Kecheng Shi

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Education

Columbia University New York, NY

M.A. in Mathematics of Finance | ***GPA: 3.94/4.0*** *September 2024 – December 2025*

- **Coursework:** Machine Learning, Time Series Modeling, Stochastic Process, Programming for Computational Finance, Numerical Methods, Derivatives Trading, Option Pricing.

University of Liverpool Suzhou, China | Liverpool, UK

B.Sc. in Mathematics with Finance | ***GPA: 3.83/4.0*** | ***First Class Honors*** *September 2020 – May 2024*

- **Coursework:** Stochastic Theory, Linear Statistical Models, Mathematical Risk Theory, Applied Probability, Derivative Securities, Numerical Methods, Operational Research, Statistics and Probability, Financial Reporting.
- Completed first two years at Xi'an Jiaotong–Liverpool University, GPA: 3.85/4.0 (**Top 5%**), then two years at the University of Liverpool as part of the international 2+2 program.

Work Experience

Numeraxial LLC New York, NY

Quantitative Research Intern *July 2025 – Present*

- Built a research-grade multi-asset data warehouse with a schema-first design, versioning for cross-asset research.
- Standardized **Bloomberg** series across IDs, calendars, and FX; built modular ETL for cleaning, corporate actions.
- Engineered documented **features and regimes** using statistical and macro signals using HMM and clustering.
- Enabled **portfolio construction** using mean–variance, Black–Litterman, and HRP with constraints.

Western Securities Co., Ltd. Shanghai, China

Quantitative Analyst Intern *January 2024 – July 2024*

- Built a research-to-execution stack with a backtester and a pseudo-live setup using the **Alpaca** Crypto Python API; kept identical signal and state machines; produced deterministic, auditable runs; containerized with **Docker**, **PostgreSQL**, and **TimescaleDB**; added a data-quality guard and a risk worker.
- Implemented two long-only modules: **EMA–ADX trend** and ***Z*-score reversion gated by ADX and RSI**; used conservative GTC limit placement with two-threshold hysteresis; applied affordability and inventory checks.
- Results for a one-year in-sample period: trend-following *Sharpe* **2.13**; reversion *Sharpe* **2.65**; buy-and-hold *Sharpe* 1.65.
- Built a stress program to define the acceptance envelope before scaling capital: tuned limit offset, reprice thresholds, and freshness gates, and set risk budgets for one-day parametric VaR and drawdown.
- Shipped a **Streamlit** monitoring dashboard covering P&L, drawdown, turnover, VaR, and an order blotter.

Project Experience

Predicting Positive SPY Moves with Gradient Boosting | *CQF* *June 2025*

- Framed next-day SPY direction as a leakage-safe classification task; built a reproducible, trading-calendar–aligned OHLCV pipeline with rigorous timestamp alignment, missing-data handling, and feature versioning.
- Engineered 40+ economically motivated **features** including volatility, skew, kurtosis, RSI, MACD, ROC, Bollinger %B, lagged returns, and seasonality; a three-stage **feature funnel**—MI → RF-RFE → GBM.
- Trained **XGBoost** with time-series cross-validation, nested tuning, probability calibration, and stability checks using SHAP and perturbation; achieved a held-out **ROC AUC of 0.714**.
- Converted calibrated probabilities into long or flat decisions; evaluated with a walk-forward procedure.

Portfolio Optimization of Factor-Based Risk Model using Machine Learning | *CU* *December 2024*

- Developed **a multi-factor risk model** and optimized portfolio weights with factor exposures and covariance matrices.
- Cleaned data with **winsorization** to mitigate outliers; computed daily residual returns using pseudoinverses.
- Trained **regularized least squares** and **neural networks** with cross-validation to estimate daily factor realizations.
- Backtested on 3,061 stocks with 59 industry factors and 6 style factors (2003–2011); analyzed long/short market values, cumulative P&L, and risk decomposition, achieved consistent risk-adjusted returns.

Skills & Certificates

Programming: Python (3.x), C/C++, MATLAB, R, Git, LaTeX, Docker, Jupyter Notebook, Excel, Bloomberg, HTML.

Languages: Bilingual in English and Chinese, Spanish (A2).

Certificates: Certificate in Quantitative Finance (**CQF**) with **Distinction**; Bloomberg Finance/Market Concepts.

Interests: Chess (Blitz Rating 2300), Piano, Running, Badminton, Website: kecheng-shi.com.