

Fu Wen Tay

<https://github.com/fuwentay>

Email : fu.tay@hmc.ox.ac.uk

EDUCATION

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- **University of Oxford** Oxford, United Kingdom
Oct. 2022 – Jun. 2026
 - *Master of Engineering in Engineering Science*
 - Quantitative Analyst, CapitOx

EXPERIENCE

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- **GIC Private Limited** Singapore
Jul 2024 - Sept 2024
 - *Software Engineering Intern*
 - Conducted **performance tuning** of portfolio **stress tester** and portfolio **attribution dashboard** via profiling of runtime and memory usage of API endpoints and functions with **Pyinstrument** and **memory-profiler**.
 - Implemented switching of data retrieval from **MSSQL** server to **parquet** files from **AWS S3 buckets** to exploit parallel file retrieval, reducing I/O runtime.
 - Implemented computations in **DuckDB** to leverage lazy-evaluation to process larger-than-memory datasets, and adapted **Singleflight** mechanism to remove redundancy when multithreading, reducing memory usage and computation runtime.
 - Added features such as a date reference to improve data querying abilities, and new endpoint to return breakdown of security return data in greater granularity.
 - **Infocomm Media Development Authority** Singapore
Jul 2023 - Aug 2023
 - *Software Engineering Intern*
 - Developed and deployed an automation pipeline in **Python** to web scrape open-source data using **Selenium**.
 - Replicated the local environment on **AWS Lambda** using **Dockerfiles**.
 - Implemented **Workato recipes** to trigger containerised Lambda functions, retrieve outputs from **AWS S3 buckets**, and email them to users.

PROJECTS

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- **Alpaca Trading Bot** February 2024 - Present
 - Developed a trading bot built on **Alpaca's API** to automate systematic trading strategies, executing trades based on real-time news event from Alpaca's news **websocket** and moving averages.
 - Logged news headline and order data using **PostgreSQL** for further analysis and potential strategy refinement.
 - Built backtest for strategy through **Backtrader** to test its historical performance.
 - Currently refactoring the codebase to use **Alpaca's SDK**, and exploring **log-periodic power law** and generalised **Hurst exponent** analysis to predict crashes.
 - **Generative AI Instagram Bot and Webapp** August 2023 - Dec 2023
 - Developed an Instagram bot that generates and posts videos based on the top comment from the previous day.
 - Built a web application hosted on **Heroku**, integrating AWS services such as **AWS S3** for media storage and **AWS Lambda** for automated tasks.
 - Set up **MongoDB** client for metadata storage and used **Docker** for containerisation, enhancing deployment flexibility.
 - **GIC CodeToImpact Hackathon - 3rd Place** September 2023
 - Developed a web application for Senior Managers, enhancing control and insights into investment assets.
 - Created **API endpoints** to ingest and **clean** data from CSV files for **insertion** into **MongoDB**.
 - Built a **Langchain-OpenAI chatbot** to analyse the fund's investment positions.

PROGRAMMING SKILLS

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- **Languages:** Python, SQL, MATLAB, Mathematica
 - **Libraries and Frameworks:** DuckDB, Pandas, Backtrader, FastAPI, Selenium, Pytest
 - **Profiling Tools:** Pyinstrument, memory-profiler
 - **Others:** Alpaca, AWS S3, AWS Lambda, Docker, PostgreSQL, MongoDB