Keyron Linarez

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EDUCATION

Pomona College | Cumulative GPA 3.93 — Claremont, CA

Bachelor of Arts: Computer Science, Minor in Mathematics — December 2025

Relevant Coursework: Data Structures and Algorithms, Programming Design Methodologies, Intro to Languages and Theory, Natural Language Processing, Game Engine Programming, Data Mining, User-Centered Research, Real Analysis

TECHNICAL SKILLS

Languages: Python, C++, Java, Rust, Scala, SQL, R, Haskell, HTML/CSS/JavaScript.

Frameworks and Libraries: MySQL, PyTorch, Gensim, Tidyverse, NumPy

Tools: Git, Linux, Robot Operating System, Quarto, Audacity

PROFESSIONAL EXPERIENCE

Pomona College | *Computer Science Teaching Assistant* | Claremont, CA — August 2023 – Present

- Host weekly mentor sessions for 40 Discrete Math and Functional Programming students, where I provide constructive feedback and guidance on core computer science concepts.
- Mentor a learning community of 6 computer science students where I clarify class concepts in a positive and engaging learning environment once a week; help correct and bug fix students' **Java** and **Haskell** code.
- Conduct thorough grading and provide detailed feedback on students' homework assignments.

Washington University in St. Louis | *Software Engineering Researcher* | St. Louis, MO — May 2023 – July 2023

- Programmed a closed-loop PID control system in **Python** that utilized IMU and Lidar sensor data for fusion control to accurately manage the speed, yaw, and position of an F1/10 car.
- Analyzed the performance of reinforcement algorithms for autonomous maze navigation on the Rosmaster R2 platform; my research focused on simulating safe paths that avoid obstacles while maintaining forward progress towards a goal.
- Implemented a waypoint trajectory system that utilized our vehicle's SLAM and LiDAR sensors to create a simplified global planner path; built our own ROS package to send and retrieve sensor data in our system.

Google Computer Science Summer Institute | *Intern* | Remote — July 2021 – August 2021

- Earned a spot in a highly selective, 4-week **JavaScript** coding course led by Google Engineers; Collaborated with a Software Engineering Mentor and a cohort of 30 peers.
- On a three-person team, completed a web game that teaches basic **JavaScript** concepts in a 'Pokémon' style. Utilized cookies to save game progress and designed the visuals for the game with **CSS**.

PROJECTS AND RESEARCH

Rust Game Engine: Shooter and Pokémon-style RPG

- Developed a game engine in **Rust** built on Frenderer, optimized **wgpu** rendering pipeline for smooth performance and memory efficiency across different hardware configurations.
- Implemented an animation system that utilized delta time to render frames accurately using **winit**, optimizing sprite management for high object counts.
- Designed a robust collision system using bounding boxes to detect and correct object intersections, ensuring precise gameplay interactions and control.
- Link to Repository: https://github.com/keneth310/game-engine-unit3

Image-to-Music Recommendation System

- Integrated Spotify API to generate personalized playlists based on input image descriptions, leveraging the Hugging Face Cross Encoder for feature prediction to yield specific songs.
- Developed and trained a CNN model using **PyTorch** on a dataset of 1,000 images across 10 categories, incorporating random rotations and successive epoch training achieving a maximum accuracy of 67-69%.
- Utilized SpotiPy library to automate the creation of curated playlists, seamlessly generating song recommendations to enhance user engagement and personalization.

Research Paper: Extremal Polynomial Norms of Graphs

- Researched Ky-Fan, Schatten, and complete homogeneous symmetric norms of graphs, and analyzed their ability to distinguish between graphs using the eigenvalues of their adjacency matrices.
- Collaborated weekly with a mathematics professor, solving problems involving Hermitian matrices and L2 norms; contributed to drafting a research paper with illustrative examples and theoretical insights.
- Publication link: https://ui.adsabs.harvard.edu/abs/2023arXiv231104689B/abstract