Richard Zhang

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EDUCATION

University of Waterloo Waterloo, ON

BASc, Systems Design Engineering 3.85 / 4.00 GPA *2022 – 2027*

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

SKILLS

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

Frameworks: gRPC, Chi, Express.js, Next.js, .NET, Django

Tools: Git, Docker, K8s, REST, AWS, PostgreSQL, Redis, Pulumi, Linux

PROFESSIONAL EXPERIENCE

Blendable Waterloo, ON

Software Engineering Intern *May 2024 - Aug. 2024*

- Shipped internal Python observability APIs for insurance transfers which **saved $100/month by replacing accounting SaaS** and decreased observability report generation times by **63%** through reduced API calls
- Refactored invoice and billing services with **extensible classes, abstractions, and functional options** to easily onboard 5 new transfer types and consolidate document generation logic for over **80+ report variants**
- Overhauled ACH payments API and database schema to support Managing General Agencies (MGAs) using **Django** to enable the onboarding of backlogged **insurance plans totalling $1.9M+**
- **Increased code coverage** by adding automated **unit tests** for critical invoice components using Django unit test

Jitto (CDL 2023/2024) Toronto, ON

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

- Led REST API and infrastructure migration from **DynamoDB** to **RDS**, reducing database size by **9%** through **database normalization** and enabling multi-supplier product support with better relational modelling
- Developed **Python Lambda function** automating weekly ingestion of PDF pricing data, improving the accuracy of produce pricing algorithm by **reducing data staleness from 1 hour to 2 minutes**

EnergyIntell Toronto, ON

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

- Architected ETL pipeline moving **50+ million rows/year** of historical electrical 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%**

PROJECTS

Wikigraph - Measure things with Wikipedia | Go, Rust, MySQL, Docker **Github**

- Engineered **Rust-based** Wikipedia link parser **compressing 92 GB of XML Data into a 1.27 GB** Binary graph format, achieving a **6 hour** faster runtime compared to alternative parsers (Wikicrush)
- Achieved a **35x improvement** in path finding speeds from **1.2s to 3ms** across multiple tests by implementing concurrent, bi-directional BFS using **goroutines and concurrency primitives**

Uprank (beta) - Freelancer Analytics SaaS | Go, Python, gRPC, Pulumi, AWS(SQS, ECS) **Demo**

- Implemented **concurrent** job ranking pipeline with **Go**, using **Python gRPC functions** with Pandas and Pinecone to compute freelancer data features

Fly.io Gossip Glomers | Go, RPC, Distributed Systems **Github**

- Designed and implemented a fault-tolerant, efficient **distributed broadcasting system** on Maelstrom, beating both latency and message-per-op benchmarks by **78% and 22%** respectively