Theo Rode

(650) 575 0625 • theorodester@gmail.com
linkedin.com/in/theorode • github.com/TheSharkhead2
theorode.com

Work Experience

GrayMatter Robotics - **AI Robotics Software Development Intern** Jun 2023 - Aug 2023

- Took lead on developing a novel RGB vision system in C++, utilizing OpenCV and PCL, which integrated with ROS.
- Developed custom algorithms for processing colored point clouds to allow for AI to perceive colored sections of objects as distinct.
- Collaborated extensively with the hardware team to build the custom hardware necessary to integrate the new vision system into the current product.
- Worked with the applications team to architect a custom calibration system to allow for interoperability between an external tracking system and a robotic arm for precise (mm scale) sanding.

Harvey Mudd College - **Multivariable Calculus (MATH019) Teaching Assistant** Aug 2023 - present

- Nominated by the head of the math department for a new role to write weekly exemplary solutions for the freshman MVC class of over 200 students.
- Collaborating with Professors and other graders to provide detailed feedback to students.

Harvey Mudd College - **Homework Hotline Tutor** Sep 2022 - present

- Provide homework help through a free call-in tutoring service for kids from elementary to high school.

Projects

The Game of Gradients Nov 2022 - Jan 2023

- Led a small team in creating a game in Rust that builds intuition for a gradient field.
- Designed a real-time gradient field simulation that updates live with user defined functions.
- Currently being used by my high school MVC teacher as a teaching tool for his MVC class.

Shark Attack Data Analysis Nov 2022 - Dec 2022

- Formatted heavily inconsistent and non-standardized data on shark attacks.
- Analyzed data to extract patterns and correlations using Julia.
- Compiled visual demonstrations of the data to effectively articulate trends.

Rust Spotfiy API Wrapper Aug 2022 - Jun 2023

- Developed an intuitive library structure as a wrapper for the Spotify Web API in Rust.
- Implemented the PKCE extension for OAuth2 authorization with the API.
- Constructed custom formatting algorithms for objects to improve usability of API.
- Uploaded as an open source library to Rust's Crates.io package marketplace.

The Three Body Problem Simulation Nov 2021 - Dec 2021

- Built a simulation engine for the Three Body problem: modeling the chaotic motion of three gravitational bodies.
- Collaborated with a group to improve accuracy and dependability of the simulation.
- Utilized the simulation to gain intuition for the chaotic system's behavior.

Music Recommendation Engine Jan 2021 - Apr 2021

- Built a machine learning model with TensorFlow to predict if a song will be enjoyed.
- Interfaced with the Spotify web API to grab song data and formatted it with Pandas.
- Constructed a desktop application to view the model's predictions and train it.

Education

Harvey Mudd College 2022 - 2026

- Sophomore pursuing degrees in Computer Science and Math. Current GPA: 4.0.
- Current coursework: Data Structures & Program Development (CSCI070), Mathematical Analysis (MATH131), Differential Equations (MATH082), Engineering Systems (ENGR079), Physics Lab (PHYS050), Pacific Islander History (ASAM126).
- Notable past coursework: Adv. Linear Algebra (MATH173), Discrete Math (MATH055), Principles and Practice: Computer Science (CSCI042)

The Nueva High School 2018 - 2022

- Notable coursework: Quantum Information and Computation, Algorithms, Computer Security, Computer Vision, Intro and Advanced Machine Learning, Graph Theory, Cryptocurrency

Skills

- Programming languages: Rust, C++, Julia, Python, Racket, JavaScript, TypeScript, MATLAB, HTML, CSS
- Tools and Platforms: OpenCV, PCL (Point Cloud Library), git, Linux, ROS (Robot Operating System), TensorFlow, Pandas, Svelte, Tauri, Leptos, Yew, Unreal Engine, Bevy, React Native
- Strong leadership, teaching, and teamwork skills

Hobbies

I love playing tennis and skiing. I also enjoy sleight of hand magic and solving puzzles.