# David Sinden

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Summary

## Education

**PhD - Dynamical Systems** **Sep 2018 - Apr 2021**
*University College London*

**MSc - Modern Applications of Mathematics** **Sep 2013 - Apr 2018**
*University of Bath*

**BSc - Mathematics with Applied Mathematics/Theoretical Physics** **Sep 2013 - Apr 2018**
*Imperial College London*

## Skills

**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

**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

**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

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