

# TRISTAN SIMPSON

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## Education

**The University of Guelph – 90% GPA**

**Sep. 2023 – May 2028**

*Honours Bachelor of Computing in Computer Science – Minor in Mathematics*

*Guelph, Ontario*

## Skills

**Expert:** TypeScript, React, Python, Go, SQL, UI/UX Design, (Modern full-stack: Vite, tRPC, TanStack, Tailwind, etc.)

**Intermediate:** Next.js, Redis, DevOps, AWS, Azure, Docker, Rust, Java, C/C++

**Beginner:** Angular, Flutter, Assembly, Figma

**Soft:** Leadership, Creativity, Critical thinking

## Professional Experience

**YNCU**

**May 2025 – Present**

*Full Stack Developer I (Full-time)*

*Kitchener, Ontario*

- Continued development of our commercial loan origination system (CLOS); led interface design, caching, security and data models; integrated Fiserv DNA for real-time data—**Saved \$500 000 at launch and \$80 000 annually.**
- Co-led Summer 2025 full-stack hiring process;** developed entire hiring process & pitched to our CIO; created the YNCU Quickstart repo (templates, docs, security architecture) and **mentored the intern cohort.**
- Led Mortgage Renewal, Mortgage Campaign, and workspace/application dashboard projects, streamlining workflows and boosting member engagement; **approximately \$22 000 in cost savings annually.**

**YNCU**

**September 2024 – May 2025**

*Full Stack Developer I (Part-time)*

*Kitchener, Ontario*

- Advanced CLOS feature set; **refactored 100 000+ lines of code** and optimized our DNA API.
- Developed ID Verification and Automatic Onboarding systems with Salesforce—**Saved thousands of hours** and processed **20 000+ member verifications.**

**YNCU**

**June 2024 – September 2024**

*Full Stack Developer Intern (Full-time)*

*Kitchener, Ontario*

- Initiated the CLOS project; defined the end-to-end user journey, data model, test procedures, and security.
- Refactored and redesigned the entire YNCU Tools platform with React Hook Form, Zod, TanStack, etc. **Achieving significant performance & accessibility improvements.**

## Engineering Ambition

**December 2023 – June 2024**

*Lead Software Developer (Founder)*

*Guelph, Ontario*

- Led a team of 15 student software engineers and designers** in developing full-stack applications for companies, local organizations, and university clubs.
- Managed project timelines; DevOps with **Azure**; reviewed and refactored team code; maintained systems; coordinated team meetings, brainstorm sessions, etc.

## Dominion Lending Ltd.

**July 2023 – September 2023**

*Software Developer (Contract Full-time)*

*Waterloo, Ontario*

- Led the development of our “Pulse” internal communication platform for event creation, secure document handling, user management, etc. —**saved \$8 000 annually.**
- Led the full-stack development of our corporate website and interactive analytics dashboard for real-time insights and team management.

## Projects

**Hermes – Full Text Search and Caching Framework** | *Go, Python, SQL, API, WebSocket*

**2023**

- Engineered a caching solution that delivers full-text search query speeds ranging from **10 to 300 microseconds**, nearly **100x faster than competing services.**

**Verlet – Physics Engine** | *C, C++, WinGL, SFML, OpenGL, Graphics*

**2023**

- Developed a physics engine from scratch with **C** and **C++** and the **SFML graphics library.** Verlet inspired me to develop **CGL** and **WinGL**, my own graphics libraries in **C** and **C++**.

**Versa & Reborn Anti-Cheat** | *Python, PyQt5, Rust, Discord Integration*

**2023**

- Created a **modern PyQt5 UI** for Versa Anti-Cheat with real-time monitoring, screen capture, and program detection; automated reporting and key management with Discord (the platform chosen given my target audience for the project).
- Rewrote the core engine in **Rust** (“Versa Reborn”) adding HWID/IP spoofing and macro detection for enhanced security.

