LARRIS XIE

larris.xie@uwaterloo.ca · 437-974-6166 · larris.me ↗ · LinkedIn ↗ · GitHub ↗

EDUCATION

University of Waterloo — Sep 2024 - Apr 2028
Bachelor's of Computer Science — **4.0/4.0 GPA**
Scholarships: *Nortel Institute, President's Scholarship, President's Research Award ($7500)*
Relevant Coursework: Object-Oriented Software Development in C++ (Enriched), Data Structures and Data Management (Enriched), Algorithm Design and Data Abstraction (Enriched)

EXPERIENCE

Shopify — May 2025 - Aug 2025
Software Engineering Intern

- Orchestrated a **100% uptime data migration** from legacy APIs to new service endpoints while ensuring full **backwards compatibility** through shadow writes, backfilling **over 5B rows**, and staged rollouts.
- Designed and implemented scalable **data models and GraphQL APIs** in Ruby on Rails, powering a fully extensible cash management experience for **2M+ active retailers**.
- Engineered full-stack features for Shopify Point of Sale (POS) in **React Native and Typescript**, resolving critical race conditions in async workflows to reduce failure rate by **40%.**

Meta x MLH — May 2025 - Aug 2025
Production Engineering Fellow

- Deployed and managed **Linux infrastructure** on CentOS, leveraging system calls and kernel-level debugging at the OS layer, and Docker and NGINX at the application layer to improve reliability.
- Configured system monitoring with **Prometheus, cAdvisor, and Grafana**, leveraging low-level resource metrics (CPU, cache misses, memory usage, I/O throughput) to cut bug detection time by **80%.**
- Automated **CI/CD workflows** with GitHub Actions, integrating testing frameworks, security scans, and performance monitoring to streamline deployments and improve system reliability.

University of Waterloo — Jan 2025 - Present
Undergraduate Research Assistant — Security and Privacy in ML

- Built a privacy-preserving **vertical federated learning** system for fraud detection, leveraging a GAN and encrypted communication protocols to enable secure cross-party training on distributed time-series data.
- Achieved a 95% F1 score under a 10000:1 class imbalance by training custom **transformer models in PyTorch** under federated learning and performing large-scale hyperparameter optimization.
- Engineered a **distributed secure inference** pipeline using Facebook's CrypTen MPC and PyTorch's RPC, providing membership inference resistant serving on GPUs and maintaining **100% of performance**.

Jobeyze — Dec 2024 - Mar 2025
Software Engineering Intern

- Spearheaded the development of an **automated web scraper** using Selenium and Python, extracting **1200+ job postings daily** and eliminating manual collection entirely.
- Built a **RESTful API** with a structured **MySQL** database schema, enabling real-time syncing of postings and application links across platforms used by thousands of active users daily.

PROJECTS

ASCII Game Engine ↗ *C++*

- Architected a 2D game engine in C++ from scratch, grounded in **MVC** architecture and **SOLID principles**, and leveraging **advanced design patterns** for modular and efficient resource management.
- Features **OOP** in console-based rendering, event-driven input and audio, collision detection, dynamic world state with multi-layered rendering and animation, with two demo games: Flappy Bird and Space Invaders.

On The Dot (3000+ users) ↗ | *React, TypeScript, Python, PostgreSQL, AWS*

- Launched a trivia game with persistent game state and anonymous user tracking—**10k plays in 3 months**.
- Architected a Python backend with custom **PostgreSQL** functions to achieve **20ms read/write latency** on **30K queries/day** for real-time statistics tracking and rate control.

LifeOS (Hack the 6ix Winner) ↗ | *React, TypeScript, Python, FastAPI, Redis, Docker, PostgreSQL, AWS*

- Engineered a **distributed video processing pipeline** using Redis Queue that orchestrates semantic analysis with TwelveLabs, embedding generation, and cloud storage via **asynchronous workers**.
- Deployed a **containerized API service with AWS** using Docker, FastAPI, Pydantic models, and JWT middleware; supports modular features like authentication, video ingestion, memory search, and chat.