ALAN MATTHEW

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EDUCATION

Yale-NUS College Singapore
Bachelor of Science (Honours) in Mathematics and Computer Science; GPA: 4.87/5.00 May 2025

Relevant Coursework: Asset Pricing, Statistical Inference, Stochastic Modelling, Machine Learning
Activities: Teaching Assistant for Data Structures & Algorithms, Probability Theory, and Statistical Inference
Awards: Kewalram Chanrai Full Scholarship

EXPERIENCE

Caladan HFT Market Making
Algorithm Developer Jul 2025 – Present

- Developed and maintained ETL pipelines, automating post-trade and transaction cost analysis (TCA) across high-frequency trading algorithms, delivering insights on hedge timing, execution quality, and price markouts.
- Designed and implemented robust NAV-based PnL attribution frameworks, producing granular breakdowns of performance by hedge leg, execution venue, etc., enabling comprehensive session-level reviews of trading activity.
- Built custom PnL monitoring and reporting pipelines for OTC trading to surface risks of strategy arbitrage, hedge inefficiency, and counterparty exposure, providing actionable insights to strengthen risk management.

Caladan HFT Market Making
Algorithm Developer Intern May 2024 - Aug 2024

- Engineered low-latency trading execution servers and market quote polling services for new exchanges.
- Monitored trading algorithms and adjusted trading execution parameters depending on market conditions.
- Monitored and resolved production issues in core trading algorithms, ensuring correct trading behavior.
- Expanded Python analysis libraries for deeper insights into market volume, PnL, and trading statistics.
- Built ETL visibility tools and debugged out of memory issues in Python, reducing AWS costs by 80%.

Singular Asset Management Asset Management
Equity Trading Intern Jan 2022 - Apr 2022

- Traded Indonesian equities on IDX, supporting a long-only portfolio with PM; generated 11% returns.

Kredens Capital Management Hedge Fund
Equity Trading Intern May 2022 – Aug 2022

- Researched US equities and macro trends to pitch short-term trades; generated 17% portfolio returns.

PROJECTS

- **POE2 Arbitrage Scanner**: Engineered a scalable ETL and ML pipeline to scrape item prices/attributes and estimate FX rates via VWAP. Built both regularized regression and closed-form pricing models, selecting the best per item, and applied residual diagnostics in an iterative feedback loop to refine accuracy. Implemented a live client to continuously scan and detect undervalued items across multiple quote currencies in real time.
- **Strategy Behaviour Analysis**: Investigated trade direction predictability using classification models. Engineered features and systematically trained and applied different models to understand trading behavior.
- **Strategy Markout Analysis**: Performed post-trade analysis on crypto data by identifying key one-hour windows, computing markouts, and visualizing strategy behaviour, trade profiles, and drawdowns.
- **yokurang/mytree**: A published Rust tool for displaying directory trees with custom filters. 2k+ downloads.

SKILLS

Languages: Python, Rust, C++, OCaml, C#, TypeScript, JavaScript, SQL, Kotlin, Scala, Golang, Coq
Frameworks: React, Vue.js, Next.js, Express.js, Flask, Laravel, AWS (Lambda, DynamoDB)
Machine Learning / Data: PyTorch, TensorFlow, scikit-learn, XGBoost, Pandas, NumPy, Spark, Kubernetes