Sen Yang

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Education

New York University, Stern School of Business — Sept 2018 – Aug 2025

- Ph.D. in Operations Management
- Advisors: Jiawei Zhang, Divya Singhvi; GPA: 3.8/4
- **Research Interest:** Machine Learning, Stochastic Optimization, Convex Optimization, Online Learning

The Chinese University of Hong Kong — Sept 2014 – Jun 2018

- B.S. in Mathematics, graduated with Honours, First Class; GPA: 3.77/4
- Admission Scholarship – Mainland: tuition fee waived for 4 years

Experience

Cubist (Point72), Quantitative Research Intern – NYC, NY — Sep 2025 – Feb 2026

- Built **AlphaBot**, a closed-loop multi-LLM agent system for systematic alpha discovery on US equities. Identified **80+ significant meta-alphas** across Momentum, Mean Reversion, Liquidity, Information Flow and other Risk Factors, then expanded into broader downstream alpha families with automatic code implementation; across the three frontier model families in the ensemble, research-output quality ranks **Opus > GPT > Gemini**.
- Developed rolling-period statistical validation and robust selection pipeline (odd/even split overfitting controls) to minimize overfit-to-regime.
- Trained ensemble prediction models combining surviving alphas across regression families, loss functions, and targets – promising Sharpe on both large- and small-cap US equities.

Optiver US, Quantitative Research Summer Intern – Chicago, IL — Jun 2024 – Aug 2024

- Underwent comprehensive training in option theory and led a project aimed at advancing volatility change rate (VCR) estimation for 0-dte SPXW
- Developed and optimized the VCR estimation workflow, pinpointing essential evaluation metrics and pivotal features through advanced feature engineering
- Implemented a novel dynamic rolling window algorithm and applied smoothing techniques, ultimately boosting the R^2 from 0.23 to 0.44

Personal Projects

AlphaBot – Personal Deployment (joint with Beier Liu) — Jan 2025 – present

- Independent deployment of the AlphaBot architecture on mid-frequency crypto trading outside Cubist as a cross-market validation. **18-month live track** on a self-funded $10K testing account; public performance dashboard at dash.300k.xyz/group/300kinvestorshowcaseaccounts (set time range to Jan 1, 2025 for the full track).
- Same agent architecture as the Cubist deployment; different market, same scaffolding produces surviving factors – evidence that the system is doing real work rather than overfitting to a single market regime.

IvorySquare (joint with Han Yan) — Apr 2026 – present

- Designed **IvorySquare**, a framework that treats peer-reviewed methodology – across finance, accounting, economics, and operations research – as a first-class tool surface for LLM agents. Skills are paper-derived, citation-grounded, and gated by purpose-built evaluation harnesses; the human-expert layer remains disjoint from engineering through declarative persona contracts. github.com/SenYangOM/IvorySquareSolutions
- Architected the skill graph as two coupled tiers: a foundational concept layer at textbook-subsection granularity under prerequisite ordering, and a paper-derived methodology layer with formal implementations, worked-example replication, and line-item citation provenance. Both tiers expose declarative MCP and OpenAI tool surfaces from one library.
- Motivating research direction: *academic citation networks as a structured post-training substrate for tool-using LLMs* – each skill supplies both a tool-use trace and a verifiable ground-truth signal, and the citation topology

gives a natural curriculum from primitive methods to composite ones.

Research Thesis

Adaptive Gradient Descent Algorithms for Online Optimization Problems in Operations, Sen Yang, Jinzhi Bu, Siyi Wang

- Developed adaptive online stochastic gradient descent algorithms for non-stationary environments and achieved state-of-the-art sublinear regret even when environmental variation is unknown. Demonstrated applications in multi-product inventory control, portfolio selection, and other online convex optimization problems.

Online Gradient Descent Algorithm for Multi-Item Ecommerce Order Fulfillment, Sen Yang, Divya Singhvi, Jiawei Zhang

- Developed online gradient descent algorithm for large scale fulfillment problem, utilizing the difference between primal solutions and actual fulfillment decisions to maintain dual prices for inventory

Additional Experience And Awards

Instructor, NYU Stern 2022 J-term: Taught course Operations Management; Evaluation 4.0/5

Funding Master Gold Medal for Graduation Students, WS College, CUHK

Technologies

Languages: Python, MATLAB.