

WORK EXPERIENCE

- **Citi** New York, NY
Software Engineer AVP - Risk Analytics Products July 2023 - Present
Software Engineer Contract May 2022 - July 2023
 - Lead efforts to cut risk model execution runtimes by 50%+ using distributed graph computation
 - Detect schema incompatibilities and logic errors ahead-of-time in risk models encoded as JSON-serializable graphs
 - Develop a managed platform for performing sensitivity analysis in risk models using parallel computing
 - Build a compiler for a type-safe DSL aimed at facilitating faster and safer vectorized numerical computations
 - Build a dynamic add-on framework to overlay model functions to apply custom logic at runtime
- **OANDA** Toronto, ON
Software Developer Intern - Execution May 2020 - August 2021
 - Contribute to the OANDA's v20 trading engine as part of the execution team
 - Optimize polling logic in multi-queue ZeroMQ cases to reduce CPU usage by 90%+ and improve latency
 - Investigate memory fragmentation issues in TCMalloc for long running processes with high memory usage
 - Migrate a group of services out of a large monorepo to facilitate faster and more atomic releases

EDUCATION

- **University of Toronto** Toronto, ON
Bachelor's Degree - Computer Science Specialist and Applied Statistics Minor September 2018 - April 2023
 - Honours Bachelor of Science with High Distinction: 3.85/4.00 CGPA
 - University of Toronto Scholar - 2019, 2020, 2022, and 2023 Dean's List Scholar

INVOLVEMENTS

- **Imglabs.io** Toronto, ON
Co-Founder April 2022 - Present
 - Edge image proxy written in Rust and deployed using WebAssembly to bring image processing closer to end users
 - Currently in production with commercial customers
 - Heavily optimized image processing for sub-second image transformations in resource-constrained environments
 - Serverless architecture for cost-conscious, effortless scaling and deployment to 275+ network edge locations
 - Software stack: Rust, WebAssembly, JavaScript, React, Next.js, Tailwind CSS, Cloudflare Workers, AWS S3, ClickHouse, Prometheus, Grafana, Supabase, GoTrue, PostgreSQL, PostgREST, Docker, JWT, Stripe

PROJECTS

- **Dsfs (darenliang/dsfs)**: A highly-experimental filesystem in userspace using FUSE with an exotic backend
 - Exotic backend: Files, folders, and transactions are stored using Discord attachments
 - Append-only log-structured filesystem: Supports automatic snapshots and rollback
 - Realtime synchronization: Syncing files and folders between remote clients in realtime
 - Performance optimizations: A variety of techniques are used such as buffering and checksums to ensure there are no unnecessary uploads/downloads and the differences between local and remote states are minimal
 - Cross-platform support: Supports major OSes such as Windows, macOS, and Linux
- **Nikel API (nikel-api/nikel)**: Free and open data API for the University of Toronto
- **MikuBot (darenliang/MikuBot)**: General purpose Discord bot serving more than 9,000 servers (discontinued)
- **Quteman (darenliang/quteman)**: A simple Postman alternative written in C++ and Qt
- **Resauce (darenliang/resauce)**: A work-in-progress file rename utility written in C++ and Qt

SKILLS

- **Languages**: Python, Go, C/C++, Rust, JavaScript/TypeScript, Java, Scala, SQL
- **Assessments**: CodeSignal: 600/600