Harrison Huynh

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Education

University of California - Los Angeles **Los Angeles, California**
B.S. Mathematics of Computational Science *2021 – 2025*
Relevant Coursework: Operating Systems, Computer Architecture, Machine Learning, Software Development, Algorithms and Complexity, Mathematical Imaging, Numerical Analysis, Differential Equations, Linear Algebra, Probability and Statistics

Projects

Spotify Buds React App
Full-Stack Development
- Collaborated with 4-member team to build and deploy React/JSS web app integrating Spotify API, Google Maps API, and Firebase.
- Implemented user authentication, friend management, and real-time location-based music discovery features.
- Leveraged distributed systems concepts to handle concurrent user activity and dynamic data synchronization.
- Applied Git and GitHub for version control, enabling smooth collaboration and continuous integration across the team.

Machine Learning Dimension Reduction Analysis
Research Project
- Engineered forecasting models leveraging PCA and other dimension-reduction techniques to improve economic prediction accuracy.
- Deployed the models as a robust calculation application using Python and official data enabling reproducible and scalable predictions.
- Achieved significant improvements in computational efficiency while maintaining predictive performance.

EXT2 File System
Operating Systems
- Designed and implemented EXT2 file system in C, including block allocation, inode management, and directory traversal.
- Built low-level read/write operations to handle file creation, deletion, and metadata tracking.
- Strengthened understanding of file system internals, memory management, and kernel-level data structures.

Optimization Method for Runge's Function Interpolation Error
Research Project
- Designed composite Runge's interpolant with optimized weights, reducing error bound from 3 to 0.14358.
- Ran MATLAB simulations and tuning to find optimal interpolation degrees and weights, improving accuracy and stability.
- Proposed 2D interpolation extensions for image processing, computer vision, and remote sensing applications.

Python ODE Mapper
Research Project
- Created a Python-based application for solving and visualizing ordinary differential equations using numerical methods.
- Integrated visualization libraries (Matplotlib/Plotly) to generate dynamic solution plots for educational use.
- Enhanced accessibility of advanced differential equation concepts for teaching and self-study.

Experience

Self-Employed **[Corona, California]**
Private Math Tutor *2020 – 2024*
- Provided individualized long-term math tutoring to multiple students from different families during high school.
- Helped a student improve their course grade from a C– to a B+ through targeted instruction and consistent support.
- Prepared a student for the SAT, contributing to a score of 1440/1600 through focused math practice and test-taking strategies.
- Tutored Physics and Calculus I–II, explaining advanced concepts clearly and fostering strong problem-solving skills.

UCLA American Heart Association **[Los Angeles, California]**
CPR Instructor *2021 – 2024*
- Certified and taught CPR and first aid courses to UCLA students, staff, and community members.
- Organized campus wide events, with turn-outs of over 100 students.
- Strengthened leadership, communication, and crisis management skills while fostering a safe and supportive learning environment.

Skills

Languages: Python, C, C++, C#, Java, MATLAB, JavaScript (React), Javascript, SQL, Web API

Tools: Git/GitHub, Docker, SciPy, Firebase, Google Maps API, Spotify API

Technologies: Linux/Unix, File Systems, Numerical Analysis, Machine Learning, Dimension Reduction, Data Visualization (Matplotlib, Plotly)