

## Education

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### Master of Engineering (Thesis) - Mechanical

*Rando University*

Sep 2018 - Apr 2021

*San Francisco, CA*

### Bachelor of Engineering - Mechanical

*Rando University*

Sep 2013 - Apr 2018

*San Francisco, CA*

## Skills

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**Programming Languages** Python | Java | C++ | C | C# | JavaScript | MATLAB | Simulink

**Technologies** AWS BS/EC/EC2/ELB | Azure AD | Docker | React.js | Flask | Redis | Spring | Android | ROS

## Experience

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### Rando University

May 2018 - Mar 2021

*Graduate Control Systems Researcher*

*San Francisco, CA*

- Developed a novel modification to a quaternion-based control system that optimizes control allocation within a quadrotor's actuator constraints to improve its stability and performance.
- Modeled and simulated a quadrotor's attitude and translational dynamics in MATLAB/Simulink to quantify the stability and performance improvements of the proposed control system.
- Adapted and extended existing C++ code architectures to facilitate prototype implementation and performed hardware-in-the-loop simulations, using Gazebo/ROS for testing.

### Rando Space Company

Sep 2017 - Dec 2017

*Satellite Simulations Intern*

*San Francisco, CA*

- Extended foundational Python code that performs Monte Carlo simulations for the Very Specific Space Mission.
- Coordinated with Senior Engineers in validating and improving models while supplying time-sensitive simulation data for Critical Design Reviews.
- Generated reports for the Very Specific Space Mission performance under varied initial conditions of the Specific system to ensure its reliability before launch.

## Notable Projects

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### RandoSite.com

Mar 2021 - Sep 2021

*Full Stack Developer*

*San Francisco, CA*

- Independently built an open-source web application that performs advanced Monte Carlo calculations for options trading, receiving praise from the trading community for its simplicity and accessibility.
- Front and back-end development using the React and Flask (Python) frameworks, respectively. These services were containerized using Docker Compose to enable scalability in the software architecture.
- Used Python optimization techniques to reduce calculation times for a fast API that can serve thousands of users per second. Load balancing in AWS was incorporated to ensure fault-tolerance and reliability of the application.
- Integrated the Azure Active Directory B2C service for secure user authentication and convenient identity management.

### RandoApp Android App

Jan 2018 - Apr 2018

*Full Stack Developer*

*San Francisco, CA*

- Collaborated with a team in building an Android application for monitoring the health status of trees in San Francisco. The app would assist the city in its urban planning and sustainability goals.
- Implemented the user authentication system using the Android SDK (Java). Google Maps was integrated into the app to enable geotagging of trees and updating their health status by users.
- Test-driven development of all back-end endpoints using JUnit testing. The back-end was deployed on a Tomcat server.

### University Space Design Team

Sep 2016 - May 2018

*Satellite Control Systems Lead*

*San Francisco, CA*

- Led a team of prospective engineers in designing the control system for Rando University's first student-led Cube Satellite (CubeSat) project. The satellite would compete in the USA Satellite Design Competition.
- Simulated the attitude dynamics and kinematics of a CubeSat in MATLAB to optimize controller gains and to size our actuators for power efficiency.
- Implemented PID and B-dot controllers in Python on a Raspberry Pi for the attitude control of a CubeSat prototype, achieving a desired pointing accuracy of less than 15 degrees for our mission.

## Publications

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- **John Doe** and FirstName LastName, "Super Awesome Modification for UAV Control Systems," *2020 International Conference on Super Cool Stuff (ICSCS)*, Paris, France.