

Riley Ellis

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EDUCATION

Illinois Institute of Technology

MS in Autonomous Systems and Robotics

BS in Mechanical Engineering

Chicago, IL

May 2023

GPA: 3.82

- Organizations: IIT EcoCAR | American Society of Mechanical Engineers | Alpha Sigma Phi Fraternity | Greek Council

WORK EXPERIENCE

Argonne National Laboratory

Technical Research Aide

Lemont, IL

Jan 2023 – June 2023

- Developed a data-driven vehicle model utilizing on-road and Hardware-In-the-Loop generated dynamometer data to support a LiDAR Augmented Traffic Control project to reduce energy consumption in electric vehicles by 15%
- Designed and simulated a vehicle energy consumption model in Python based on Markov Chain Theory

Marine Robotics LLC

Robotics Engineering Intern

Gray, ME

May 2022 - August 2022

- Advanced the design and development of an unmanned autonomous sailing vessel prototype
- Integrated robotics with single board computers, microcontroller units, flight controllers, motor controllers, actuators, and other electronics
- Analyzed pose, wind, and bathymetric data with ROS and Foxglove Studio for control development, troubleshooting, and vehicle repairs for mechanical and software failures
- Documented highly detailed software and hardware user manuals for company archives

Pacific Northwest National Laboratory

Robotics Engineer Intern

Richland, WA

June 2021 - August 2021

- Investigated methods of advanced control of an Autonomous Surface Vehicle (ASV) to improve water quality monitoring systems for hydropower facilities in the United States
- Developed a Python script to simulate the ASV in a controlled environment in the Graphical User Interface, Mission Planner, to observe the vehicle's behavior
- Reported findings in a technical research document detailing the Python script, control methods implemented, and how an autopilot interacted with the script via a Raspberry Pi companion computer

PROJECT EXPERIENCE

EV EcoCAR Challenge

Control Engineer

Chicago, IL

August 2022 – May 2023

- Modeling an Adaptive Cruise Control system in Simulink and MATLAB for a level four autonomous vehicle to improve highway driving performance and increase efficiency in connected vehicles
- Simulating intersection navigation behavior of autonomous vehicles and designing road networks to improve vehicle performance using Roadrunner

LEADERSHIP EXPERIENCE

NASA L'SPACE ACADEMY - Student Workforce Development Program

Student Deputy Project Manager

Chicago, IL

May 2020 - July 2020

- Designed a Mars lander and rover with mass constraint of 180kg, volume constraint of 0.4 cubic meters, and budget constraint of \$100 million
- Created 97-page Preliminary Design Review document including design process, evolution, and constraints
- Constructed Gantt Chart for three-month timeline to coordinate task distribution, durations, and deadlines
- Formulated five validation and verification testing plans for the Mars payload for dynamics, thermal, solar, electromagnetic interference/compatibility, and mobility performance

SKILLS & INTERESTS

Computer Skills: Python | MATLAB | Simulink | Java | Robot Operating System | PTC Creo | Inventor | Arduino | Foxglove Studio | Particle IoT | Mission Planner | RStudio | Google Suite | Microsoft Office | AutoCAD

Design Skills: Systems and Controls Modeling | Rapid Prototyping | Soldering | Power Saws | Wood Lathe

Interests: Mobile Robotics, Marine Robotics, Automation, RC Vehicles, Quadcopters, Skateboarding