA

- Performed nonlinear structural and thermal analysis of Raptor and Merlin engines components using ANSYS and documented results for the responsible engineers
- Assessed multiple fluid fitting designs to mitigate flight risk for Starship orbital test flight
- Analyzed deflections in Raptor fuel turbopump housing at critical sealing surfaces
- Assessed gapping, structural margins, and fatigue life on Raptor high pressure lines
- Conducted modal and random vibration analysis on high pressure Merlin LOx line

### CORNELL SPACE SYSTEMS DESIGN STUDIO | GNC ENGINEER

April 2021 - Present | Ithaca, NY

- Worked on the development of a high fidelity 6DOF simulation for [PAN](#)
- Tuned orbital rendezvous controller and worked on flight software implementation
- Conducted HITL and HOOTL tests to verify performance of orbital rendezvous controller and propulsion system
- Ran simulations to determine if deployment dispersions met our satellite's delta-v budget

## PERSONAL PROJECTS

### G-FOLD IMPLEMENTATION | MARCH 2021-JUNE 2021

- Recreated Acikemese and Blackmore's powered descent algorithm
- Utilized lossless convexification and modified problem to help with feasibility
- Coded algorithm and a 6DOF simulation in C++ to verify robustness to disturbances
- Conducted Monte-Carlo trials to determine landing ellipse of the algorithm

### VERTICAL TAKEOFF AND LANDING VEHICLE | APRIL 2020-AUGUST 2020

- Built and coded a vertical takeoff and landing vehicle powered by racing drone motors which utilizes servo driven thrust vectoring fins for attitude control
- Wrote GNC code from scratch using C++ including a Kalman Filter to fuse altimeter and accelerometer readings which reduced variance in altitude readings by 44%
- Designed and printed thrust test stand to accurately model the nonlinear thrust curve of racing drone motors and to measure the effectiveness of the thrust vectoring fins
- Conducted isolated unit tests to validate efficacy of the roll controller

### ROCKET SIMULATION AND UKF | Nov 2021

- Created a Matlab script to simulate the 6DOF dynamics of a high powered rocket including wind and aerodynamic forces and moments
- Wrote an Unscented Kalman Filter for position, velocity, and attitude estimation given accelerometer, gyro, and GPS readings

### 6DOF TVC MODEL ROCKET SIMULATION | JAN 2021

- Derived equations of motion for a quaternion-based dynamics model
- Wrote 6DOF Simulink model of vehicle that accounts for real-world effects like actuator delay, TVC mount misalignment, and sensor noise
- Conducted Monte-Carlo simulations to determine dispersions from nominal trajectories