Martin MA

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EDUCATION

Georgia Institute of Technology | Atlanta, United States December 2026
M.S in Computer Science (part-time) - Artificial Intelligence, Computer Systems

Columbia University | New York, United States May 2024
Master's in Economics and Econometrics - Quantitative/Computational Analysis

Sun Yat-sen University | Guangzhou, China June 2021
B.S in Economics, minor in CS - Merit Student Scholarship; Graduation Thesis Award

SKILLS

Programming: Python, Java, C/C++, SQL, Docker, Ubuntu | **AI/ML:** RAG, Agentic AI, OLS, Q learning

EXPERIENCE

Christofferson Robb & Company (Credit Hedge Fund) June 2024 - Now

Software Engineer - AI/ML

- Built multi-threaded **NLP pipelines** to extract signals from unstructured financial text, integrating chunking, embedding generation, vector indexing, and SPLADE search to support research across millions of documents.
- Developed an **internal LLM-driven research assistant** using RAG, hybrid dense/sparse retrieval, and on-demand prompt orchestration, enabling avg 10ms semantic lookup and accelerating internal research workflows.
- Developed **tree-based predictive models** leveraging over 5 million loan-level records with credit event data to estimate PD, achieving over 10% improvement in average portfolio profitability.
- Optimized **Monte Carlo simulation** workflows for risk analysis via parallelized computation with **Numba** and **Cython**, achieving 15× runtime improvement and 100× speed-up over Excel benchmarks.

Quantitative Developer

- Developed credit transition–matrix models from multi-million–record loan tape datasets to estimate borrower migration, delinquency paths, and downgrade/default probabilities, providing inputs for credit-risk assessment and fixed-income portfolio valuation.
- Engineered a modular market data infrastructure leveraging **Bloomberg HAPI** and **shared-memory IPC** multi-processing, improving ingestion throughput by >10× through parallel computing with **Polars** and ConnectorX.
- Experienced a **novel portfolio representation model** inspired by Transformer architectures, encoded portfolio structure and interactions to assess **predictive profitability signals** and to do systematic portfolio evaluation.

Christofferson Robb & Company May 2023 – May 2024

Software Engineer Intern

- Optimized and maintained an in-house electronic trading platform, managing **full-stack** web components and backend Linux services; enabled **PHP opcache** optimization to improve system performance by 25%.
- Engineered low-latency **Python socket servers** for real-time Bloomberg market-data streaming and customized a **C++ QuickFIX engine** to support order routing and execution.

APPLY.AI (AI-based Online Autofill Tool) April 2023 - April 2024

Founder/Developer

- Architected a **hybrid AI query workflow** inspired by Retrieval-Augmented Generation (RAG), pre-caching user embeddings via NLP for sub-10 ms context retrieval and dynamically selecting relevant historical context; built scalable full-stack infrastructure with **Spring Boot**, **Django**, and **Redis**.

Bain & Company October 2023 – May 2024

Graduate Consultant

- Designed and developed a **regression-tree-based evaluation framework** integrating quantitative performance metrics to assess and rank AI-driven investment strategies; published an internal white paper detailing methodology and implementation, which was adopted into the firm's systematic strategy selection workflow.

Gousen Securities July 2019 – Aug 2019

Quant Research & Software Engineer Intern

- Constructed and validated multi-factor stock selection models integrating momentum indicators and fundamental factors under the **Barra Risk Model** by Python, with extra factor exposure analysis, and back-testing.
- Implemented a **Q-learning**–based RL model to dynamically enhance trading signal robustness for single-stock strategies, achieving **~3% higher annualized return** while maintaining the same Sharpe ratio as the baseline strategy.