Jedidiah Alindogan

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EDUCATION

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

Simulation
- ANSYS, ROS 1, ROS 2, Gazebo

CAD
- Solidworks, Fusion360

LINKS

jedi-alindogan.github.io
github.com/jedi-alindogan
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

2018 - Bella Vista High School Valedictorian Scholar

2018 - Science Olympiad Experimental Design State Champion

2017 - Science Olympiad Optics State Champion

RELEVANT COURSES

ME Design Lab Competition;
ME Experiments and Modeling;
Dimensional and Data Analyses;
Mechanics: Statics and Dynamics of Rigid Bodies, Deformable Bodies, and Fluids;
Thermal Sciences: Classical Thermodynamics and Transport;
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

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.

Probabilistic Road Map Planning for High DOF Robot Arms 2021
- Python, ROS, Git
- Researched variations of RRT in probabilistic road map planning for different robot arm schematics.

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.

DESIGN Hub Intern - Los Rios Community College District 01/2020 - 12/2020
- ISO 9001 QMS Operation
- Developed various applications including a 2D Moonshot simulation, SARS Active Site Gamification, and a web application for remote test distribution.

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

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
- Over 120 hours volunteering at the Fair Oaks Public Library to assist in community events and organize texts.

PAPERS

"Lunar Architecture for Tree-Traversal In-service-of Cabled Exploration (LATTICE)," Technical paper submitted to 2022 NASA BIG Idea.
"MAGIC^{VFM}: Meta-learning Adaptation for Ground Interaction Control with Visual Foundation Models," co-authored research paper submitted to T-RO.