

# ALAN MATTHEW

28 College Avenue West, Singapore | +65 8425 5742

alan.matthew.yk@gmail.com | linkedin.com/in/alan-matthew-yk | github.com/yokurang | https://yokurang.com

## EDUCATION

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### 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

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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%.

### 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**.

### Switchero 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

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### panglesd/diffcensible

Accessible Diff Viewer

- Implemented data structures like Zipper and blocks to optimize diff representation and navigation.
- Developed algorithms for word-level diff views in **OCaml**, enhancing file comparison granularity.
- Programmed side-by-side view and integrated pager functionality for navigation of large diff outputs.

## PROJECTS

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- **yokurang/lagrangian-multiplier-calculator:** A **Python** program to solve constrained optimization.
- **yokurang/quant-strategy-research:** Researched the performance and patterns of a trading strategy.
- **yokurang/ocaml-chat:** An **OCaml** one-to-one chat app using TCP for real-time messaging and RTT.
- **yokurang/passphrase-generator:** A **Rust** app to generate secure passphrases using Markov chains.

## 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)