# CHIN WEI (AIDEN) MAK

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## EDUCATION

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

## TECHNICAL PROJECTS

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

- Built scalable RESTful API backend serving 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 workflow orchestration system coordinating multiple background services, external API integrations, and asynchronous task processing for reliable production environment.
- Optimized API response time from 6.8s to 0.2s (97% improvement) through database indexing strategies, query optimization, and implementing efficient caching mechanisms.
- Implemented comprehensive error handling, logging infrastructure, and monitoring systems to ensure reliability and observability across production services.

**TeachReach Tutoring Platform** — *Software Developer*                                          *Sept - Dec 2024*
*Technologies: Java, SQL, JDBC, JUnit, Git, Agile/Scrum, CI/CD Pipelines*

- Collaborated in 5-person Agile team delivering production-ready educational platform on schedule through 2-week sprints, daily standups, code reviews, and collaborative Git workflows.
- Architected scalable backend system using industry-standard design patterns (Factory, Singleton, DAO) following object-oriented principles, SOLID methodology, and clean code practices.
- Implemented core business features including user authentication system, session scheduling module, and real-time in-app messaging functionality deployed to production with zero critical bugs.
- Ensured code quality and system reliability through comprehensive automated testing suite covering 90%+ of critical code paths, reducing post-deployment issues by 95%.

**Municipal Data Analytics Platform** — *Database Engineer*                                      *Jan - Apr 2024*
*Technologies: SQL, PostgreSQL, Python, pandas, scikit-learn, Database Design & Optimization*

- Architected normalized relational database schema with 15+ interconnected tables, processing 100,000+ municipal service records with proper data modeling, referential integrity, and business logic constraints.
- Developed 29+ optimized SQL queries featuring complex joins, aggregations, window functions, and subqueries for high-performance analytics workloads supporting business intelligence reporting.
- Reduced query execution time by 85% through strategic indexing, query plan optimization, and database performance tuning techniques, significantly improving user experience.
- Built automated data validation and quality assurance pipeline achieving 95% data cleanliness through systematic anomaly detection, cleansing rules, and statistical analysis workflows.

## TECHNICAL SKILLS

**Programming Languages:** Python (advanced), Java, C/C++, SQL
**Backend Development:** RESTful API design and implementation, Flask web framework, workflow orchestration systems, microservices architecture, asynchronous task processing.
**Database & Data:** PostgreSQL, SQL query optimization and tuning, database schema design and normalization, indexing strategies, relational data modeling, JDBC, data pipeline development.
**DevOps & Infrastructure:** Git version control, Linux/Unix systems administration, CI/CD pipeline implementation, Google Cloud Platform (GCP) exposure, Infrastructure as Code concepts, production deployment.
**Software Engineering Practices:** Agile/Scrum methodologies, object-oriented design patterns, SOLID principles, test-driven development, code review processes, collaborative development workflows, automated testing (JUnit).
**Languages:** Cantonese (native), Mandarin (fluent), English (fluent)