Daniel Rhee

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BS Computer Science (3.92/4.0 gpa) **Class of 2027**
University of California, Santa Cruz (UCSC)

Skills

Programming Languages: Python, Java, Go, C, C++, C#, Rust, R, JavaScript, Typescript, Dart

Frameworks/Libraries: Pytorch, Tensorflow, Carla, SQL, Postgres, Albumentations, Pandas, Numpy, Polars, Django, Flask, Flutter, NodeJS, Angular, React, DuckDB, Flask, MySQL, NoSQL, Apache, Docker, Spark

Tools: Git, Jupyter, LaTeX, Matlab, SageMath, KiCad, Onshape, Tableau

Experience

Software Development Intern, Linux Foundation **Jul 2025 - October 2025**

An intern to extend the functionality of the FinOps Open Cost and Usage Specification (FOCUS) validator tool provided by the FinOps Foundation to standardize billing data sets from AWS, GCP, Azure and other cloud providers to make it easier to understand technology spending.

- Developed a conformance rules engine in Python to parse JSON rules specifications and use topological sort to track dependency validation
- Utilized DuckDB and Polars for efficient data storage and rapid column and SQL checks
- Maintain tests framework in Git to work with all updates and changes to the FOCUS standard

Autonomous Software Lead, Formula SAE at UCSC **Sep 2024 - Present**

A software engineer on UCSC's Formula-style electric race car team in international collegiate competition hosted by the Society of Automobile Engineers (SAE). Won 3rd place for most efficient car (2025).

- Promoted to lead the designing and prototyping of a perception and route-planning software stack for driverless racing in the 2026 Formula SAE competition
    - Trained YOLACT and YOLOv8 semantic segmentation models on synthetic datasets annotated with Segment Anything Model 2 (SAM2) and Grounding Dino and deployed them for real time inference with TensorRT
    - Deployed depth estimation models (LiteMono, Depth Anything V2, Depth Pro) for learning based depth estimation and corrected relative to metric depth with geometric techniques
    - Implemented RANSAC for ground segmentation and removal to improve efficiency and accuracy of cone location estimation and depth mapping
    - Implemented a Stanley controller to determine torque demand into the steering column to navigate the car effectively at racing speeds
- Applied machine learning techniques, including neural networks, to create cross-functional vehicle dynamics models and optimize vehicle design
    - Modeled the performance of the primary battery for voltage sag, output, and efficiency under dynamic motor loads in racing conditions
    - Modeled transient tire behavior to simulate deformation and heating due to forces and moments applied to the tire during acceleration, braking and cornering

- Utilized Pytorch to create semi-empirical models utilizing real world testing results to identify flaws and improve purely theoretical models

Undergraduate Researcher, AI Explainability Accountability Lab at UCSC **Mar 2025 - Present**

A member of Dr. Leilani Gilpin's research lab that focuses on design and analysis of methods for autonomous systems to explain themselves (X AI) and how generative models can be used in iterative X AI stress testing.

- Worked on the Waymo Open Dataset challenges in preparation for the upcoming 2026 Waymo Open Scenario Challenge
- Studied and partially reimplemented the SIMformer paper to utilize transformers to encode vehicle trajectories
- Trained reinforcement learning models in gymnasium environments to benchmark performance between Deep Deterministic Policy Gradient, Proximal Policy Optimization, and Deep Q-Network models
- Utilized the Carla autonomous vehicle simulator environment to analyze autonomous vehicle driving habits based on simulated LIDAR outputs
- Placed in the top 2 among 30 undergraduate students in the lab in Spring quarter 2025

Volunteer, Research Project at Madigan Army Medical Center **Mar 2021 - Jul 2024**

A volunteer researcher in a precision health research project to improve healthcare outcomes through data science and data visualization techniques for hospital staff using wearable device data combined with clinical and survey data.

- Utilized Fitbit's API to automate an end-to-end retrieval of sleep and activity data of study participants
- Developed a ReactJS dashboard with a Flask backend providing personalized health coaching by combining data from Fitbits and survey data describing wellness, diet, nutrition and medical history

Intern, University of Washington **Sep 2023 - Jun 2024**

A student intern in Dr. Sajjad Moazeni's Emerging Integrated Technologies & Systems Lab in the Department of Electrical and Computer Engineering at the University of Washington.

- Analyzed Python and bash script to understand system behavior and create documentation
- Set up Berkeley Analog Generator and Laygo2 for automated generation of circuits for Cadence Virtuoso

Projects

Breast Cancer Tumor Segmentation, BioHacks 2025 Hackathon at UCSC **Mar 2025**

- Won best AI/ML application at the hackathon
- Developed a deep learning model utilizing a UNET to segment breast cancer tumors from ultrasounds with a dice score > 88%
- Developed a convolutional neural network (CNN) to classify tumor risk at over > 70% accuracy

Research Project, International Baccalaureate Extended Essay **Sep 2022 - Jun 2024**

- Utilized regression techniques to predict geyser eruption times in Yellowstone National Park at a higher accuracy than the National Park Service
- Published paper in Journal of Emerging Investigators (2024). DOI: 10.59720/23-162