MINGXIAN GAO

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EDUCATION

Columbia University New York, NY
M.S. in Financial Engineering Expected Feb 2028
Relevant Coursework: Financial Engineering Foundations; Stochastic Models; Time Series; Optimization; Monte Carlo Simulation.

The University of Sydney Sydney, Australia
B.Sc. (First Class Honours) in Data Science; B.Com. in Finance, GPA: 87/100 Feb 2026
Awards: Dean's List and Academic Merit Prize; Vice-Chancellor's Global Mobility Scholarship.
Relevant Coursework: Stochastic Processes; Statistical Inference; Optimization; Linear Algebra; Regression Analysis.

WORK EXPERIENCE

Shanghai Redwall Taihe Fund Management Shanghai, China
Quantitative Research Intern Feb 2026 - Apr 2026

- Built two families of daily factors from tick-by-tick order and trade data on 4,000+ China A-shares: order-flow persistence, measured by multi-lag autocorrelation of sequentially encoded order directions, and state-conditioned trade features that filter trades by intraday states (sharp drops, low prices, volume spikes), split them by aggressor side and scale trade size against each stock's average trade value to flag abnormal prints.
- Aggregated tick-level features to the stock-day level, ranked stocks cross-sectionally at weekly rebalance dates and tested weekly Rank IC against next-week returns with long–short decile backtests; the best single factor earned 5.23% average weekly Rank IC, 21.6% annualized long–short return and a 2.58 Sharpe ratio.

Shanghai Elyon Asset Management Fund Shanghai, China
Quantitative Research Intern Dec 2025 - Feb 2026

- Reconstructed orders from tick-by-tick trades on 4,000+ China A-shares by merging fills on buy/sell order IDs, computing each order's cumulative value and first-to-last fill duration; mapped order attributes back to trades, classified them by size, duration and aggressor side, and built stock-selection factors from each class's share of daily volume. The best factor earned 4.7% average weekly Rank IC and entered the firm's production factor pool.
- Built a 1D-CNN + temporal-attention model for 5-day stock-return prediction from multi-day factor sequences: convolutions capture local changes across adjacent trading days and temporal attention weights historical time points.
- Ranked stocks daily by predicted return and formed equal-weight top-5% sub-portfolios, each holding 20% of capital for five trading days with five staggered tranches rolling the portfolio; out-of-sample 2024–2025 backtest achieved a 2.5 Sharpe ratio and 5.2 Calmar ratio.

PROJECTS

SPX Volatility Surface Construction & Stochastic-Volatility Calibration Oct 2026 - Nov 2026

- Built a pipeline on EOD SPX/SPXW option chains (~30k contracts/day, 103 trading days): implied forwards and discount factors from put-call parity (robust Theil-Sen, cross-checked against CME SOFR futures) and ~1,600 OTM Black-76 implied vols/day (0.24 ± 0.41 vol pts vs. vendor IVs).
- Fitted an arbitrage-free SVI surface across 13 maturities (SSVI prior, calendar constraints as linear inequalities, Gatheral–Jacquier butterfly test): 0.29 vol-pt RMSE in-sample, 0.30 on held-out strikes vs. 0.58 for a cubic spline; 99% of quotes within 1 vol pt.
- Calibrated Heston via a Carr–Madan FFT pricer (<0.004 vol-pt error vs. quadrature, ~5,000× faster) to 0.89 vol-pt RMSE (0.23–0.60 beyond 3 months); per-slice SABR reached 0.43.
- Recalibrated daily over 103 trading days (1.3 s warm-started): Heston ρ stable at -0.67 ± 0.04 and 0.99-correlated with the SSVI ρ; derived sticky-strike vs. sticky-moneyness deltas and expiry-bucketed vegas from the fitted surface.

US Cross-Sectional Stock-Selection Signal Research Aug 2026 - Present

- Built a point-in-time US equity research database on CRSP, Compustat and I/B/E/S (2.5M stock-months, 1985–2025): fundamentals aligned to announcement dates, split, fiscal-year rollover and delisting-return errors corrected; replicated market, size, value and momentum factors at 0.98–1.00 correlation with published series.
- Evaluated 18 pre-specified signals in four size universes with monthly Spearman rank IC: the composite IC rises from 0.03 in the largest 1,000 stocks ($t = 3.5$, 2000–21 out-of-sample) to 0.07 in ranks 2,001–3,000 ($t = 10.7$) and holds in a locked 2022–25 sample.
- Tested monthly-rebalanced, equal-weight 100-stock long-only portfolios: the liquidity-screened small-cap portfolio beats its universe by 8.3% a year net of 30–100 bp costs (IR 1.1, 1990–2025) versus 2.5% in large caps; the edge shrinks with liquidity and turns negative in micro caps at 300 bp, separating tradable from statistical alpha.

SKILLS & INTERESTS

Programming: Python, C/C++, R, SQL, Linux.
Libraries/Tools: PyTorch, NumPy, Pandas, SciPy, scikit-learn, LightGBM, Optuna.
Interests: High-altitude trekking, travel photography, alto saxophone, and distance running.