Hoang Chu

hchu88347@gmail.com • (909) 407-6637 • linkedin.com/in/hoangchu2001

EDUCATION

Pitzer College Claremont, CA
Bachelor's Degree, **Joint Computer Science and Mathematics (Honors)** Expected May 2024

- **GPA: 3.7 / 4.0** (Major GPA: 3.9. Cross-registered Math and CS classes at Harvey Mudd College)
- **Coursework**: Data Structures & Algorithms (**TA 1 year**), Web Development, Computer Systems, Machine Learning
- **Awards:** USACO Platinum, SIG Coding Challenge Winner, Google Code Jam Round 2 Qualifier, Codeforces Master

WORK EXPERIENCE

University of Southern California June 2023 - August 2023
Undergraduate Research Scholar in Operations Research and Data Science *Python, MATLAB*
Topic: *"Last-mile Delivery Optimization with Recurrent Neural Network"*

- Developed a pair-wise Recurrent Neural Network with a customized attention-based mechanism to predict the path deviation from the theoretical shortest-distance path a human driver would follow under external circumstances.
- Designed an iterative Sequence Generation Algorithm used after model training to identify the first stop of a route that yields the optimal operational cost and achieve the global efficiency of all routes under 120 different simulations.
- Prediction accuracy from this model **improved by 15%** compared to LSTM encoder–decoder and pointer network.

Meta May 2022 - August 2022
Engineering Intern (received return offer) *C++, Python, MongoDB, Hive*

- Worked on infrastructure in the Instagram Suggested Users team to increase efficiency and recommendation quality.
- Optimized cache refresh scheduling by user activity prediction led to a **30% decrease in CPU cycles** in peak hours.
- Developed internal logging infrastructure using C++ for performance metrics, logging filtering, and crash reports, providing support for multiple Instagram entities (accounts, comments, etc.) on approx. **100,000 requests** per day.

CoHost.ai (Seed-stage Startup) June 2021 - August 2021
Engineering Intern (only intern in the company) *C++, Linux, Full-Stack, MongoDB, gRPC, Kubernetes*

- Deployed a multi-threaded Message Queue with Inter-Thread Communication method which prevents message loss if the program crashes, supports any data types as inputs, streamlines ownership, and leaves no copies of messages sent.
- Architected the system design for the company's new Chatbot and designed test suites reaching **100% code coverage**.

PROJECTS

Innovative APIs for Fixed-income Algorithmic Trading | Periwinkle Trading Clinic Project C++, *Python*

- Contributed performant C++ to 15+ connected internal components of Periwinkle Trading's Options execution team.
- Implemented robust error handling, fallback behavior, and interactive graphical interfaces for options quoting logic.
- Discussed system design improvements weekly with Scott Smallwood, the CEO and former Partner at PDT Partners.

Python to Java for Android Development | **MLH Fellowship** Open-Source Contributor *Java, Python, gRPC, GoMock*

- Wrote helper functions that detect and remove redundant bytecodes and avoid crashes when variables jump addresses.
- Refactored 1200 lines of Java code for that benchmarks performance improvement of the team's Virtual Machine
- Built a deletion state service to store cluster info and transformation history, and support gRPC/HTTP requests.

ClaremontCourses, Independent *Python, HTML, CSS, Node.js, React, Beautiful Soup, MongoDB*

- Built a full-stack (featured) course search UI and with a customized **HTTP handler fetching 4500+ courses an hour**.
- Designed tree serialization algorithms optimizing the website's PageSpeed **from 30 secs to a consistent 0.8 second**.

LendingClub Risk Assessment | Citadel Summer Datathon Winner *Python, Numpy, Scikit-learn, Keras*

- Performed statistical analysis on selected datasets totaling **26,000,000 data points** and discovered that LendingClub had failed to detect new borrowers who'd defaulted and altered their personal information to manipulate interest rates.
- Developed a k-NN forecasting model with **94% accuracy** for classifying and predicting new borrowers' interest rates.

Secured P2P File Sharing System, Independent *C++, System Programming*

- Developed a distributed file sharing server that detects malicious attackers while preserving shared file contents.
- Implemented a multi-core x86-64 operating system that supports syscalls, multithreading and caches synchronization objects such as spinlocks and futexes, a virtual file system, and an on-disk file system with directory trees.