Jiayi (Jerry) He

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Personal Homepage: https://jerry-jiayi-he.github.io | **WeChat Official Account:** *Jerry's Thought on Finance*

Languages: English (Working Proficiency), Mandarin (Native Speaker), Cantonese (Beginner)

Skills: Python, SQL, C, Stata, Matlab, Wind | **Target:** Quant Research Intern | **Visa:** Eligibility for TTPS Application

Education

Sun Yat-sen University, School of Business — Guangzhou, China

M.Phil. in Management Science & Engineering (Financial Engineering Track) — *Sep. 2024 – Jun. 2027 (Expected)*

- **Thesis Topic:** Pricing Factors and Quantitative Strategies for Digital Asset Perpetual Swaps.
- **Core Courses:** Advanced Operations Research, Advanced Microeconomics, Game Theory, Investments, Derivatives.
- **Honors:** First-Class Postgraduate Scholarship.
- **Audited Courses:** *Economics & Finance* at SYSU Lingnan College.

Sun Yat-sen University, School of Intelligent Systems Engineering — Shenzhen, China

B.Eng. in Intelligent Transportation — *Sep. 2020 – Jun. 2024*

- **Honors: China National Scholarship (Top 0.2%, 2021)**; Outstanding Graduate of SYSU (2024).
- **GPA: 4.1/5.0 (Rank 2/58)**.
- **Core Courses:** Data Structures & Algorithms (91), Machine Learning (94), Automatic Control Theory (94), Operations Research (94), Differential Equations (98).
- **Program Focus:** Integrated System Science, Computer Science, and AI algorithms to solve engineering problems in transportation scenarios.

Internship Experience

Guangdong Houfang Investment Management — Guangzhou, China

Quantitative Research Intern (Commodities) — *Dec. 2025 – Present*

- **Commodity CTA Research:** Conducting quantitative analysis on **Precious & Non-ferrous Metals** (e.g., Gold, Copper). Focusing on developing trend-following and mean-reversion strategies suitable for futures markets.
- **Strategy Framework:** Engineering a modular backtesting framework using **Python** and **Backtrader**; implementing technical indicators to evaluate signal robustness across different market regimes.
- **Data Engineering:** Deployed a **local MySQL instance** to archive historical futures data; built automated scripts for data cleaning and alignment, establishing a reliable local environment for strategy simulation.

Lingnan Global Macro Hedge Fund — Guangzhou, China

Research Intern (Macro & Derivatives) — *Aug. 2025 – Oct. 2025*

- **Macro Research:** Synthesized sell-side research (e.g., Goldman) into **18 internal notes** and **12 public articles** **[View Samples]**; distilled key logic to support PM's views on US macro, AI themes, and Rates.
- **Multi-Asset Research:** Extended coverage to A-share drivers, AH premium, and commodities; monitored key trends to provide qualitative insights for the investment committee's daily discussions.
- **Data Engineering (OTC Options):** Built Python crawlers to collect market-wide **A-share OTC equity option quotes**; cleaned and normalized raw data to construct a structured dataset, **delivering high-quality inputs** to the Quantitative Team for downstream modeling. **[View Code]**

Ruqi Mobility (9680.HK) — Guangzhou, China

Algorithm Engineer Intern, Data & Analytics Dept. — *Sep. 2023 – Nov. 2023*

- **Predictive Modeling:** Built feature engineering pipelines and trained models (**Linear Regression, MLP, etc.**) to forecast operational KPIs: **Orders, Completion Rate, ETA, and IPH**. Achieved prediction errors (MAPE) of **4.3%, 4.3%, 7.2%, and 5.4%** respectively.
- **Revenue Management:** Engineered a traffic filtering mechanism based on *Marginal Revenue Theory*. Constructed a dynamic scoring model (Price / Service Time) with 25th-percentile thresholding. **Impact:** Reduced Gaode ETA by **10.2%** and boosted unit value by **0.9%** in A/B testing.
- **Reinforcement Learning (RL):** Formulated the order dispatching problem as a **Semi-Markov Decision Process (SMDP)**. Trained an RL agent to maximize driver revenue using trajectory data, **delivering a feasibility report** for production deployment.

Quant-Related Projects & Academic Research

Deep Learning for Asset Pricing (Replication Project) | *Python, PyTorch, CNN* Nov. 2024

- Replicated the methodology of *"(Re-)Imag(in)ing Price Trends"* (Jiang et al., *Journal of Finance*, 2023).
- Transformed price and volume time-series data into 2D image representations and trained a **Convolutional Neural Network (CNN)** to capture technical patterns, mimicking traders' visual analysis.
- Evaluated strategy performance via portfolio backtesting, demonstrating the applicability of computer vision techniques in asset pricing.

Game-Theoretic Modeling in Supply Chains (Published Paper) | *Game Theory* Dec. 2023 – Oct. 2025

- **Second Author (First Student Author).** Paper: *"Slot Sharing for Container Shipping Liners under Demand Uncertainty"*, *Frontiers in Marine Science* (JCR Q1).
- Developed a **game-theoretic framework** to analyze service competition and slot (inventory) cooperation among shipping liners under **stochastic demand**.
- Derived equilibrium outcomes for three contractual mechanisms (Revenue Sharing, Cost Sharing, and Transfer Payments) and analyzed their impacts on supply chain efficiency and profit allocation.

Deep Learning for Medical Image Analysis (Published Paper) | *Python, Bi-LSTM* Aug. 2022 – Apr. 2023

- **Third Author.** Paper: *"Sequence based local–global information fusion framework for vertebrae detection under pathological and FOV variation challenges"*, *Computerized Medical Imaging and Graphics* (JCR Q1).
- Proposed a local–global information fusion framework combining spatial feature extraction with **Bi-LSTM**-based sequence modeling for vertebrae detection.
- Improved robustness in handling complex anatomical structures and demonstrated strong performance in scenarios with noisy or incomplete image features.

Selected Competitions

China Undergraduate Mathematical Contest in Modeling | *Provincial 1st Prize (Guangdong)* Oct. 2022

- Project: *"Composition Analysis and Classification of Ancient Glass Artifacts"*.
- Applied **hypothesis testing**, **CART**, **logistic regression**, and **K-means clustering** to analyze incomplete chemical composition data.
- Used **ensemble learning** for missing-feature prediction with sensitivity analysis at the base-classifier level.

The Chinese Mathematics Competitions for College Students | *Provincial 1st Prize (Guangdong)* Dec. 2021

- Ranked among top performers; demonstrated solid foundations in calculus and mathematical reasoning.

National Competition of Transport Science & Technology for Undergraduates | *National 2nd Prize* May 2023

- Developed a road-network-level traffic signal control system using **Multi-Agent Reinforcement Learning**.
- Designed an interactive visualization interface to interpret agent decision-making for signal optimization.

The National University Students' Intelligent Car Race | *Regional 3rd Prize* Aug. 2022

- Implemented a complete **Perception–Decision–Control** pipeline for an auto vehicle using computer vision.

Additional Finance & Trading Experience

Active Trading

- Traded HK stocks, US stocks, and crypto markets.
- Captured cross-market arbitrage opportunities arising from premium discrepancies between Hong Kong–listed A-share index ETFs and their A-share market counterparts during the Sep. 2024 policy shift and holiday trading window **[Fig. 2 in Note]**.

Web3 Research

- Maintain a GitHub repository sharing Web3 research notes and code related to **Blockchain**, **Stablecoins**, and **Crypto Finance** **[View Material]**.

Interests

Marathon running, tennis, hiking and citywalk.