Tommy Vo Tran

U.S. Citizen | Los Angeles, CA

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Education

University of California, Los Angeles (UCLA) *Los Angeles, CA*
M.S. in Computer Science with Concentration in Machine Learning *Sept 2023 - Dec 2024*
B.S. in Computer Science *Sept 2019 - June 2023*

- Teaching Assistant for Data Management Systems, Web Applications
- Graduate Coursework: GPUs, Parallel & Adv Computer Architecture, Deep Learning, Reinforcement Learning, Computer Security, High-Level Synthesis and Deep Learning to Create Accelerators on FPGAs
- Undergraduate Coursework: Data Structures and Algorithms, Operating Systems, Databases, Computer Networks, Programming Languages, Software Engineering Capstone, Adv Probability Theory, Adv Real Analysis, Stochastic Processes

Experience

Akuna Capital *Chicago, IL*
Software Engineer Intern @ Crypto Division *June 2023 - Aug 2023*

- Consulted quantitative traders and quantitative researchers to design a lightweight protobuf schema for low-latency strategy emission. The schema encompasses desired liquidity points, a proactive view in active orders, a reactive view in active liquidity points, and market-making triggers.
- **(Python/C++) Implemented low-latency strategy emission in the market-making application with asynchronous coroutines, lazy state-building, and a novel snapshot + diffs mechanism. This affected all (~95) instances of the market-making application globally**, allowing developers and traders across the firm to analyze the live and historical strategy data to make more profitable trading decisions.
- **(Python)** Built a general-use library to consume the strategy emissions and aggregate the snapshot + diffs into the current market-making strategy state. **The library takes advantage of the minimal payload sizes to avoid having to conflate the messages, which means the preservation of information resolution and enabling the consumption of millions of messages per hour without loss.**
- Developed crypto quoting strategies based on analysis of these emissions over time to meet market maker obligations on exchanges.

Optiver *Chicago, IL*
Software Engineer Intern @ Automated Trading Systems, Pricing Division *June 2022 - Aug 2022*

- **(C#)** Created leading/lagging filters for events affecting the volatilities of underlyings in a pricing manager used by all (~100) traders.
- **(C#)** Automated options volatility interpolation with respect to movements in the forward price. **Eliminates race conditions involving the reference price and volatility points in the system, saving the firm tens of thousands of dollars daily**.
- Added APIs for directly setting volatility dynamic parameters. Eliminates erroneous accumulation of volatility updates.
- Migrated anchor volatility adjustment logic from client pricing scripts to the main server. **Improves the freshness of the forward price used in pricing calculations by 300-6000 ms**.

Capital One *San Francisco, CA*
Software Engineer Intern @ Enterprise Data and Machine Learning Division *June 2021 - Aug 2021*

- **(Python)** Created an **AWS Lambda** script to fetch metadata from and infer the schemas of **AWS DynamoDB** instances. Data is sanitized and batch-published to an internal aggregate data lake. **Streamlines handling of 57 terabytes of DynamoDB tables, optimizing the workflow of hundreds of Capital One teams**.
- **(Scala)** Built an **Apache Spark** pipeline to then push data of selected tiers to an **AWS Aurora Global DB (PostgreSQL)**. The pipeline is run on **AWS Elastic MapReduce**, taking advantage of data parallelism across many compute instances to **process dataframes with thousands of rows in minutes instead of hours**.

Research

Computational Machine Learning Lab *Los Angeles, CA*
Researcher, advised by Professor Cho-Jui Hsieh *April 2023 - September 2023*

- **(PyTorch)** Model-agnostic, dataset distillation with gradient matching in an unsupervised setting.

Projects

GooberEats

Engineer

- **(C++)** A delivery-logistics system that accepts food pickup and food dropoff requests.
- Takes in any set of Open Street Map geocoordinates but has been especially tested for Westwood, CA deliveries. Employs hashmaps for quick retrieval of data, A* search algorithm for shortest-path curation, and a greedy algorithm for heuristically optimizing the delivery order.

Skills

Languages	C++, C, Python, C#, Java, Scala, Bash, HTML/CSS
Tech	PyTorch, NumPy, Protobuf, git, cmake, conda, Apache Spark, OpenMP, UNIX