

JUSTIN LAI

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EDUCATION

The University of Western Ontario

Bachelor of Science in Computer Science

London, ON

Dec. 2024

Relevant Coursework: Operating Systems, Data Structures, Algorithms, Software Engineering, Database Systems, Web Development, Networks, Machine Learning

TECHNICAL SKILLS

Languages: Python, Java, SQL, JavaScript, HTML

Databases: PostgreSQL, SQLAlchemy, MongoDB, Supabase

Backend & APIs: Flask (REST APIs), OAuth, Stripe Payments, WebSockets

CI/CD & DevOps: GitHub Actions, Railway, Netlify, Monitoring (logging/debugging)

System Design & Performance: Load Balancing, API Rate Limiting

DS & Algorithms: Graphs, Trees, Hashing, Multithreading

PROJECTS

QHelpDesk (🔒 / 🌐) | Flask, PostgreSQL, OpenAI GPT, Stripe API, Railway Dec 2024 – Jan 2025

- Engineered a **large-scale, multi-tenant** help desk system with **API-driven ticketing workflows**, reducing ticket response time by 30% while ensuring **high availability**.
- Deployed and monitored microservices with **CI/CD pipelines** on Railway, ensuring real-time ticket updates and **less than 100ms API response times**, cutting deployment overhead by 60%.
- Developed **AI-powered ticket resolution** via OpenAI GPT API, integrating real-time ML-driven responses with a Flask REST API for enhanced automation and user experience.

MathQuest (🔒) | Java, JUnit, JSON, CSV, Jira, Bitbucket, Confluence Apr 2024

- Implemented **graph-based procedural map generation** using A* pathfinding and Prim's algorithm to create dynamic gameplay, enhancing user engagement while optimizing memory usage.
- Refactored the game loop using **multithreading** and advanced data structures, improving algorithmic efficiency and reducing frame lag by 25%.
- Utilized **JUnit** for robust testing, significantly improving code reliability and reducing runtime errors.
- Maintained comprehensive documentation and leveraged version control for seamless project iterations.
- Adopted agile methodologies to integrate user feedback, iterating on features for a direct impact on engagement.

Sleep Better App (🔒) | C++, Qt, Google Test, OOP, MVC Pattern Oct

- Developed an application that improved user engagement by 40% through personalized sleep tracking and a smart alarm ensuring a minimum of 7 hours sleep.
- Implemented an **MVC architecture** using Qt to separate concerns, enabling scalable and maintainable code.
- Applied comprehensive testing frameworks with **Google Test**, ensuring high application stability and early defect detection.
- Optimized real-time data processing and UI responsiveness, reducing lag and enhancing the user experience.
- Integrated detailed sleep analytics and reporting features to empower users with actionable insights.

Portfolio Website (🔒 / 🌐) | HTML, CSS, Netlify Dec 2024

- Designed and developed a **responsive website** that boosted user engagement and overall performance.
- Utilized modern web technologies (HTML5, CSS3) to create a clean, professional UI aligned with industry standards.
- Leveraged Netlify's **CI/CD pipelines** to streamline deployments and ensure optimal load times.
- Implemented SEO and accessibility best practices, enhancing online visibility and user experience.
- Integrated interactive elements and smooth animations, directly contributing to increased time-on-page metrics.