

Michael Pham

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EDUCATION

- **River City High School** West Sacramento, CA
High School Diploma *Mar 2019 – Jun 2022*
 - GPA: 4.00
 - Graduated Salutatorian
- **University of California, Berkeley** Berkeley, CA
B.A. in Computer Science and Mathematics *Aug 2022 – Present*
Minor in Data Science
 - GPA: 3.87
 - Member of Upsilon Pi Epsilon Honor Society

PROJECTS

- **Audio Analyzer and Visualizer** | Java, Processing
 - Displays different representations of audio, including waveform and polar graphs, alongside a responsive visualizer.
 - Implemented a Discrete Fourier Transform algorithm, along with smoothing the RDFT.
 - Includes a beat detection feature by observing the audio's level and seeing if there's a marginal difference.
 - Created 3D objects that moved, rotated, and changed size and color based on audio frequency levels.
 - Created moving 3D terrain using Perlin Noise mapped to audio frequencies, moving based on frequency values.
- **Berkeley Admissions Visualization** | Python, Matplotlib, NumPy, Pandas, Plotly, RegEx, Seaborn
 - Compiled data on Berkeley's Californian public school admissions, and created visualizations for it.
 - Filtered, regularized, and merged data from various sources with Pandas and RegEx.
 - Visualized data using scattermaps, choropleth maps, and other charts using Matplotlib, Seaborn, and Plotly.
- **Build Your Own World** | Java
 - An interactive maze exploration survival game featuring enemies.
 - Implemented a pseudo-random world generation system via Prim's Algorithm.
 - Created a smooth lighting system using BFS, alongside pathfinding enemies with A*-Search Algorithm.
 - Features saving functionalities implemented through serialization.
- **Optimizing Convolutions** | C, OpenMP, OpenMPI, SIMD
 - Optimized naïve 2D Convolution algorithm through efficient cache usage, parallel programming, vectorizing operations, and working with pointers.
 - Achieved around a 50x speedup.
- **A Secure File Sharing System** | Golang
 - Designed and implemented a secure file sharing system using cryptographic library functions.
 - Implemented file creation, appending, sharing, and deletion among multiple users. Users could also sign on from multiple devices and edits would be reflected across all accounts.
 - Utilized symmetric encryption, HMACs, and digital signatures to ensure security.
 - Extensively tested implementation, writing over three thousand lines of test code. Utilized fuzzing as well.
- **Spam Classifier** | Python, Matplotlib, NumPy, Pandas, RegEx, scikit-learn, Seaborn
 - Created a spam email filter using a Logistic Regression model. Achieved an accuracy of 99.2% on given test data.
 - Cleaned and visualized data using Pandas, RegEx, Matplotlib, and Seaborn.
 - Fine-tuned hyperparameters by cross-validation with GridSearchCV.

TECHNICAL SKILLS

- **Programming Languages:** C, CSS, Golang, HTML, Java, Javascript, MATLAB, Python, R, RISC-V, Scheme, SQL
- **Frameworks/Libraries:** Matplotlib, Numpy, OpenMP, OpenMPI, Pandas, Plotly, Processing, PyTorch, scikit-learn, Seaborn, TensorFlow
- **Tools:** Docker, gdb, git, Logism, LaTeX, Valgrind
- **Mathematics:** Abstract Algebra, Discrete Mathematics, Linear Algebra, Logic, Numerical Analysis, Real Analysis