Branson Crawford

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Education

University of British Columbia (3rd Year Student, GPA 4.00/4.0) *BC, Canada*
Bachelor of Science **Major in Computer Science — Minor in Mathematics** *Sept 2023 – Present*

- **Dean's Scholar (2024–25)** for Outstanding Academic Achievement
- **Cumulative GPA: 4.00/4.0**

Tech Skills

Languages Proficient in: C, Java, Python, JavaScript — Familiar with: R, TypeScript, Rust, MIPS, C++
Development Flask, FastAPI, HTML5, TailwindCSS, Git, Docker, MySQL, PostgreSQL, Unity
Data Science NumPy, Matplotlib

Work Experience

University of British Columbia — Master of Data Science *BC, Canada*
Software Developer (Contract Part-time) *Nov 2025 – Present*

- Collaborating with MDS faculty to streamline graduate student application and evaluation workflows.
- Migrating legacy Excel-based processes into **full-stack web application with Flask and PostgreSQL**.
- Designing database schema and implementing CRUD operations with role-based access control.
- **Increased efficiency by 52% for page load** using critical CSS and on-hover caching for HTML objects for efficient API requests.
- Implementing export functionality, admin interfaces, and comprehensive data management features.

UBCO Aerospace — JellyFish Drone Project *BC, Canada*
Software Developer (Volunteer) *Sep 2025 – Present*

- Developed **vision processing pipeline** using NumPy and Matplotlib for drone-based image analysis.
- Implemented **automated drone flight system** with vector movement algorithms.
- Built fully-fledged GUI for drone vision control using HTML and JavaScript.
- Improved image processing speed by **30%** through optimized Hough transform algorithm.

Regional District of Okanagan–Similkameen (RDOS) *Penticton, BC*
IT Summer Student *May 2025 – Sep 2025*

- Assisted network administrator with **TCP/IP connectivity issues** across Okanagan region and configured Linux servers.
- Led refactorization and pipelining work for **Microsoft Silverlight business applications** with business analysts.
- Configured and deployed network infrastructure including switches, routers, and wireless access points.
- Maintained IT documentation for hardware inventory, software systems, and operational procedures.

Key Projects

E-Commerce Web Application — Java, JDBC, Docker, SQL Server, JSP *Oct 2025 – Nov 2025*
GitHub

- Built database-enabled online store with product catalog, shopping cart, and order processing functionality.
- Implemented user authentication, admin dashboard with daily sales reporting, and customer account management.
- Designed product detail pages with binary image storage and retrieval from SQL Server database.
- Developed **transaction-based order shipment system** with inventory validation and automatic rollback on errors.
- Containerized application using Docker for consistent deployment across development environments.

MDS Application Management System — Python, Flask, PostgreSQL, Tailwind CSS *Nov 2025 – Present*

- Built full-stack web application to manage graduate student applications for the Master of Data Science program.
- Implemented user authentication, role-based access control, and session management for faculty users.
- Designed normalized database schema with PostgreSQL for applicant data, evaluations, and user management.

- Created admin dashboard with export functionality, data filtering, and comprehensive CRUD operations.

DatBase: SQLite Clone — C, B-tree Indexing   *Aug 2025 – Sep 2025*
GitHub

- Built lightweight database engine in C with **B-tree indexing** and SQLite-compatible file format.
- Implemented query parsing engine and execution engine for SQL statement processing.
- Developed on-disk storage system with reliable data persistence and transaction management.

DockerKilo: Command-Line Text Editor — C   *May 2025 – Jul 2025*
GitHub

- Forked and extended Kilo text editor with enhanced usability and performance optimizations.
- Implemented **buffer management system** for efficient text manipulation and memory handling.
- Optimized memory management and I/O pathways to improve editor responsiveness by **40%**.

Network Chatroom — Java, TCP/IP Sockets, Multithreading   *Sep 2025 – Dec 2025*

- Developed client-server chat application using Java socket programming and TCP/IP protocol.
- Implemented **multithreaded server architecture** to handle concurrent client connections and message broadcasting.
- Built real-time message exchange system with connection management and client session handling.

Relevant Courses

Computer Science   Data Structures and Algorithms, Object-Oriented Programming, Computer Networks, Machine Architecture, Image Processing and Applications
Mathematics   Applied Linear Algebra, Linear Algebra, Calculus III & IV, Matrix Algebra, Mathematical Proof, Introductory Statistics