

Kathy Deng

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY

Master of Engineering in Financial Engineering, GPA: 3.97

Dec. 2025

New York University, New York, NY

Bachelor of Science in Data Science, Double Major in Business and Finance, Cum Laude, GPA: 3.8

May 2024

Selected Coursework: Market Microstructure & Trading, Quant Tools in Financial Engineering, Equity Derivatives, Optimization Modeling in Finance, Simulation Modeling & Analysis, Machine Learning, Reinforcement Learning, Big Data Technologies

SKILLS

Programming Languages: Python, R, SQL, JavaScript

Machine Learning & AI: XGBoost, LightGBM, PyTorch, TensorFlow, Scikit-learn, FinBERT, RAG, LangChain

Data Engineering & Tools: Pandas, NumPy, Statsmodels, WRDS, Compustat, AWS, Linux, Git, Excel, BeautifulSoup, LaTeX

EXPERIENCE & PROJECTS

SHEPHERD VENTURES

New York, NY

Senior Quantitative Analyst

May 2025 - Present

- Establish stress-regime modeling frameworks in Python using Hidden Markov Models (HMM), Gaussian Mixture Models (GMM), and clustering to detect volatility regimes and inform dynamic risk overlays in equity portfolios.
- Implement a monthly rebalancing portfolio strategy on S&P 500 equities using Mean-Variance Optimization with risk constraints and Black-Litterman return adjustments generated from FinBERT-based news sentiment signals.
- Lead a 10-person Machine Learning team coordinating data collection, model validation, and parameter tuning.

BLACKROCK

New York, NY

Aladdin AI Capstone Research - Team Lead

Aug 2025 - Feb 2026

- Led a 6-member Cornell team to design enterprise-scale Retrieval-Augmented Generation (RAG) over a 1,100+ document BlackRock corpus; built the full pipeline including scraping, ingestion, chunking, embedding, retrieval, and evaluation.
- Built and benchmarked 5 RAG architectures (Vanilla, hierarchical tree-based, and graph-based retrieval), introducing structured evaluation metrics for hallucination rate, context deficiency, and category misclassification.
- Reduced hallucination-related retrieval and grounding errors from 19% (Vanilla RAG) to 0% through tree- and graph-augmented retrieval improvements, significantly improving enterprise QA reliability; first author of resulting paper.

TREXQUANT

New York, NY

Market Prediction Competition - Team Lead

Sep - Dec 2025

- Designed and implemented a cross-sectional alpha research pipeline over 400+ factors, integrating market microstructure features and news-derived embeddings; achieved Top 2 leaderboard performance (IC \approx 0.07).
- Engineered a 1,900+ feature pool through IC-driven nonlinear expansions and interaction terms, followed by temporal IC-stability screening and cross-correlation filtering to construct a decorrelated 237-signal core feature set.
- Built a diversified ensemble (LightGBM, XGBoost, CatBoost, DNN, Ridge) using correlation-optimized weighting.

CORNELL SC JOHNSON COLLEGE OF BUSINESS & COLLEGE OF ENGINEERING

New York, NY

Teaching Assistant

May - Dec 2025

- Mentored 7 MSBA teams (35 students) on ML pipelines for industry-sponsored analytics projects and graded deliverables.
- Advised students in AI/ML Applications to Trading on Python-based feature engineering and alpha combination.

SHANGHAI LUOSHU INVESTMENT CO., LTD.

Shanghai, China

Quant Research Analyst Intern

May - Aug 2024

- Designed a trend-following strategy across 40+ commodity and financial futures using rolling-window Hodrick-Prescott filter; generated signals from trend-slope reversals with execution delay and forward-filled logic; achieved 1.57 Sharpe.
- Reverse-engineered and mathematically derived methodologies from established platform to build an all-broker, all-instrument positions and P&L dashboard toolkit for cross-instrument monitoring and alternative signal exploration.

SHENWAN HONGYUAN SECURITIES CO., LTD.

Shanghai, China

Quant Developer Intern

May - Aug 2023

- Built a high-throughput market data pipeline in Python with 10 \times speedup and optimized structures across 7 exchanges.
- Developed the evaluation module for daily and intraday high-freq strategies, benchmarking against TWAP/VWAP.

PUBLICATIONS

Deng, K., et al. (2026). *Retrieval-Augmented Generation in Finance: A Comparative Evaluation of Vector, Hierarchical, and Graph-Based RAG Models*. SSRN;

Aldridge, I., Deng, K., et al. (2025). *Agentic Artificial Intelligence in Finance*. SSRN;

Aldridge, I., Deng, K. (2025). *Meet the Rollups: The Digital Broker-Dealers*. SSRN.