Alfonso Moreno Victoria

(510) 974-9975 | amorenovictoria04@gmail.com | linkedin.com/in/amorenovictoria04

Education

University of California, Berkeley Expected May 2026

B.S. Electrical Engineering and Computer Science, B.A. Minor Data Science

Relevant Coursework: Introduction to the Internet: Architecture and Protocols **(Python)**. Operating Systems and System Programming **(C)**, Data Structures **(Java)**, Designing Information Devices and Systems, Discrete Mathematics and Probability Theory, Efficient Algorithms and Intractable Problems, Great Ideas of Computer Architecture **(C, RISC-V)**, Principles & Techniques of Data Science **(Pandas)**, Optimization Models in Engineering **(CVXPY)**

Experience

Daxe | *AI-Computer Science Intern* June 2025 – Present

- Created a multi-agent NBA analytics assistant using Google's ADK, capable of retrieving and interpreting live player stats with nba-api
- Developed and deployed a FastAPI service on Railway to log BMO's customer support tickets on a Neo4j graph database
- Enabled efficient and user-friendly ticket analysis by leveraging Neo4j's graph structure, reducing reliance on complex SQL joins
- Reviewed and proposed systematic compliance documentation to prepare the startup for the SOC2 Type 2 audit

Projects

PintOS | *C, Docker, GDB* January - May 2025

- Implemented a diverse set of syscalls, including process control (e.g fork), file operations (e.g write), and subdirectory (e.g chdir)
- Created a simplified POSIX pthread library for user threading with syscalls such as pthread_create, lock_acquire, sema_up
- Deployed a strict priority scheduler with functional priority donation to prevent inevitable priority inversion with threads
- Improved performance through a buffer cache to optimize disk I/O operations, reducing disk accesses for file system operations

Transport Protocol | *Python, TCP* April 2025

- Implemented logic to buffer and reorder out-of-order TCP segments, ensuring in-order delivery to the application layer
- Created a mechanism to parse and respond to ACKs whilst respecting the receiver's advertised window size to prevent packet loss
- Developed full TCP connection teardown logic (passive and active close procedures) and all corresponding state transitions

Optimized Convolution | *C, SIMD, OpenMP, Open MPI* April 2024

- Optimized a naive implementation of 2D convolutions with SIMD vectorization through the help of Intel's Intrinsic Guide
- Furthered optimization by parallelizing the convolutions with OpenMP's multi-threaded directives to achieve a 8.96x speedup
- Increased speedup by 5.23x with Open MPI to pass data between programs and establishing a manager/worker framework

Rock-Paper-Scissors World | *Java, STDDraw, Google Truth* May 2023

- Developed a Java-backed engine for psuedo-randomly generating tile-based 2D worlds with navigable rooms and hallways
- Implemented a player capable of interacting with the world and moving enemies that trigger fight events upon interaction
- Refined the user interface and game's visuals using Princeton's STDDraw package to improve clarity and accessibility for user
- Used Google Truth assertion library to create comprehensive tests to debug large and increasingly complex code

S1XT33N | *Arduino, Closed-Loop Control, PCA* November 2023

- Built a four-wheeled robotic car capable of following four voice drive commands: drive far, drive close, turn left, and turn right
- Installed a first-order low-pass RC filter onto the breadboard to isolate frequencies that correspond to human speech
- Implemented a closed-loop control strategy into Arduino to allow for self-correcting straight-driving through imperfect terrain
- Gathered audio samples and used principal component analysis to classify voice commands through k-means clustering

Cook County Valuations | *Python, Pandas, sklearn* October 2024

- Designed and constructed a multiple-linear regression model with sklearn to predict housing prices in Cook County, Illinois
- To rid outliers, considered the lower 25th and upper 90th percentiles of the estimated land value of properties in model
- Utilizing Pandas, created multiple helper functions such as top_n_neighborhoods to seamlessly conduct EDA
- Separated data into training and test data and calculated the RMSE to judge which features were strong predictors

Spam or Ham Classifier | *Python, Pandas, sklearn, seaborn* December 2024

- Developed and built a logistical regression model to classify spam emails from a dataset containing *8000+* emails
- Using the Seaborn library, created visualizations of word usage between spam and ham emails to determine beneficial features
- To understand the model's accuracy and adjust the cutoff threshold, generated an ROC curve with intervals of *0.1%*
- Split the data into a training and test data set and then achieved a model mean accuracy on the test data set of *87%*

Technical Skills

- **Programming Languages**: Java, Python, C, Cypher, KSQL, SQL, Scheme, Kotlin
- **Libraries and Frameworks**: Numpy, Pandas, FastAPI, sklearn, seaborn, STDDraw, CVXPY, OpenMP, MPI, SIMD
- **Tools and Technologies**: Neo4j, Railway, Docker, GDB, Git, Regex, Logisim, Arduino, Google Truth, Jetpack Compose, LaTeX