

Alexander Steele

SOFTWARE ENGINEER · TESLA

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Experience

Tesla

Palo Alto, California

SIMULATION SOFTWARE ENGINEER

July 2024 – Present

- Developing novel processor-in-the-loop simulation platform using **Rust** to enable scalable validation of firmware on real microcontrollers interacting with simulation models running in software and on FPGAs.
- Designing a **Buck2** remote execution service to efficiently build artifacts and run simulations.
- Decreased real-time simulation latency by 20% using knowledge of core isolation and thread affinities.
- Automated processor-in-the-loop executions using **RabbitMQ** to allow developers to test on hardware with one click.

Tesla

Palo Alto, California

CRASH SAFETY SOFTWARE ENGINEER INTERN

Fall 2022, Summer 2023

- Implemented numerical integrals for the restraint control module (RCM) crash algorithm's calculations in **C**.
- Designed and wrote SPI drivers to control the RCM's inertial measurement units (IMUs) in **C**.
- Independently discovered and patched allocation inefficiency in **Rust** simulation codebase, improving runtimes by 30%.
- Optimized **Rust** simulation data intake pipeline by hand-writing a parser, resulting in an 80% performance improvement.

UBC Department of Computer Science

Vancouver, British Columbia

NUMERICAL METHODS RESEARCH ASSISTANT

Summer 2022

- Created novel discretization technique for solving ill-conditioned instances of the Helmholtz equation in **MATLAB**.
- Developed high-performance finite-element magnetohydrodynamic simulation software using **C++** and **Eigen**.

UBC Department of Computer Science

Vancouver, British Columbia

LEAD UNDERGRADUATE TEACHING ASSISTANT

January 2020 – May 2024

- Developed **Racket** autograder server used by over 1100 students to submit and receive feedback on over 2500 files daily.
- Detected over 500 cases of academic misconduct by designing, implementing, and deploying novel source code similarity algorithms written in **Rust**, **Python**, and **PyTorch**.

Skills

Languages	C, Rust, C++, Python, Java, MATLAB, Julia, Racket, Kotlin, C#
Technologies	Git, PyTest, \LaTeX , Bash, CMake, GDB, Scientific Python, PyTorch
Technical	Object-Oriented Design, Agile Methodologies, Test-Driven Development, SIL Testing, Data Analysis

Education

University of British Columbia

Vancouver, British Columbia

B.Sc. COMBINED HONOURS COMPUTER SCIENCE AND PHYSICS

September 2019 – April 2024

Average: 96.4% (4.0/4.0 GPA equivalent).

Thesis: "Deep Reinforcement Learning for Control of Snake-Like Robots"

Honours & Awards

Bill Aiello Memorial Award in Computer Science

May 2024

Awarded to the student who "best [combines] academic excellence with leadership, community service, or volunteerism."

Computer Science Academic Award of Excellence

May 2024

Awarded to the student with the highest graduation average in the Computer Science program.

Rudi Haering Medal in Physics

May 2024

Awarded to "the most outstanding graduating student in Physics."

Dorothy Gladys Studer Memorial Scholarship

October 2022, November 2023

Awarded "on the recommendation of the Department of Physics" to "the student who [obtained] the highest standing in Honours physics."