Omar Elrefaei

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Professional Experience

Bank of Canada, Software Engineer Jan 2023 – Aug 2023

Contributed on a next-gen macroeconomic modeling suite in Julia.

- Optimized memory allocations for specialized operations by interfacing with Fortran code.
- Drafted engineering recommendations regarding adoption of auto-differentiation libraries.
- Asserted robustness of numerical routines through careful unit testing.
- Developed graphical plotting for new forecasting methods.
- Deployed legacy matlab codebase on a Linux HPC SLURM cluster.

Lumentum, Optical Testing Software Developer Sep 2021 – Mar 2022

Lead the development of an in-house data processing tool using C#, dotnet, and SQL.

- Processed over 200,000 hardware testing results into an analytics database.
- Achieved 80% reduction in ingress time by batching SQL transactions.
- Designed a WinForms UI for previewing and cleaning parsed data.
- Maintained data integrity when importing noncompliant files with fail-safe parsing.
- Enhanced design workflow by dispatching jobs to simulation toolkit using Python API.

Alolom, Junior DevOps Developer May 2020 – Aug 2020

- Deployed JupyterHub through Github CI/CD using Docker and Kubernetes.
- Developed tools for automated Python AST source-code transformations.

Open Source Contributions

Symbolic Quantum Computing project, (Paid contract): 2024 – 2025

- Develop benchmarks for automated performance tracking on Github Actions CI. (PR link)
- Ensure code quality by integrating type-system analysis in test suite. (PR link)

Volunteering - Event Coordinator

Working with local community since early 2024 to help organize regular events.

- Set up multi-microphone sound system for bi-weekly events.
- Assist in organizing summer retreat. I was involved everywhere such as planning, onboarding guests, liaising with campsite, and general day-to-day camp operations.

Education

University of Waterloo, BASc Nanotechnology Engineering 2019 – 2024

- Capstone project: EV battery temperature-regulation in subarctic climates - Carbon nanoparticles induced resistive-heating in a wax-based insulation layer.
- Academic class rep for 2019: communicated student feedback with teaching staff.