

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)

Numerical Analysis (g)

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