## Leadership / Extracurricular

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### Harvard, Stanford, MIT

*Student*

**Fall 2022 – Present**

*Harvard, MIT, Stanford*

- Harvard CS50x, CS50P, CS50W, CS50AI; Stanford Online Compilers, Databases, CS101; MITx ML, CS
- Expanding my experience in developing applications with **C**, **Python**, **JavaScript**, **HTML**, and **CSS**.
- Actively engaging with a community of passionate students, facilitating collaborative learning of **mathematics**, **data structures**, **databases**, **machine learning**, and **low-level programming**.

### Simpson Research

*Founder and Lead Developer*

**Fall 2021 – Present**

*Waterloo, Ontario, Canada*

- Established a platform dedicated to mutual learning and application of technologies, programming languages, and best practices in software design and development.
- Currently teaching: **Python**, **PyTorch**, **Typescript**, **React**, **Angular**, **Databases**, **Security**, and more.

### Eclipse Expositions

*Software Developer (Permanent Part-time)*

**December 2023 – June 2024**

*Waterloo, Ontario*

- Coordinated projects with **Jira**; DevOps with **AWS**; designed and developed full-stack web applications with **tRPC**, **Next.js**, **React**, **Tailwind CSS**, **PostgreSQL**, **TypeScript**, **Git**, **AWS**, **Docker**, etc.
- Spearheaded the migration from REST to **tRPC**, and the development and deployment of the Eclipse Expositions React component library.

### Google Developer Student Club

*Events Director and Developer (Volunteer)*

**Fall 2023 – May 2024**

*The University of Guelph*

- Oversaw the events team, secured sponsorships, and organized workshops, events, and the GDSC 2024 hackathon.
- Leveraged **tRPC**, **Next.js**, **React**, **Tailwind CSS**, **PostgreSQL**, **TypeScript**, **Git**, **Google Cloud**, **Docker**, **Prisma**, **Vercel**, etc. to collaboratively develop and deploy an event registration system.

### STEM Fellowship

*Software Developer and Indiciium Researcher*

**Fall 2023 – May 2024**

*The University of Guelph*

- Computer science TSP research – combinatorial optimization and operations research, optimization, heuristic and approximation algorithms.
- Developed software for educators and researchers to manage, refine, and illustrate data.

### Society of Computer Information Sciences

*Vice President of Tech, Project Manager, System Admin, and Lead Website Developer*

**Fall 2023 – May 2024**

*The University of Guelph*

- Led, organized, and managed tech initiatives, projects, and sponsorships.
- Coordinated project schedules, objectives, and timelines; collaborated with other SOCIS teams to ideate projects.

### Enactus

*Web Developer*

**Fall 2023 – May 2024**

*The University of Guelph*

- Spearheaded the design and development of Enactus full-stack web applications.
- Worked with a team of students to ideate and deploy social, economic, and environmental concentrated solutions.

### Guelph Cyber Security Society

*Web Developer and Project Lead*

**Fall 2023 – May 2024**

*The University of Guelph*

- Led the design and development of the club website, leveraging **tRPC**, **Next.js**, **Tailwind CSS**, **NextAuth**, **NextUI**, **PostgreSQL**, and **AWS**.
- **Coordinated the Machine Learning Turret development team**, guiding project timelines and tasks.

### Artificial Intelligence Club

*Executive Team Member*

**Fall 2023 – May 2024**

*The University of Guelph*

- Led the design and development of the club website, leveraging **Next.js**, **Tailwind CSS**, **PostgreSQL**, and **Vercel**.
- Organized workshops and seminars to promote AI tools, concepts, and applications to club members.
- Worked with other executive members to teach **Pandas**, **Numpy**, **Scikit-learn**, **TensorFlow**, **PyTorch**, etc.

### Ski and Snowboard Club

*Software Developer*

**Fall 2023 – May 2024**

*The University of Guelph*

- Led the design and development of the club website, leveraging **tRPC**, **Next.js**, **NextUI**, **Tailwind CSS**, **NextAuth**, **Supabase**, and **Vercel**.
- Developed an event registration system and an administrative dashboard for managing permissions, events, announcements, etc.