Harrison Zhang

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EDUCATION

The University of Chicago **09/2024 – 12/2025**
Master of Science in Financial Mathematics | *Concentrations:* Options & Derivatives, Trading & Risk *Chicago, IL*
- *Honors:* FinMath Alpha Scholar (top 1% merit) *GPA: 4.0/4.0*
- *Courses:* Stochastic Calculus, Option Pricing, Quantitative Trading Strategy, Portfolio Theory & Risk Management

Vanderbilt University **08/2021 – 05/2024**
Bachelor of Science in Computer Science, Mathematics, and Economics *Nashville, TN*
- *Honors:* College Scholar (top 2% merit), Dean's List, ACT: 35/36, SAT II Math: 800/800 *Major: 3.7/4.0*
- *Courses:* Probability & Statistics, Discrete Mathematics, Combinatorics, Financial Mathematics, Stochastic Processes, Multivariable Calculus, Linear Algebra, Differential Equations, Data Structures, Algorithms, Software Design, Artificial Intelligence, Machine Learning, Deep Learning, Data Science, Game Theory, Econometrics

SKILLS

Programming: C/C++, Java, Python, R, SQL, Rust, Solidity
Technologies: Git, AWS, Kubernetes, Jupyter, Pandas, Scikit-Learn, PyTorch, TensorFlow, Spring, Hibernate, REST

EXPERIENCE

Core Value Capital **08/2024 – 09/2024**
Quantitative Trader Intern *Chicago, IL*
- Built Python backtester and hyperparameter tuner to optimize trade entry/exit points for mid-frequency currency pair strategies
- Discovered inconsistencies in micro and macro momentum indicators using time-series analysis, reducing slippage costs by 7%

Capital One **06/2024 – 08/2024**
Machine Learning Engineer Intern *Chicago, IL*
- Designed hyperparameter tuning components for Grid, Random, and Bayesian Search algorithms on AWS Kubeflow pipelines
- Invented a pipeline mutex system to parallelize sequential black box optimization problems for XGBoost credit models in Python
- Sped up ML training by 313% and deployed pipeline with global adoption commitments across all data science teams by Q4 2024

Hashed Health **05/2022 – 05/2024**
Software Engineer *Chicago, IL*
- Led backend production team and implemented REST APIs, replacing original outsourced system with 2-times the functionality
- Directed architectural design using PostgreSQL, Java Spring Boot/Security, Hibernate, and AWS EC2/RDS cloud solutions
- Built digital asset authentication system with Soulbound ERC-721 Tokens (NFTs), Solidity Smart Contracts, and Stripe API

Institute for Software Integrated Systems **06/2023 – 08/2023**
Software Engineer Intern *Nashville, TN*
- Researched and implemented ML techniques for soft robotic spatial observations using the OpenCV library in C++ and Python
- Analyzed and formalized spectral clustering and RNN methods, improving detection of elastic physics interactions by 16%

Data Science Institute **01/2023 – 05/2023**
Software Engineer Intern *Nashville, TN*
- Developed integration to automate GPT-4 deep learning questions to test reading comprehension through prompt engineering

Ideascape **05/2022 – 08/2022**
Quantitative Researcher Intern *Chicago, IL*
- Built Java app with AWS Textract to fully automate parsing of incompatible tabular data with NLP, improving efficiency 10-fold
- Designed R models comparing sector trends with simulations, visualizations, and interactive models to project human capital data

PROJECTS

Poker AI | *Vanderbilt University Culminating Research Project* **01/2024 – 05/2024**
- Trained AI agent on self-play using Reinforcement Learning and Monte Carlo Counterfactual Regret techniques to play NL poker
- Benchmarked agent against single-strategy and Q-Learning agents to gauge positive cumulative gains and oracle win percentages
- Implemented OpenAI/DeepMind research for optimal bet-sizing, information set-gathering strategies, and game tree pruning

Loan Credit Risk Modeling via Deep Learning **01/2024 – 05/2024**
- Used Multilayer-Perceptron and gradient-boosted LightGBM decision tree models to analyze an individual's risk of credit default
- Evaluated LightGBM and MLP models using a metric factoring in a Gini score, deterioration penalty, and residual stability

Melbourne Housing Price Predictor **08/2023 – 12/2023**
- Modeled prices in R, using regression, regularization, Bayesian classifiers, random forests, cross-validation, and bootstrapping

AWARDS

- **Jane Street | *Figgie Trading Challenge*:** 2nd in open-outcry trading simulation tournament held in Nashville **09/2023**
- **Akuna Capital | *Options 201*:** Among ~150 selected globally for an invite-only quantitative options trading program **08/2023**
- **IMC Trading | *Prosperity Trading Challenge*:** Top 3% in international 10,000 team algorithmic trading competition **03/2023**