Derrick Ratnaharan

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Education

University of Toronto — Mississauga, ON
B.Sc. Applied Mathematics & Applied Statistics; Minor in Computer Science — *Sep. 2024 – Jun. 2028*

- Relevant coursework: Data Structures, Software Design, Object-Oriented Programming, Systems Programming, Probability & Statistics, Multivariable Calculus

Experience

Software Engineering Evaluator (Contract) — May 2026 – Sep. 2026
Mercor Intelligence & Handshake AI — *Remote*

- Evaluated **70+ software-engineering tasks** across Python, JavaScript, TypeScript, and backend codebases, reproducing failures and validating AI-generated patches against tests, edge cases, expected behavior, and task specifications
- Set up and debugged unfamiliar repositories using Git, Docker, Linux, package managers, logs, stack traces, and test suites to distinguish implementation bugs from environment, dependency, and configuration failures

Technical Lead — Oct. 2026 – Present
Google Developer Groups (GDG) on Campus — *Mississauga, ON*

- Develop technical content for hands-on AI/ML and software engineering workshops, preparing coding demos and project-based learning materials
- Collaborate with the executive team to plan technical sessions covering application development, debugging, and deployment

Software Team Lead — Apr. 2023 – Jun. 2024
FIRST Robotics – Markham Robotics — *Markham, ON*

- Led a **6-person software team** building a web platform for communication, visual strategy planning, and match performance tracking, reducing competition preparation time by **2+ hours per event**
- Developed Python scouting and analytics tools to process **50+ match records**, automating performance rankings and reducing manual data-processing time by **70%** to support alliance selection and match strategy

Selected Projects

Campify — *Flutter, React, Firebase, Node.js* — campify.ca | App Store

- Built and launched a production campus social application for web, iOS, and Android, growing adoption to **300+ students across multiple universities**
- Built an OCR-to-calendar pipeline that converts inconsistent timetable screenshots into structured schedules using image preprocessing, pattern matching, validation, parsing, and defensive error handling
- Developed graph-based friend recommendations using mutual connections, schedule overlap, social proximity, and interaction signals to surface more relevant connection suggestions
- Redesigned onboarding based on activation drop-off analysis, increasing profile completion by 17 percentage points (54% to 71%).

Kestrel — *C++20, Metal, LLM Inference, Safetensors* — github.com/D-Haran/Kestrel

- Built a native Llama-family inference runtime in C++20 that loads Safetensors weights and generates text without an external inference framework, with transformer execution, KV-cached autoregressive decoding, and CPU/Metal backends
- Validated generated outputs against Hugging Face reference inference and built reproducible prefill/decode benchmarks and profiling tools to isolate performance bottlenecks across inference operations and execution backends

RepoGraph — *Rust, Tree-sitter, Static Analysis, Graph Algorithms* — github.com/D-Haran/RepoGraph

- Built a Rust static-analysis engine using Tree-sitter to resolve cross-file dependencies, trace function calls, and identify tests affected by code changes
- Implemented reverse-call analysis and incremental indexing, processing an **18K-LOC Flask codebase in 0.36 seconds** on a cold run

Awards

MacHacks 2: Best Business Solution — Winner; Most Creative Use of Twilio — Winner
eHacks: Best Idea for Social Impact — Winner

Technical Skills

Languages: Python, TypeScript, C++, Rust, JavaScript, SQL, Java, Dart
Frameworks/Platforms: React, Next.js, Flutter, Node.js, Firebase, Android development, PostgreSQL, AWS, Metal
Tools: Git, Docker, Linux, CMake, Bash, Tree-sitter