

MICHAEL HOON YONG HAU

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EDUCATION

Singapore University of Technology and Design

Bachelor of Engineering, Engineering Systems and Design, Business Analytics Specialisation

Sep. 2022 – May 2026

Singapore

University of California, Berkeley

Summer Exchange, Econometrics

Jun. 2023 – Aug. 2023

Berkeley, CA

EXPERIENCE

AI Engineer Intern

DSO National Laboratories

Apr. 2024 – Dec. 2024

Singapore

- Deployed a full-stack, fully local Retrieval Augmented Generation (RAG) pipeline as internal AI research assistant, significantly reducing man-hours required for staff to conduct research & policy analysis.
- Conducted extensive literature review on state-of-the-art RAG techniques, and implemented the GraphReader paper LLM agent for on-premise deployment with Streamlit frontend.
- Implemented a Multi-Agent RAG approach with a Neo4j Knowledge Graph database for agentic retrieval strategy, significantly improving reasoning & generation capabilities compared to vanilla RAG pipelines.

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, significantly reducing working man-hours.
- Created PowerBI Dashboard for key metrics and patterns on route analysis. Wrote internal report discussing findings

PROJECTS

LepakLah! | *Python, FastAPI, MySQL, Docker, Kubernetes, Flutter*

Aug. 2024 – Sep. 2024

- Developed a Flutter-based mobile application as part of Dell InnovateFest, a Public-Good hackathon to combat social isolation among the Elderly. Represented University and **won 3rd place award**.
- 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.
- Developed System Architecture, 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 transportation analytics with General Motors dataset, to predict consumer choices among bundles of safety features in cars using Discrete Choice Models.
- Developed and tested 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, Apache Airflow*

Jun. 2024 – Aug. 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 system with SQL database to store and retrieve data on Microsoft Azure Cloud Platform, enabling a scalable, secure, and reliable cloud-based data storage.

SKILLS

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

Tools: Git, Docker, Kubernetes, Linux/Bash, Ollama, Neo4j, Microsoft Azure, Firebase, Apache Airflow

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