Chwa Choon Xiang (Mr.)

Nationality: Malaysian (Singapore PR)

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Education

National University of Singapore	*Jan 2021 — Jan 2023*
Institute of System Science - Master of Technology (Intelligent Systems)	CGPA: 4.35-/5.00
Nanyang Technological University	*August 2013 — July 2017*
School of Mechanical and Aerospace Engineering - B.Eng (Mechanical Engineering), Mechatronics Specialization	CGPA: 4.30-/5.00

Technical Skills

- Languages: Python, SQL Query, Javascript, TypeScript, HTML, CSS, Java, C#.
- Framework: Django, Hugging Face Transformers, LangChain (LangGraph, LangSmith), Llamaindex, PyTorch, ReactJS, Vite, MUI.
- Library: Django, scikit-learn, TensorFlow, Pandas, NumPy, OpenCV, Spacy.
- Cloud: AWS S3, AWS EC2, MongoDB Atlas, Openshift
- Databases: MongoDB, PostgreSQL, Oracle Database, MySQL.
- OS/Script/tools: Ollama, OpenAI API, Docker, Git, Microsoft Windows Server, Mac, Linux.

Work Experience

Data Scientist

Scientific Infra & Private Assets (SIPA)   *November 2023— Present*

- Developed, deployed, and maintained a scalable full-stack application to automate transaction workflows, integrating Django framework, ReactJS with TypeScript (frontend website), and MongoDB Atlas (cloud database), containerized with Docker, and served through gunicorn and nginx.
- Launched an LLM agentic service using LangGraph to perform Retrieval-Augmented Generation (RAG) to schedule the financial data collection in Airflow by leveraging transaction details, search engine results and website content to generate financial summaries and detect SPVs.
- Designed and built a NoSQL database with an optimized aggregation pipeline to manage transaction details, store generated text summaries and create a knowledge graph by extracting entities and relationships from LLM output.
- Served the LLM agentic service using FastAPI in AWS EC2 instance by Docker Compose to integrate with Django backend and Ollama services.
- Conducted entity-relation extraction experiments using various offline LLM models, including Gemma3, Phi4, and Mistra and validated the results with Deepseek R1 reasoning models, iteratively refining instructions and few-shot examples to achieve progressive improvements.

Part-time Capstone Project Developer

Infineon Singapore Pte. Ltd   *August 2021— September 2023*

- Developed a AI-powered full-stack search engine solution to retrieve structured and unstructured information from documents and websites.
- Designed relational database schemas to integrate seamlessly with search engine application (Django backend API service) and document embedding generated by ML/LLM models.
- Setup ETL pipeline for extracting and storing unstructured information from documents and websites into database using Airflow.
- Containerized deployment of the full stack application on Openshift platform to ensure great maintainability and high scalability.

Senior Software Consultant

znt Singapore Pte. Ltd   *February 2021— October 2023*

- Designed software workflow and data pipeline for the proposed solution to integrate with different tools, application layers and machine.
- Implemented CI/CD pipelines and executed automated testing for different scenarios and use cases on the developed solutions.
- Collaborated with stakeholders to assess the challenges, understand complex problems and identify requirements to develop impactful solutions.
- Leveraged shopfloor data analysis (SQL, Kibana, MQ) to provide different insights and propose feasible solutions for optimizing the MES system.

Senior Application Engineer

ATS Applied Tech Systems Pte Ltd *September 2019 — February 2021*

- Designed and implemented user interfaces and remote operating systems using Python and Java to enable seamless communication and efficient workflow orchestration.
- Established an automated production process by implementing SCADA and MES system to control the workflows among machines.
- Integrated cloud infrastructure solutions for scalable deployment and efficient monitoring of production processes.

Instrumentation and Control Engineer

Winsys Technology Pte Ltd *August 2017 — September 2019*

- Implemented automated data workflow for running Wireless Temperature Monitoring System to collect and store sensors data and visualized as dashboard by using Rapid SCADA.
- Developed an uninterrupted monitoring system with the hot standby environment and the configuration of historian and server redundancy.
- Designed the system architecture of the SCADA monitoring system and configured server virtualization and database redundancy.

Project Experience

Conversational Natural Language Query of Relational and Non-relational Databases

Practice Module, Practical Language Processing of M.Tech (Intelligent Systems) *August 2022— November 2022*

- Developed a full stack application (Django + React + Vite) as a chatbot solution to translate natural language into SQL or GQL.
- Performed intent classification and Q&A to extract the utterance and intention from users by using Sentence Transformer and TFIDF Vectorizer.
- Analyzed the entities and POS tags of the user query and generated a rule-based algorithm to perform natural language generation.

Pain & Accura Video Evaluation of Exercises
February 2022— May 2022

Practice Module, Intelligent Sensing Systems of M.Tech (Intelligent Systems)

- Developed a sense-making POC solution to predict pain recognition and intensity with RestNet50 feature extractors and CNN models.
- Designed the model pipeline and prepared the training data by performing image preprocessing and face detection on the raw images.
- Increased the accuracy of the trained models to 84% by conducting the experiment to tune the parameters and redesign model pipeline.

Covid-19 Vaccine Adverse Effect Analyser
August 2021— November 2021

Practice Module, Pattern Recognition Systems of M.Tech (Intelligent Systems)

- Developed a full stack application (Django backend API + ReactJS) to analyze the symptoms of vaccination adverse effect to support users on reactogenicity encountered.
- Improved the performance of the classification model to 90% by categorization, filtering, normalization, and sampling on the training data.
- Performed multi-label text classification by applying TF-IDF SVM classifier and Word2Vec-CNN Deep Learning model.

Advanced Gym Recommender
January 2021— May 2021

Practice Module, Intelligent Reasoning Systems of M.Tech (Intelligent Systems)

- Implemented the bag-of-words with cosine similarity and model-based collaborative filtering to deliver personalized exercise recommendations.
- Developed the Django backend integrated with ReactJS as frontend to enable seamless user interaction and efficient data management.
- Designed a structured and scalable SQL database with robust data integrity to support efficient storage and retrieval of user exercise routines.

Hobbies

- Ball racquet sport, eg basketball, badminton and pickleball.
- Trading, investment and financial planning.
- Software Tool Exploration and development.