

RANDY ZHU

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EDUCATION

University of British Columbia

Bachelor of Science, Honours Computer Science, Option in Software Engineering

September 2023 – December 2027

GPA: 88%

TECHNICAL SKILLS

Languages: Python, Java, C#, TypeScript, HTML/CSS, C++, C, SQL, MIPS Assembly, Swift

Developer Tools: Git, Docker, Linux

Testing Frameworks: JUnit, NUnit, PyTest, Playwright

Technologies: React.js, Google Maps API, Unity Game Engine, Express.js, Google Cloud Run, Power BI, SQL Server Management Studio (SSMS), pandas, pthreads

WORK EXPERIENCE

Research Assistant

May 2025 – September 2025

Vancouver, BC

Software Practices Lab

- Implemented **graph algorithms for static and dynamic program analysis in Python** for automated unit test generation
- Identified external dependencies to functions by extracting docstrings from objects for analysis with an open source LLM, **Gemma 3n on ollama**
- Developed the tool using Agile methodologies like **Kanban**; managed source code collaboration using **Git**
- Caught 76% of bugs and covered 85% of code base using test-driven-design by writing over 300 **unit tests in PyTest, mocking expensive API calls using pytest.mock and monkeypatch**

Software Developer Intern

September 2024 – April 2025

Vancouver, BC

Teck Resources

- Created calendar component used by **teams across the org** using the Power Apps Component API, React.js, TypeScript and the Microsoft Fluent UI React toolkit
- Tested web apps, catching 87% of bugs before reaching user acceptance tests using **Playwright** and **NUnit** and **C#**
- Saved over 100 hours for site engineering teams by creating a data ingest tool using the Microsoft Dataverse **REST API** in **C#**
- Presented **Power BI** dashboard of on-site safety events across business units by unifying data from legacy databases, using **SSMS**, to wrangle data using **SQL**, then finer transformations using **M, DAX** and **pandas** for the final dashboard

Teaching Assistant

July 2024 – Present

Vancouver, BC

The University of British Columbia

- Achieved a 98% favourable rating from students for **debugging their event-driven Swing code in Java**
- Lectured during seminars on low-level programming fundamentals like **MIPS Assembly, stack frames, and POSIX pthreads**
- Explained and solved parallel programming problems as a part of office hours using **spinlocks, mutexes, and threading**

PROJECTS

Racket Compiler

| x86 assembly, Linux ABI, C, Racket (Scheme/Lisp), gdb 2026

- Implemented **instruction selection and register allocation using graph colouring algorithms** to minimize expensive memory reads
- Working towards support for first class functions via closure conversion, and **tail call optimization to enable efficient recursion**

Campus Explorer

| TypeScript, React.js, express.js, Google Maps API, Docker, Google Cloud Run 2025

- Designed REST APIs and implemented them in express.js, writing middleware to route rooms using the Google Maps Routing API for cycling and walking paths
- Containerized the backend using **Docker** and deployed the API to **Google Cloud Run**
- Displayed and transformed embedded map using the Google Maps JavaScript API on React.js based frontend

iscsi-driverkit

| Swift, C++, DriverKit, Networking, iSCSI (RFC 7143) 2025

- iSCSI is a storage protocol similar to SMB. macOS has no support for it, and third-party addons use deprecated kernel modules and are closed source. This project aims to create a GPLv2, trusted, open-source implementation that uses modern APIs (i.e., no kernel extensions).
- Working around limitations of DriverKit by **implementing the networking client in user space with Swift**
- Implemented SCSI device driver with ring buffers to improve performance using **C++** without the STL