Larris Xie

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Education

University of Waterloo Sep 2024 - May 2028
Bachelor's of Computer Science **4.0/4.0 GPA**

Skills

Languages:	C++, Python, JavaScript, TypeScript, Java, SQL, C#, R
Frameworks:	React, NextJS, ExpressJS, NodeJS, Flask, PHP Laravel
Database:	MongoDB/NoSQL, Firebase, SQLite, MySQL
DevOps/Tools:	Docker, Git, GCP, AWS, Selenium, TensorFlow, PyTorch

Experience

Research Assistant Jan 2025 - Current
University of Waterloo

- Researching **Security and Privacy in Machine Learning**, supervised by Dr. Florian Kerschbaum.
- Constructing a protocol for **Vertical Federated Learning in PyTorch** to securely align and train on distributed time-series sequences, leveraging cryptography and differential privacy to protect data.

Software Engineering Intern Dec 2024 - Current
Jobeyze

- Spearheaded the development of an **automated web scraper** using Selenium and PHP Laravel to extract **1200+ job postings** across multiple platforms.
- Built a **RESTful API** using Laravel, enabling seamless integration with a **MySQL** database schema for real-time updates of job postings and application links.

Researcher Aug 2022 - Feb 2023
Lumiere Education

- Analyzed a financial transaction dataset using Python and trained a **XGBoost** classification model to classify fraudulent organizations with **99.9315% accuracy** and a **0.001% false positive rate**.
- Published a peer-reviewed research paper in the **Journal of High School Science** under the supervision of Dr. Maria Konte.

Projects

Autonomous Vision Systems for Self-Driving Cars | *Python, Tensorflow*

- Developed and fine-tuned object detection pipelines for autonomous vehicles using techniques such as **neural networks, CNNs, transfer learning models (VGG16), and YOLO**.
- Conducted a comparative analysis of different model architectures, evaluating trade-offs between speed and accuracy in the context of autonomous driving.

Off The Hook | *React, Vite, Flask, MongoDB, OpenAI*

- Engineered an alternate reality game (ARG) simulating phishing attacks by implementing secure **JWT-based authentication**, ensuring a tokenized login flow for simulated hacker interaction.
- Deployed a Flask backend integrated with MongoDB, using scalable **RESTful APIs** to manage user interactions, including a built-in **chatbot powered by OpenAI**, fine-tuned on cybersecurity.
- Winner of **1Password's Best Security Hack** at UofTHacks (**500+ participants**).

The Fastest Root | *React, NextJS, ExpressJS, NodeJS, Google Cloud Platform*

- Architected a full-stack web app that retrieves **real-time pricing data** from grocery stores through **web scraping with Puppeteer**.
- Designed a route optimization algorithm and visualized the cheapest grocery shopping route using the Google Maps API, delivering time and cost-saving insights to users.
- Winner at Ignition Hacks **(400+ participants)**.

NavigAIt | *React, NextJS, ExpressJS, NodeJS, Google Cloud Platform*

- Built an onboarding assistant integrating Google's Vertex AI and Gemini in a **RAG-LLM architecture** to provide live, multimodal support for new employees navigating codebases.
- Constructed a continuous audio streaming system using **NodeJS WebSockets**, enabling uninterrupted voice inputs with real-time transcription and TTS pipeline leveraging Google Cloud's Text-to-Speech API.
- Winner at GeeseHacks **(300+ participants)**.

Saving Christmas | *C#, Unity*

- Engineered a 2D Platformer Game with fluid movement mechanics, dynamic camera tracking, and collision detection across multiple levels.
- Applied **OOP principles** to design modular and reusable components, such as interaction interfaces, dialogue systems, and player movement scripts.