# Richard Zhang

Toronto, Ontario
r29zhang@uwaterloo.ca in/rz2004 @notzree richard-zhang.ca

## Education

**University of Waterloo** **Sep. 2022 – Present**
*Bachelors of Applied Science in Systems Design Engineering-* ***3.85 GPA*** *Waterloo, Ontario*

- **Relevant course work**: Digital Computation (C++) — Linear Algebra — Introduction to Design — Graphics (Solidworks)
- **Clubs and Activities**: University of Waterloo Alternative Fuels team, University of Waterloo Muay Thai

## Technical Skills

**Languages**: Javascript, Typescript, Python, C#, Java, HTML/CSS, C++
**Technologies**: Next.js, React.js, Express.js, Node.js, .NET/.NET CORE, Flask, Pytorch, Socket.io
**Tools**: Git, PostgreSQL, SQLServer, Prisma, Qdrant, Websockets, Redis

## Experience

**EnergyIntell** **January 2023 – April 2023**
*Software Engineer* *Richmond Hill, Ontario*

- Architected ETL pipeline to archive over **50+ million** rows of data from **SQLSever** database to cloud data store using **Entity Framework**. Lowered job time from **2 days** to under **10 minutes** and reduced database volume by **20%**.
- Spearheaded the development of the Mobile dashboard application using **React Native** and **.NET Core**. Documented and shipping a JWT-based Auth solution protecting API routes and securing sessions
- Migrated dashboard data-fetching SOAP web service to a REST API using **.NET Core** and **LINQ**, leading to **21%** faster fetch times and a **40%** reduction to payload sizes.

**Freelance Fullstack developer** **January 2023 – April 2023**
*Fullstack Developer* *Toronto, Ontario*

- Designed and developed a photo and video gallery for Scarball basketball using **Sanity** CMS, **Next.js**, and **Mux** video player, increasing brand awareness and social presence.
- Designed and developed a Car-detailing booking website using **Next.js**, **Prisma**, and PlanetScale's **MySql** database, simplifying the booking process for customers as well as fufilling appointments.

## Projects

**sign:here - Multilingual semantic search hackathon**

- Developed a natural language chat-bot using **React** and **Flask** using **co:here's NLP** to provide users with a seamless and intuitive experience for answering legal document-related questions.
- Implemented semantic search with **Qdrant's** vector similarity search engine and **context injection**, enabling the chat-bot to use relevant parts of the users documents to generate an accurate responsein a natural language form.

**write:here (Hackville 2023 winner)**

- Deployed a fullstack web application using **Next.js** and **Vercel** to parse hand written letters into emails providing users who are unable to type with an intuitive and nostalgic way to send emails.
- Led cross-team initiative to integrate **Google Vision API** with **co:here's natural language model** to parse, spellcheck, and format the parsed text.

**Realtime chat application**

- Architected web application that enabling users to communicate in realtime over a websocket connection, utilizing **Auth.js** for a password-less user authentication.
- Developed web socket server built using **Next.js** and **Socket.io** to establish websocket connection.

**Bigram Language Model**

- Utilized **Pytorch** to implement a **Multilayer Perceptron** based Bigram Language Model generating unique names.
- Optimized the model using **Stochastic Gradient Descent** with Pytorch's autograd library on a training data-set of 25K names, implementing **minibatching** to expedite the training process.