

Rajan Agarwal

647-973-4401 | rajan.agarwal@uwaterloo.ca | rajan.sh | [Linkedin](#) | [Github](#)

TECHNICAL SKILLS

Languages: Python, JavaScript (Typescript), C, C++, R, Ruby, Rust, Swift, SQL (Postgres)
Frameworks: React, NextJS, NestJS, NodeJS, Flask, Django, Ruby on Rails, Jupyter Notebook, Prisma
Developer Tools: Git, Docker, Github CI/CD, TravisCI, Render, Google Cloud, VS Code, Figma, PyCharm, Linux
Libraries: Pandas, NumPy, Matplotlib, SciKit Learn, Mapbox, SciPy, Transformers

EXPERIENCE

Founding Engineer October 2022 – February 2023
Arterial Toronto

- Developed REST APIs with GraphQL, PostgreSQL and Flask for storing Machine Learning document analysis
- Integrated NestJS, NextJS, PostgreSQL, Mapbox full-stack web application with BERT, NLP and Vector backend
- Built infrastructure for largest urban planning firms in Canada and raised pre-seed of **\$320,000 from Contrary**

Software Engineer Intern May 2022 – October 2022
Camp Social New York City

- Built core microservices and APIs with Ruby on Rails, Typescript and Solidity to connect frontend with backend
- Wrote **3500+** lines of production code for network efficiency, digital profiles, incentivization and offline features
- Improved database and network optimizations to increase return rate by **18%** and reduced latency by **60%**

Contract Software Engineer Intern June 2022 – August 2022
Hack Club Vermont

- Built and designed a new application management platform to give international clubs access to free CS tools
- Developed with Next.js and PostgreSQL that supports **7,000+ multilingual applications**
- Featured in the **Github Newsletter**, scaled platform to reach over **1 Million interactions**

Public Health Analyst August 2021 – May 2022
Salutem Toronto

- Collaborated with the Nigerian Ministry of Health and Public Health Representatives in Bauchi to construct remote impact strategies and implement clean water/agricultural systems
- Conducted research with **150+ local families** and analyzed health trends in villages
- Presented to local MP/MPPs and worked with food banks to analyze and maximize food distribution

PROJECTS

Shapeshift (RippleX, RBCx) | *Python, Flask, NextJS, PostgreSQL, SciKit Learn, pgvector, Github CI/CD*

- Built a Machine Learning **autonomous agent** to design earthquake-resistant buildings in under **15 seconds**
- Created algorithms to scrape thousands of policies and use Fourier Transforms to run tectonic plate simulations
- Accepted to Cohort 15 RippleX Fellowship, under the supervision of Dominic Lau and sponsored by RBCx
- Collaborated with **Government of Costa Rica** to analyze seismic data and optimize construction

Self-Driving Tank (Culminating Software Engineering Project) | *Python, Flask, C, Raspberry Pi, Transformers*

- Built pathfinding, neural network simulations, object detection, lane control and PID controllers from scratch
- Led the hardware integration, connecting Raspberry Pi, PCB encoders, motor controllers and circuits with servers

Portal (Hack the North 2023 Winner) | *Python, Flask, Cohere Embeddings, Raspberry Pi, Google Cloud, OpenAI*

- Developed an algorithm that semantically searches through audio and video memories and returns clip fragments
- Built and scaled APIs that searches hours of audio and video in **under 50 ms**

ConnexSci (Hack the North 2022 Winner) | *NextJS, Python, Django, Firebase, Cohere Embeddings, PostgreSQL, Neo4j*

- Built a knowledge graph of **500,000 embedded research papers**, sorted by topic and strength of connection
- Developed a public funding model with **97% accuracy** to search through papers and distribute investment

EDUCATION

University of Waterloo Waterloo, ON
Bachelor of Software Engineering. Hosting UW Startups Socratica Sept. 2023 - May. 2028