

ALAN MATTHEW

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EDUCATION

Yale–NUS College

Aug 2020 – May 2025

Bachelor of Science (Honours) in Math, Computational and Statistical Sciences | GPA: 4.87/5.00

Coursework: Asset Pricing, Statistical Inference, Stochastic Modelling, Machine Learning

Activities: Teaching Assistant for Data Structures & Algorithms, Probability Theory, Statistical Inference

Awards: Kewalram Chanrai Full Scholarship

EXPERIENCE

Caladan (AlphaLab Capital)

HFT Market Making

Software Engineer

Jul 2025 – Present

- Designed and built a generalised caching layer in Python to manage storage and fast retrieval of large-scale time-series data across S3, SQL, and etc., reducing query latency and improving pipeline throughput by 97%.
- Reimplemented ETL job services with fault-tolerance and async design (Python event loops, DAG modeling), improving recovery, consistency across dependent tasks, overall maintainability, and clarity of error reporting.
- Built a fault-tolerant 24/7 ETL service for real-time PnL computation, enforcing invariants for correctness and exposing statistics for business analysis, with infrastructure libraries supporting QuestDB and Grafana logs.

Caladan (AlphaLab Capital)

HFT Market Making

Software Engineering Intern

May 2024 – Aug 2024

- Implemented cold and hot path components for C# trade servers, expanding crypto trading to new exchanges.
- Developed data ETL pipeline visibility service in Python; Rewrote core services using async to improve speed.
- Resolved critical bugs in algorithm trading logic and fixed out of memory issues, saving monthly costs by 80%.

Evooq

Fintech SaaS

Software Engineering Intern

Jan 2024 – Apr 2024

- Created a Python LLM chatbot that translated natural language queries into SQL for a MariaDB database.

Hatcher+

Fintech SaaS

Software Engineering Intern

May 2023 – Aug 2023

- Developed a Python LLM microservice to parse excel company capitalization documents into structured JSONs.
- Programmed a PHP scheduler leveraging an LLM to predict English sentences and translate foreign languages.

OPEN SOURCE

panglesd/diffcensible

Accessible Diff Viewer (OCaml)

- Developed side-by-side diff rendering with numbered lines, color highlighting, etc., to enhance user experience.
- Implemented data structures (e.g., zipper, block-based storage) and linear-space diff algorithms to enable precise word-level comparisons across multi-line changes and improve performance in large-scale file navigation.

PROJECTS

- **yokurang/poe2-arbitrage:** 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 to users.
- **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, Next.js, Flask, PyTorch, TensorFlow, scikit-learn, AWS (Lambda, DynamoDB)