Jorge Emanuel Nuñez

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Education

San Diego State University | **San Diego, CA** May 2027
- M.S. in Computer Science

Coursework: Machine Learning, Algorithms, Database Theory & Implementation

University of California, Berkeley | Berkeley, CA May 2024
- B.S. in Electrical Engineering and Computer Sciences

Coursework: Operating Systems, Artificial Intelligence, Database Systems, Data Structures, Computer Architecture

Experience

Qualcomm | **Software Engineering Intern** May 2023 - August 2023
- Contributed to the CPU software infrastructure team responsible for validating and optimizing low-level system performance in embedded platforms.
- Developed and maintained Python-based automation tools to validate power management workflows, analyzing large datasets of system performance metrics to identify regressions.
- Automated CI/CD testing with Bash and CMake, reducing deployment time by 40%.
- Worked in a 5-person Agile team to deliver weekly builds with optimized power-saving workflows.
- Reduced system power consumption by analyzing CPU load patterns and optimizing task scheduling.

Berkeley ACE Lab | Research and Development Assistant February 2021 - May 2024
- Engineered and implemented RESTful APIs using Node.js/TypeScript to integrate real-time cheat detection with PrairieLearn, handling 200+ concurrent users.
- Developed Python-based cheat-detection software with 92% accuracy, reducing academic dishonesty in UC Berkeley's introductory computer science course serving 200+ students.
- Launched automated test suites and CI/CD pipelines for continuous deployment, ensuring 99% system uptime.
- Authored documentation and optimized Git workflows, boosting collaboration for a 12-member team.

Projects

Yomitan Predictive Query Bar | Open Source Contribution (Personal Fork)
- Engineered a Japanese-only search bar in JavaScript for Yomitan using on-demand DB-first Trie caching, enabling fast predictive queries across 100K+ dictionary entries.
- Designed and implemented the UI and core logic in JavaScript, HTML, and CSS; developed and tested in a forked codebase using Vitest, Playwright, and ESLint.

Pintos Operating System | Course Project, CS162: Operating Systems
- Extended OS with user programs, system calls, priority scheduling, and file caching in C.
- Implemented robust synchronization primitives, including semaphores and priority donation to prevent priority inversion in multi-threaded processes.

Database Management System | Course Project, CS186: Database Systems
- Built an ACID-compliant DBMS in Java with MVCC and ARIES-style crash recovery.
- Reduced lookup time by 60% using custom B+ Tree indexing and optimized query plans.

Gitlet Version Control System | Course Project, CS61B: Data Structures
- Engineered a lightweight version control system in Java, implementing core Git functionality such as snapshot tracking, branching, merging, and conflict resolution algorithms.
- Integrated SHA-1-based content addressing and staged commit workflow for consistent history tracking.

Traffic Sign Recognition | Personal Project
- Achieved 97%+ accuracy on GTSRB with a LeNet5-inspired CNN in PyTorch, trained on augmented data using cross-entropy loss and Adam optimizer.
- Applied image preprocessing techniques (histogram equalization, normalization) and data augmentation.

Skills
- **Languages:** Python, Java, TypeScript/JavaScript, SQL, C/C++
- **Frameworks & Libraries:** PyTorch, Node.js, RESTful APIs, PostgreSQL, FastAPI, React, Pandas, NumPy
- **Tools & Platforms:** Git, Docker, CI/CD pipelines