Richard Zhang

r29zhang@uwaterloo.ca | linkedin.com/in/rz2004 | github.com/notzree | richard-zhang.ca

EDUCATION

University of Waterloo — Waterloo, ON

BASc, Systems Design Engineering 3.85 / 4.00 GPA — *2022 – Present*

- Relevant Courses: Data Structures and Algorithms, Digital Computation (C++)

PROFESSIONAL EXPERIENCE

Jitto — Toronto, ON

Fullstack Engineering Intern — *Aug. 2023 - Dec. 2023*

- Proposed and drove REST API and infrastructure migration from DynamoDB to RDS (Aurora-MySQL), enabling ACID compliance on transaction history data and **reducing query API response times by 23%**
- Overhauled lead scraping logic to support parallel processing with **Node.js Worker Threads**, realizing a **66% scrape time decrease** for over 7000 leads
- Scaled PDF processing **Lambda** cron job for pricing data updates, leveraging concurrent execution and AWS resource tuning to achieve **3x faster runtimes** and **9% reduced operational costs**
- Built full-stack spreadsheet components using **React.js**, **Typescript**, and **RESTful APIs**, enabling buyers to track inventory and pricing information

EnergyIntell — Toronto, ON

Software Engineer Intern — *Jan. 2023 - Apr. 2023*

- Architected ETL pipeline moving **50+ million rows/year** of historical electricity data to cold storage using **.NET with Entity Framework**, lowering archival job time from **2 hours to under 10 minutes** and **reduced database volume by 20%**
- Modernized energy data SOAP web service into REST API to support interoperability using **.NET and LINQ**, **reducing fetch speeds by 21%** and **payload size by 40%**
- Spearheaded electricity pricing REST API changes to support latency requirements by implement async short-polling using **AJAX and SQL**, resulting in a 14% reduction in fetch time

COMMUNITY INVOLVEMENT

Watonomous - WatCloud — Toronto, ON

Server Cluster Team Developer — *Feb. 2024 - Present*

- Authored **Bash** scripts and **Terraform** IaC to automate Azure provisioning, streamlining deployment and scalability for Azure Kubernetes Service users

PROJECTS

Wikigraph - Wikipedia Graph Analysis | Rust, Go, gRPC, Redis, Kubernetes, Docker — **GitHub**

- Engineered a **Rust**-based link parser compressing 92 GB of Wikipedia XML data, into a compact 1 GB binary graph format achieving sub-second path-finding and a **58% reduction** in runtime over Regex
- Architected Token Bucket Rate limiter and A* Path-finding microservices in **Go**, achieving a cost-effective and performant backend using **gRPC** for inter-service communication
- Orchestrated and containerized deployment of microservices using **Google Kubernetes Engine** and **Docker**

write:here (Hackville 2023 winner) | Next.js, Google Cloud, co:here — **Demo, GitHub**

- Deployed a fullstack application with **Typescript** and **Next.js** 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

Nimbus - File system organizer | Rust, Tokio, LaunchD — **GitHub**

- Developed a MacOS Daemon to categorize and relocate downloaded files with regex to directories aligned with current academic courses supported by the UWaterloo Open Data API
- Created a CLI-tool to manually review and adjust relocation actions, allowing fine-grained control over file organization and improved edge-case handling

SELECTED SKILLS

Languages: Go, Rust, Python, Typescript, SQL, Bash, C#, C++

Technologies: Express.js, Node.js, React, Next.js, .NET, Flask, Django

Tools Git, Docker, Kubernetes, gRPC, AWS EC2, GCP, MySQL, Redis, Cloudformation, Terraform