Ethan (Hoang) Chu

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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**), Machine Learning (**TA**), Computer Systems (**TA**), Database Systems (**TA**), Computer Network (**TA**), Web Development (**TA**), Probability, Logic, Mathematics of Data Science.
- **Awards**: [Codeforces Master (2147 rating - Top 3%)](), [Top 1% (Round 3) Google Code Jam 2022](), [4th Place - Citadel Terminal Algorithm Contest](), 9 / 82 teams - Southern California ICPC Contest, Gold Medal: National Math Olympiad

SKILLS

- **Programming Languages**: C++, Python, Java, C, JavaScript, SQL, OCaml, Racket, Prolog
- **Technologies**: Selenium, Flask, Kafka, Hadoop, Kubernetes, Datadog, AWS, MySQL, gRPC, Beautiful Soup, Groovy

WORK EXPERIENCE

Periwinkle Trading ([periwinkletrading.com]())   August 2023 - Present
Quantitative Developer Contract (report to the CEO)   *C++, Python, Datadog, Spark*
- Contributed **in C++** the company's order book and high-frequency trading execution engine for the Brazilian Equities.
- Designed, implemented, and deployed in Python a fast and flexible portfolio optimization package optimized in C++.
- Reduced firm-wide portfolio size calculation runtime **from O(hours) to O(minutes)** in training **gigabytes of data** by coding **in Python** a translation APIs that translate dataframe operations from Pandas searches to Spark joins.
- Scaled a price/yield calculation engine with **C++** that handled increased **from 30000 to 65,000** daily requests by building an integration testing suite **in C++** for all types of trades and also implemented metrics logging to **Datadog**.

University of Southern California - Undergraduate Research Intern   June 2023 - August 2023
Topic: "Last-mile Delivery Optimization with Recurrent Neural Network"   *Python, C++, AWS, Groovy*
- Developed from scratch a Neural Network model **in C++** with a customized attention-based mechanism that helped tackle neglection of real-time factors (e.g traffic jam) in the Traveling Salesman shortest-Path (TSP) algorithm.
- **Solved seq2seq's adaptability issue** with unordered sequences by convincing the team to use LSTM encoder-decoder (capture global instead of local information) with **a model built in Python** that **saved 15% time** on average than TSP.
- Developed a suite of model validation classes for internal model serving service with integrations for AWS S3.

Meta   May 2022 - August 2022
Engineering Intern   *Python, C++ PyTorch, Hadoop (MapReduce), MySQL, kDB*
- Development and maintenance on TorchScript and deployment of models authored in Python **in C++** exclusive environments, reducing **25% in inference time** latency and flops and an additional 10% reduction in live production.
- Developed an API in Python for users to register saved tensor hooks reducing memory usage **from O(n) to O(1)**.
- Contributed new **MySQL database sharding** schema that **scaled 5x workload** of generative big data stream.
- Resolved Time Limit Issue in hyperparameter search by designing a Window Selection Optimization Algorithm.

Cohost.ai ([cohost.ai]())   June 2021 - August 2021
Full-Stack Engineering Intern   *Java, Django Selenium, HTML, CSS, JavaScript, ReactJS, AWS*
- Collaborated cross-team to develop from scratch a multi-threaded Message Queue which prevents message losses with **Java Spring API** and Inter-Thread Communication method, which **lowered storage costs by over 90%**.
- **Reduced webpages response time by 70%+** by refactoring, optimizing database tables, and caching expensive calculations from Django and Golang microservices to process interaction metrics from **over 1.5 million messages**.

PROJECTS

ClaremontCourses | Independent   *Python, React, JavaScript, RESTful API, Selenium, Flask, Node.js, AWS*
- Built a full-stack class search website that **served 2000+ users** in JavaScript and automated scratching with Selenium.
- Implemented tree serialization algorithm to display full-depth prerequisite trees in vanilla JavaScript from MongoDB.
- Designed algorithms with bitwise operation that optimized search time **from 25 to 0.8 seconds** per course query.

Traveling Salesman Art | Independent   *C++*
- Designed algorithms finding min-weight Hamilton cycle which draws a copy of original image using minimum lines.