

MICHAEL HOON YONG HAU

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EDUCATION

Singapore University of Technology and Design

Bachelor of Engineering, Engineering Systems and Design, Minor in Computer Science

Sep. 2022 – May 2026

Singapore

University of California, Berkeley

Summer Exchange, Econometrics

Jun. 2023 – Aug. 2023

Berkeley, CA

EXPERIENCE

AI Software Engineer Intern

DSO National Laboratories

Mar. 2024 – Dec. 2024

Singapore

- Deployed Retrieval Augmented Generation (RAG) pipeline for internal research assistant chatbot application with open-sourced tools, to provide intelligent responses based on large-scale unstructured data sources.
- Implemented Advanced Agentic RAG techniques incorporating DAG workflows with intelligent Plan-and-Solve prompt engineering, significantly improving reasoning capabilities compared to vanilla RAG pipelines.
- Optimised Data Pre-processing, Generation, and Retrieval pipelines through a comprehensive literature review of state of the art NLP techniques, to improve retrieval relevancy and ensure quality generated answers.
- Participated in deploying the model within the company's IT platforms, ensuring scalability and performance.

Data Analyst Intern

Poh Tiong Choon Logistics Ltd.

Jan. 2024 – Apr. 2024

Singapore

- Worked on Supply Chain Analytics, analysing cross-department delivery driver dataset to derive insights and optimize business strategies. Identified key areas for improvement in scheduling and boosted driver utilisation rates by 20%
- Developed end-to-end automated data pipeline solution for cleaning and analysis with bash scripts, integrating existing database system with Python and Power BI dashboard, significantly reducing working man-hours.

PROJECTS

LepakLah! | *Python, SQL, Docker, Kubernetes, Flutter*

Aug. 2024 – Sep. 2024

- Developed a Flutter based mobile application as part of the Dell InnovateFest finalist, a Public-Good hackathon to combat social isolation among the Elderly.
- Implemented a recommender system to match users with activity buddies, leveraging data from user profiles and preferences to generate optimal matches.
- Integrated a generative AI model (LLM) to produce personalized workshop ideas based on existing data, and an image-generation model to create visual samples of activities. Models deployed on NVIDIA NIM platform.
- Containerised application backend with Docker and managed with Kubernetes, ensuring scalability and efficiency on a cloud-native environment. Deployed on Red Hat OpenShift platform.

Transportation Analytics | *R, Discrete Choice Modelling, Econometrics*

Aug. 2024 – Aug. 2024

- Internal Kaggle Competition on developing Discrete Choice Models for transportation analytics with General Motors dataset, to predict consumer choices among bundles of safety features in cars.
- Developed multiple models in *R* such as Multinomial Logit, Mixed Logit, Random Forest, and XGBoost, validating model results on a private test set using a cross-entropy loss metric.
- Fine-tuned model with hyperparameter grid search and introduced stacking techniques such as Meta-Learning to implement a soft-voting classifier, obtaining 2nd place overall. Discussed model interpretability with SHAP values.

MRP Backend System | *Python, SQL, Docker, Microsoft Azure, Airflow*

Aug. 2024 – Sep. 2024

- Designed and implemented a backend system for Materials Requirement Planning (MRP) for a supply chain project, optimizing inventory management by forecasting material requirements and automating workflows.
- Developed an end-to-end ETL pipeline with Python, SQL, Azure Cloud Platform, and orchestrated automated DAG workflows with Apache Airflow. Back-end microservices containerised with Docker, validated data with Pydantic.
- Integrated the system with SQL databases to store and retrieve data on the Microsoft Azure Cloud platform, enabling scalable and secure cloud-based data storage.

SKILLS

Languages: Python, R, SQL, Julia, \LaTeX

Tools: Git, Docker, Kubernetes, Ollama, Linux/Bash, Microsoft Azure Cloud Platform, Apache Airflow

Libraries/Frameworks: LangChain, LangGraph, HuggingFace, Pandas, NumPy, scikit-learn, FastAPI, tidyverse (R)