CHIN WEI (AIDEN) MAK

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TECHNICAL SKILLS

Programming Languages: Python (Advanced), TypeScript, JavaScript, Java, C/C++, SQL

AI / ML: Multi-Agent Systems, LangGraph, LangChain, MCP (FastMCP), RAG Pipelines, Prompt Engineering, OpenAI API, Gemini, ChromaDB, Pinecone, Sentence Transformers

Full-Stack: Flask, Next.js, React, Node.js, SQLAlchemy, REST APIs, WebSocket, Stripe, Tailwind CSS

Database & Data: PostgreSQL, Redis, Schema Design & Normalization, Query Optimization, Indexing Strategies, Data Pipeline Development

Infrastructure: Docker, GCP Cloud Run, CI/CD, Git, Linux/Unix, Prometheus, Grafana

Testing & QA: Pytest, Playwright E2E, JUnit, Test-Driven Development, Automated Testing

Practices: Agile/Scrum, SOLID Principles, OOP Design Patterns, Code Review, AI-Assisted Development (Claude Code, GitHub Copilot, Antigravity)

Languages: English (Fluent), Cantonese (Native), Mandarin (Fluent)

Interests: Coffee, Hiking, Travelling, Badminton, Vibe Coding, Open Source, AI-Assisted Development

TECHNICAL PROJECTS

HR Intelligence Platform — *AI Engineer*   *Jan 2026 –Present*
LangGraph • Model Context Protocol (MCP)/FastMCP • OpenAI • Gemini • ChromaDB • Sentence Transformers • Flask • PostgreSQL • Redis • Docker • GCP Cloud Run

- Shipped **8-agent** enterprise HR platform to production on **GCP Cloud Run** with 1,909 automated tests (**Pytest + Playwright E2E**), **Docker containerization**, and **real-time observability** via **Prometheus** and **Grafana**.
- Architected **LangGraph multi-agent orchestration** with conditional routing, shared state, and fault-tolerant workflows across policy Q&A, leave management, compliance auditing (GDPR/CCPA/HIPAA), and workforce analytics.
- Implemented **Model Context Protocol (MCP)** server via **FastMCP** exposing 28 tools, 8 resources, and 5 prompts, enabling standardized LLM-to-tool integration with **BambooHR** connector for live **HRIS data**.
- Built **hybrid RAG pipeline** combining **ChromaDB vector** store with **Sentence Transformers embeddings** for context-aware policy document retrieval across 101 Python modules.

The Golden Fork — *AI Engineer*   *Jan - Feb 2026*
OpenAI API • Pinecone • RAG • Next.js • TypeScript • PostgreSQL • Stripe • WebSocket • Render

- Engineered **RAG-driven** recommendation engine using **OpenAI embeddings** and **Pinecone vector search**, delivering dietary-aware menu suggestions with sub-second retrieval latency.
- Built end-to-end order pipeline with **Stripe** webhook-driven checkout and **WebSocket** real-time kitchen display for live order tracking across multiple **concurrent session**s.
- Created manager analytics dashboard with sales velocity metrics and menu engineering insights; **deployed** full platform live on **Render** with **PostgreSQL persistence**.
- Implemented role-based access control with **JWT authentication** across customer, kitchen staff, and manager roles, enabling secure multi-tenant operations with **session-based** cart persistence and **real-time** order state synchronization.

AI-Powered Educational Platform — *AI Engineer*   *Jan - Dec 2025*
Technologies: Python, Flask, PostgreSQL, LangGraph, ChromaDB, RESTful APIs, Gemini API

- Built a scalable **RESTful API** backend powering an **LLM**-based educational chatbot in partnership with Canadian Museum for Human Rights, handling concurrent user sessions with **PostgreSQL** for data persistence and state management.
- Designed and implemented an **orchestration layer** coordinating **RAG pipeline**, **LLM inference calls,** and external **API** integrations using **LangGraph** and **LangChain**, enabling reliable multi-step agentic workflow execution in production.
- Optimized **RAG** query response time from 6.8s to 0.2s (97% improvement) through vector database indexing, query optimization, and implementing efficient caching mechanisms for LLM outputs.
- Engineered adaptive prompting system with **NLP-driven** content personalization across 6 interactive learning modules, dynamically adjusting difficulty and topic depth based on user response analysis and engagement metrics.

EDUCATION

University of Manitoba   Winnipeg, MB
Bachelor of Science (Honours), Computer Science   *June 2025*