Michael Hoon Yong Hau

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Education

Singapore University of Technology and Design   Sep. 2022 – May 2026
Bachelor of Engineering, Engineering Systems and Design, Business Analytics Specialisation   *Singapore*

Experience

AI Engineer Intern   Mar. 2024 – Dec. 2024
DSO National Laboratories   *Singapore*

- Deployed Retrieval Augmented Generation (RAG) pipeline for internal research assistant chatbot application with open-sourced tools, significantly reducing man-hours required for staff to conduct research & policy analysis.
- Implemented Advanced Agentic RAG techniques with Neo4j Knowledge Graph retrieval and Plan-and-Solve prompt engineering, significantly improving reasoning & generation capabilities compared to vanilla RAG pipelines.
- Optimised data pre-processing, generation, and retrieval pipelines through a comprehensive literature review of state of the art RAG techniques, to improve retrieval relevancy and ensure quality generated answers.
- Participated in deploying the model within the company's local IT platforms, ensuring scalability and performance.

Data Analyst Intern   Jan. 2024 – Apr. 2024
Poh Tiong Choon Logistics Ltd.   *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, FastAPI, SQL, 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, 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.

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 system with SQL database to store and retrieve data on Microsoft Azure Cloud Platform, enabling scalable and secure cloud-based data storage.

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 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.

Skills

Languages: Python, R, SQL, Julia, LaTeX
Tools: Git, Docker, Kubernetes, Linux/Bash, Ollama, Microsoft Azure Cloud Platform, Apache Airflow, Neo4j
Libraries/Frameworks: LangChain, HuggingFace, Pandas, NumPy, scikit-learn, FastAPI, Firebase, tidyverse (R)