

# Jedidiah Alindogan

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## EDUCATION

**Ph.D. in Control and Dynamical Systems**  
California Institute of Technology  
09/2024 - Current

**B.S. in MechE**  
California Institute of Technology  
09/2021 - 06/2023

**A.S. in - Physics, Math, MechE, and EE**  
American River College  
06/2018 - 06/2021

## SKILLS

### Programming Proficiencies

- Python, C++, C#

### Computation

- MATLAB, Mathematica




### Robotics

- ROS 1, ROS 2, Gazebo

### Design

- Solidworks, Fusion360, ANSYS

## LINKS

 [jedi-alindogan.github.io](https://github.com/jedi-alindogan)  
 [github.com/jedi-alindogan](https://github.com/jedi-alindogan)  
 [www.linkedin.com/in/495-jedidiah-alindogan](https://www.linkedin.com/in/495-jedidiah-alindogan)

## HONORS & AWARDS

2022 - Tau Beta Pi Honors Society Member

2021 - 2022 NASA BIG Idea Challenge Finalist

2019 - NASA Community College Aerospace Scholar

## RELEVANT COURSES

Optimization;  
Linear Functional Analysis;  
Probability and Measure Theory;  
Nonlinear Dynamics and Control;  
Linear System Control;  
Robotics I: Manipulation, Kinematics, Dynamics;  
Robotics II: Planning, Navigation, and Perception;  
Robotics Lab: Localization and Perception Project;  
Optimal Control and Estimation;  
Probability Models;  
Game Theory

## PROJECTS

### Autonomous Toy Car

2024

- C++, Python, Arduino
- Sensor Calibration (LiDAR, GPS, Intel Realsense), Mechanic Design
- Developed autonomous payload for a Traxxas Xmaxx to run planning and control algorithms.

### Learning Introspective Control

2023

- C++, Python, Gazebo, Git
- Collaborated with researchers from Caltech and JPL to design algorithms that allow a ground vehicle robot to adapt to changes in its dynamics not predicted as design time.
- Created a tipping safety constraint, conducted experiments for control and planning algorithms, designed simulation terrains for testing in Gazebo.

### Unicycle Localization and Planning

2023

- ROS2, Linux, Git, Python
- Assembled and implemented algorithms to localize, plan trajectories, and navigate around obstacles autonomously via ROS2 and Python.
- Integrated information of Hall effect encoders, IMU, LiDAR, and camera sensors.

### NASA BIG Idea Challenge

2022

- Solidworks, Matlab
- Collaborated with a team of student engineers to design and prototype a cable-traversing robot for lunar exploration.
- System was designed to satisfy NASA's TR4/TR5 readiness level (i.e. tested system in laboratory and relevant environment).

### Data-Driven Discovery of Differentially Flat Coordinates

2022

- Pytorch, Git
- Developed an autoencoder to learn differentially flat coordinates for a unicycle and a quadrotor for trajectory generation.

## EXPERIENCE

### Research Engineering Staff - Caltech

08/2023 - 08/2024

- Experimentation, Simulation, Python, ROS, Gazebo
- Actively contribute to the design and execution of experiments, employ advanced simulations, and engage in software development within the Autonomous Robotics and Control Lab

### Summer Undergraduate Research Fellow - Caltech

06/2022 - 08/2022

- Machine Learning and Planning
- Developed an autoencoder to construct trajectories for nonlinear dynamical systems using differentially flat coordinates at the Autonomous Robotics and Control Lab.

### Program Assistant - Los Rios Community College District

08/2019 - 05/2021

- Teaching and Management
- Coordinated with tutors to facilitate STEM Center operations in outreach and tutoring for students.

## VOLUNTEERING

### Academics Chair - Graduate Student Council

2024-Present

- Coordinate activities aimed at enhancing academic and career interests of graduate students and to help foster an environment in which graduate students can learn to become leaders in their academic fields.

### Rise Tutor - Caltech Y

2022-2023

- Advise, mentor, and tutor high school students in STEM subjects.

### Social Director Team - Avery House, Caltech

2022-2023

- Volunteer in organizing, planning, and running social events for student life on campus.

### Fair Oaks Library Volunteer - Fair Oaks Public Library

2018-2021

- More than 120 hours volunteering at the Fair Oaks Public Library to help with community events and organize texts.

## PAPERS

MAGIC<sup>VFM</sup>: Meta-learning Adaptation for Ground Interaction Control with Visual Foundation Models. Published in IEEE TRO; fourth author.

Lunar Architecture for Tree-Traversal In-service-of Cabled Exploration (LATTICE). Technical paper submitted to 2022 NASA BIG Idea.