

Alex Xu

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EDUCATION

University of Waterloo

Waterloo, Canada

B.Sc in Computer Science with AI Specialization; Combinatorics & Optimization Minor

Expected 2027

- **Waterloo National Math Scholarship:** Awarded to top 15 mathematics and computer science students
- **Coursework:** Data Structures, Algorithms, Object-oriented Programming, Linear Algebra, Statistics

SKILLS

Languages/Frameworks: Python, TypeScript, JavaScript, C/C++, C#, .NET, ASP.Net, EF Core, Java, React, React Native, Go, HTML/CSS, Kotlin, Swift, Flask, SQL, MySQL MongoDB, AWS, Docker, Kubernetes, Apache

Achievements: President's Scholarship of Distinction, AIME Invitee, Canadian Badminton Junior National Team

EXPERIENCE

Incoming Software Engineering Intern

Toronto, Canada

Shopify

Machine Learning Engineer Intern

Toronto, Canada

Zomp Inc.

Jan. 2025 – Present

- Developing advanced ML models, including Random Forest, Gradient Boosting, and Convolutional Neural Networks, to enhance ILI data analysis for pipeline integrity and estimate missing pipeline properties
- Built ETL pipelines to process inspection data, improving pipeline defect detection accuracy by reducing depth measurement uncertainty by 20%, using Python

Software Developer Intern

Toronto, Canada

Zomp Inc.

May 2024 – Aug. 2024

- Developed **C#/.NET** applications used by **50+ analysts**, which increased client productivity by **30%**
- Optimized document processing and document repairs by **73%** by using **IAsyncEnumerable** and lazy evaluation
- Applied **test-driven development** methodologies using the **XUnit** framework, achieving **95%** code coverage and enabling early detection of issues, resulting in more reliable and maintainable code

PROJECTS

UFC Fight Predictor | *Python, Pandas, Sklearn, Lgbm, Flask, React*

- Developed a Machine Learning Fight Predictor using **Bayesian Optimization** and **Time Series** to achieve **64%** accuracy using **Light Gradient Boosting Machine** model
- Utilized **Pandas** for thorough data cleaning and processing of **4,000+** fighters' stats and **19,000+** fight records (web scraped with BeautifulSoup), ensuring data accuracy and reliability for analysis and modeling

VM | *C++20, Ncurses*

- Recreated a fully functional, Vim-like text editor using OOP principles and design patterns, implementing modal editing (insert, command, and visual modes) to mirror Vim's behaviour

Language Virtual Machine | *Rust, Cargo*

- Built a register-based virtual machine in Rust, implementing a custom assembler that translates high-level language constructs into MIPS-like bytecode compatible with the virtual machine
- Developed REPL (Read-Eval-Print Loop) that enables real-time code execution and debugging with advanced memory management and garbage collection algorithms, optimizing resource utilization and ensuring stable runtime performance

Parkt | *React Native, TypeScript, Expo, Next.js, MySQL, Stripe*

- **Backend engineer** for a real-time online parking marketplace connecting drivers with private parking spaces, using **MySQL**, handling 1000+ parking transactions per month

Slime Scholars | *React, TypeScript, Next.js, Express, MongoDB, Node.js*

- **Backend engineer** of the education tech startup, with the goal of gamifying education. Reduced database query load by **15%** by developing **REST APIs** using **HTTP** protocols and refactoring data schemas in **MongoDB**