Alexander King Perocho

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Education

Western University. **Sep 2020 — Expected Apr 2026**
B.Sc Computer Science — Software Engineering. London, Ontario

Coursework: Data Structures & Algorithms, Object-Oriented Design & Analysis, Databases I, Software Project Management, Intro to Software Engineering, Software Tools & Systems Programming, Operating Systems, Computer Architecture & Organization, IBM Z Xplore (Master the Mainframe).

Skills

Languages: C++, Java, Python, Bash, SQL, NoSQL, JSON, JavaScript, PHP, DOM, HTML, CSS.
Tools & Technologies: Git, GCC, Make CMake, Vim, Linux, Unix, Relational Databases, UML, ERD, Jira, Confluence, AWS.
Concepts & Frameworks: OOP, SOLID, ACID, Agile, Scrum, Waterfall, SDLC, MVC.

Experience

Front End Developer Intern **May 2020 — Aug 2020**
Long Branch Neighborhood Association Toronto, Ontario

- Designed and implemented user-friendly navigation pages with an interactive map in Flutter/Dart; enhanced trail discovery and improved user engagement in a mobile app used for local nature tours by **80%** for a community with over **10,000+** residents.
- Collaborated with an Agile team of 4 to deliver UI/UX updates in a structured git workflow; ensured clean commit histories and reduced merge conflicts by **50%**, improving code quality and commit tractability.
- Conducted functional and cross-platform testing of UI components across **15+** device configurations to ensure responsive behavior; resolved over **20+** visual bugs and layout issues on both Android and iOS devices.
- **Utilized: Flutter, Dart, Figma, Github, Git.**

Projects

Chess Engine

- Created a UCI-compliant chess engine in modern C++ using Object Oriented Programming; emphasized adherence to SOLID design principles; applied Singleton, Strategy and State design patterns; wrote clean C++ built to last through industry standards.
- Designed a polymorphic 64-bit bitboard system with custom bitwise operators; enabled constant-time move generation and caching of evaluations; improved search, position-evaluation, and memory efficiency.
- Applied a heuristic evaluation function with compact data structures and inline functions; reduced position analysis compute times.
- **Utilized: C++, SOLID, OOP, Design Patterns, Polymorphism, CMake, Git.**

Visual Programming Language

- Led an Agile development team as Scrum Master to create a block-based programming language in Java/Swing that introduced beginner coders to programming concepts through visual intuition.
- Implemented MVC architecture and OOP to represent code with drag-and-drop blocks; enabled interactive code generation.
- Assigned and maintained tasks with Jira; authored requirements documentations with confluence; applied continuous unit-testing throughout development; coordinated Agile workflows and Sprints, ensuring application stability.
- **Utilized: Java, Swing, JSON, MVC, OOP, Jira, Confluence, Git.**

AI/LLM-Powered Geo-Spatial Search Tool

- Delivered an application with Node, Express, and React that used AI to convert plain English into a Query-Language (QL) to display geo-referenced data on an interactive map.
- Applied instruction priming to control AI responses and generate/retrieve valid Overpass QL queries without extraneous output.
- Integrated OpenAI and OpenStreetMap APIs with RESTful GET and POST endpoints; ensured seamless data flow from user input to map visualization; verified functionality with Postman.
- **Utilized: Node.js, Express.js, React.js, OpenAI, OpenStreetMap, Git.**

Hospital RDBMS

- Designed a normalized relational database in MySQL to model relationships between patients, doctors, nurses, and departments.
- Developed form-driven web pages using HTML and CSS; enabled user-friendly management of database through a UI.
- Created server-side logic with PHP; enabled CRUD operations with prepared SQL statements and input validation.
- Applied RDBMS best practices, including referential integrity, ACID-compliant foreign-key constraints, and index/query optimizations; improved performance and ensured data consistency.
- **Utilized: MySQL, HTML, CSS, PHP, ACID, Apache Web Server, Git.**