RICHARD ZHANG

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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*
- **Infrastructure migration:** Led server-side REST API and infrastructure migration from DynamoDB to RDS (Aurora-MySQL) using **Cloudformation and SQLAlchemy**, resulting in **23%** reduction in API response time
- **Web-scraping optimization:** Introduced parallel processing with **Node.js Worker threads** reducing scrape-time by **66%** for over 7000 leads
- **Front end refactor:** Overhauled React application into Next.js, resulting in improved data fetching using server side rendering. Shortened page load times by **0.4s**
- **Cron job automation:** Converted manual weekly pricing updates (heavy PDF processing) into Lambda cron jobs, reducing time spent from **3 hours per week into a few minutes**

EnergyIntell   Toronto, ON
Software Engineer Intern   *Jan. 2023 - Apr. 2023*
- **Data pipeline:** Optimized ETL Pipeline moving **50+ million rows/year** from SQLServer to cloud storage using .NET with Entity Framework and MediatR. Lowered job time from **2 hours to under 10 minutes** and **reduced database volume by 20%**
- **Legacy API Overhaul:** Migrated energy pricing SOAP web service into REST API using **.NET and LINQ**, **reducing fetch speeds by 21%** and **payload size by 40%**
- **API optimization:** Added async short-polling on electricity pricing REST API using Ajax and SQL, **speeding up the fetch speed by 14%**

SELECTED PROJECTS

write:here (Hackville 2023 winner) | Next.js, Google Cloud, co:here   **Demo, GitHub**
- Deployed a fullstack application 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

sign:here - Document Semantic search | React, Flask, Qdrant   **GitHub**
- Developed a natural language chatbot using co:here's LLM allowing users to converse about their legal documents with document specific context
- Leveraged Qdrants vector similarity search to store text embeddings, reducing token usage by 34%

Download file organizer for students | Rust, Tokio, Launchd   **GitHub**
- Created MacOS Daemon running under Launchd that detects the relation between a course and a file and organizes the file to a corresponding directory

Phone ordering system (Transcribing speech into JSON) | Flask, Twillio, Langchain   **GitHub**
- Utilized OpenAI's Whisper model and Twillio to transcribe orders from incoming phone calls, which were extracted and converted to structured JSON using Langchain and prompt engineering

SELECTED SKILLS

Languages: Rust, Python, Typescript, SQL, C#

Frameworks: Express.js, Node.js, React, .NET, Flask

Other technologies Git, Docker, AWS, MySQL, Redis