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: 3.85
  - Awards: Dean's List, Honors to Date
  - 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 (smoothed) DFT Algorithm. Utilized FFT to extract frequency information.
  - Includes a beat detection feature by comparing the audio's level to previous in stack.
  - Programmed 3D objects that generate, move, and change color based on frequency levels from FFT.
  - Created audio-responsive 3D terrain using Perlin Noise.

- **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
  - Implemented a naïve 2D Convolution algorithm and optimized it.
  - Optimizations include efficient cache usage, parallel programming, vectorizing operations, loop unrolling, 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, visualized, and analyzed data using Pandas, RegEx, Matplotlib, and Seaborn.
  - Fine-tuned hyperparameters by cross-validation with GridSearchCV.

TECHNICAL SKILLS

- **Programming Languages**: C, Golang, Java, Julia, MATLAB, Python, R, RISC-V, Scheme, SQL
- **Frameworks/Libraries**: Matplotlib, Numpy, OpenMP, Pandas, PyTorch, scikit-learn, Seaborn, TensorFlow
- **Tools**: Docker, gdb, git, Logism, LaTeX, Valgrind