

ALAN MATTHEW

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EDUCATION

Yale-NUS College

Bachelor of Science in Math and Computer Science; Minor in Economics; GPA: 4.89/5.00

Singapore

May 2025

Relevant Coursework: Parallel Programming, Machine Learning, Stochastic Processes, Econometrics

Activities: Teaching Assistant for Data Structures & Algorithms, Probability, and Database Systems

Awards: Kewalram Chanrai Full Scholarship

EXPERIENCE

Caladan (AlphaLab Capital)

Software Engineering Intern

High Frequency Market Making in Singapore

May 2024 - Aug 2024

- Implemented cold and hot path components for a **C#** trade server for Upbit Korean exchange.
- Developed ETL pipeline visibility in **Python**; migrated core services from AWS to on-prem resources.
- Enhanced **C#** trading algorithm logic and resolved critical bugs, ensuring accurate trading behavior.
- Expanded **Python** analysis libraries for deeper insights into market volume, pnl, and trading statistics.
- Debugged memory issues and optimized **Python** resource usage, saving 140,000 SGD in costs.

Hatcher+

Software Engineering Intern

Singaporean Venture Capital SaaS

May 2023 - Aug 2023

- Built a **Python** LLM service to parse excel company capitalization documents into structured JSONs.
- Authored a smart contract in **Golang** to store investment data on the AWS Hyperledger Fabric network.
- Programmed a **PHP** scheduler to predict English sentences using an LLM and apply language updates.
- Designed and developed a comprehensive employee leave system using **Vue.js**, **Laravel**, and **MySQL**.

Switchco Labs

Software Engineering Intern

Singaporean Cryptocurrency Exchange

Oct 2022 - Dec 2022

- Used **Golang** to automatically link markets and liquidity pools for secure allocation of all capital.
- Created a **Golang** search API to aggregate and consolidate data from multiple databases into one call.
- Developed a **TypeScript** service for monitoring CDP transactions and visualizing trades with **React**.
- Built a **TypeScript** Telegram Bot to alert the team about stalled Carbon blockchain transactions.

OPEN SOURCE

panglesd/diffcensible

Accessible Diff Viewer

- Implemented Zipper data structure in **OCaml** for efficient navigation of large diff files.
- Developed side-by-side and word-level diff views in **OCaml**, enhancing file comparison granularity.
- Designed novel "blocks" data structure to optimize diff organization and representation.
- Integrated pager functionality for improved navigation of large diff outputs.
- Engineered space-efficient linear implementation of Myers diff algorithm in **OCaml**.

PROJECTS

- **yokurang/passphrase-generator**: A **Rust** app to generate secure passphrases using Markov chains.

SKILLS

Languages: C++, Python, C#, TypeScript, JavaScript, SQL, Kotlin, Scala, Golang, Rust, OCaml, Coq

Frameworks: React, Vue.js, Next.js, Express.js, Flask, Laravel, AWS (Lambda, DynamoDB)