

Balaji Leninrajan

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Education

University of Waterloo

Bachelor of Software Engineering

2023 – Present

Waterloo, ON, Canada

Coursework: Operating Systems, Compilers, Computer Networks, Distributed Systems, Databases, FPGA Design

Experience

Finta | Software Engineering Intern

May 2026 – Present

- **Reduced dashboard load time by over 98%**, from approximately 2 minutes to under 2 seconds, by replacing request-time aggregation with indexed PostgreSQL read models and rebuilding the interface in React
- Built a collaborative financial-modeling spreadsheet in **three weeks**, enabling finance teams to create live models from company accounting data using custom formulas, charts, templates, and version history
- Architected Google Sheets-style **real-time collaboration** using a revisioned operation log, optimistic concurrency, WebSocket synchronization, reconnect recovery, and conflict-safe version restoration

Shopify | Production Engineering Intern | Edge Infrastructure

September 2025 – December 2025

- Engineered a high-scale SSL stack with **Ruby on Rails** and **Terraform**; migrated 10+ services to the new stack
- Resolved a **critical production outage** caused by 429-error spikes; Implemented kill switches and refactored core retry logic with intelligent backoffs to maintain site reliability
- Recovered **\$250,000+ annually** with an optimized maintenance task to **prune 10M+ dead hostnames efficiently**
- Authored operational playbooks and built **automated incident response tools** to find and fix domain and ssl job processing errors across edge infrastructure

Shopify | Software Engineering Intern | Communications Platform Team

January 2025 – April 2025

- Shipped features for a high-throughput communications platform using **React**, **Ruby on Rails**, and **GraphQL**, orchestrating **4M+ monthly** emails and push notifications across multiple Shopify services and teams
- Designed an approval workflow system for emails using a **polymorphic Rails concern** that empowers users in marketing automation, resulting in an **80% reduction** in faulty campaigns due to human error

Waterloo Aerial Robotics Group | Autonomy Lead

January 2024 – Present

- Led a team of **15+ software developers** that contributed to back-to-back victories at AEAC 2024 and 2025
- Architected a robust **VSLAM pipeline for autonomous drone navigation**, integrating stereo-depth sensing and visual-inertial odometry (VIO) to ensure precise localization in GPS-denied environments
- Architected a fault-tolerant **ROS 2 behavior-tree mission controller** that sequences takeoff, timed waypoint laps, target reconnaissance, and landing while preserving progress through operator kill-switch interruptions
- Built and published a **Python** developer CLI using Git sparse checkout and dependency resolution to automatically configure, run, test, and diagnose individual robotics subsystems

Projects

varchar | Rust, WebAssembly, Preact, SQL

- Built a **SQL engine in Rust** that keeps a whole database in one string, with a hand-rolled lexer, parser, type checker, and a planner that makes a regex do an index scan's job
- **Fuzzed** the engine against a reference implementation, checking random CRUD sequences and predicates with proptest for identical results
- Ported the engine to **WebAssembly**, drawing each query's match spans onto the live database string so the planner's choices are visible as they run

salt | Rust, TypeScript, React, Cloudflare Workers, KV

- Built a CLI that reads local coding-agent session history, scanning **16 GB across 7,900 files in under 4 seconds** and leaving the scan bound by disk, not CPU
- Turned each local scan into a **shareable link**, serving reports and the static site from one Cloudflare Worker with KV records that expire themselves after 30 days
- Shipped **binaries for six platforms** from one npm package, cutting the install to 2 MB with no bundled runtime

harness racer | TypeScript, React, Node.js, Ink, WebSockets

- Integrated five coding agents behind one event contract, reconciling **JSON-RPC, ACP, and SDK streaming**
- Designed a benchmark that distrusts its own inputs, scoring providers under one `o200k_base` tokenizer, taking medians over repeats, and voiding runs where output arrived in one buffered burst instead of streaming
- Drove a **React dashboard and an Ink terminal UI** from one benchmark core, with no forked logic between them

Technical Skills

Languages: Python, C, C++, Go, Ruby, Rust, TypeScript, JavaScript, SQL

Technologies: Ruby on Rails, React, React Native, Next.js, Django, GraphQL, Tailwind, Apache Spark
Nginx, Terraform, Git, Linux, AWS, GCP, WebAssembly, PyTorch, Pandas, Docker, Kubernetes