

# ALAN MATTHEW

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## EDUCATION

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### Yale-NUS College

Bachelor of Science (Honours) in Mathematics and Computer Science; GPA: 4.89/5.00

Singapore

May 2025

**Relevant Coursework:** Asset Pricing and Options, Econometrics, Stochastic Modelling, Machine Learning

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

**Awards:** Kewalram Chanrai Full Scholarship

## EXPERIENCE

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### Caladan (AlphaLab Capital)

Algorithm Developer 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 out of memory issues and optimized **Python** resource usage, saving AWS costs by 80%.

### Evooq

Software Engineering Intern

Swiss Wealth and Asset Management SaaS

Jan 2024 - Apr 2024

- Used **Python** to build a LLM chatbot which can query a **MariaDB** database using natural language.
- Created a **Python** tool to generate trading ideas for a given portfolio with specific goals using RAG.

### 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.
- 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

- 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

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### panglesd/diffcensible

Accessible Diff Viewer

- Designed and implemented optimized data structures (e.g., Zipper, blocks) and algorithms for word-level diff views in **OCaml**, improving file comparison granularity and navigation.
- Programmed side-by-side view and integrated pager functionality for navigation of large diff outputs.

## PROJECTS

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- **yokurang/rtree**: A **Rust** CLI tool to display directory trees with support for depth control, file filtering, etc.
- **yokurang/passphrase-generator**: A **Rust** app to generate secure passphrases using Markov chains.
- **yokurang/ocaml-chat**: An **OCaml** one-to-one chat app using TCP for real-time messaging and RTT.

## SKILLS

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**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)