# Prem Patel

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## EDUCATION

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| **University of Waterloo** | Waterloo, ON |
| *BCS (Computer Science) \| GPA: 3.8* | *Expected Dec. 2026* |
| **Wilfrid Laurier University** | Waterloo, ON |
| *BBA (Finance Concentration) \| President's Gold Scholarship* | *Expected Dec. 2026* |

## EXPERIENCE

**Software Engineer Intern** — Jan. 2025 – Apr. 2026
*Kinaxis* — *Ottawa, ON*

- Built end-to-end features in a **distributed C++ server** and **TypeScript (Node.js) + Java** agent/worker runtimes over persistent **WebSockets**, focusing on throughput, isolation, and reliability under load
- Shipped a **VS Code extension** to author, publish, and run/debug user-defined **embedded algorithms** with breakpoints, reducing developer iteration time by **40%**
- Launched **Bring-Your-Own-Model** optimization by building a **solver-agnostic** integration layer and **async** job pipeline to run user-defined models at scale
- Designed thread-safe CPU/memory **guardrails** in **C++** using **RAII semaphores** to prevent noisy-neighbor resource spikes in **multi-tenant** clusters; cut lock contention by **32%**
- Standardized **structured logging + metrics** integrated with **Datadog** dashboards to attribute CPU usage per customer, enabling fair and transparent **consumption-based pricing**
- Optimized response serialization with **FlatBuffers** to support **25%** larger payloads without performance regressions, improving throughput consistency under load
- Deployed agent services on **Kubernetes** via **Docker + Helm** (**Azure**/**GCP**) for repeatable rollouts and presented **15** cross-team demos in a fast-paced **Kanban** environment

**Software Engineer Intern** — Jan. 2024 – May 2024
*AutoTrader* — *Toronto, ON*

- Developed **Python** services processing OEM feeds for **30+ automotive brands**; reduced end-to-end processing time by **8x** by restructuring transformations and batching (Pandas + REST API integrations)
- Built **Azure Pipelines** automation to generate and deliver monthly reports for **150+ dealerships**, integrating **Redash** queries and enforcing consistent schemas/validation
- Automated PDF/table ingestion and validation with **Tabula**, reducing manual cleanup by **5 hrs** per refresh cycle and improving reporting accuracy by up to **85%**
- Partnered with dealerships to scope purchase-experience requirements and ship feed + reporting updates

**Data Engineer Intern** — Jan. 2023 – Apr. 2023
*D2L* — *Waterloo, ON*

- Led a CRM single-source-of-truth initiative by designing repeatable **data-quality** workflows (dedupe, normalize, categorize) across **15k+** records; improved lead routing and expanded target prospect universe by **38%**

## PROJECTS

🔗 **Ledger-First Transaction System** | *Node.js, TypeScript, Fastify, PostgreSQL, Prisma* — Jan. 2026

- Designed an immutable double-entry ledger (derived balances) with async trade execution; ensured auditability and replay-safe retries via transactional idempotency keys and **SYSTEM** counterparties enforcing financial invariants

🔗 **Instill (Mobile Journaling App)** — Jan. 2026

- Built an offline-first journaling app implementing outbox-based sync (delta sync, idempotent ops, conflict-safe merges) using **React Native/TypeScript** and a **Node/Postgres** backend (**Fastify/Prisma + Vitest**)

## TECHNICAL SKILLS

**Languages**: C++, TypeScript (JavaScript), Python, Java, Go, SQL, Bash, C, C#, Kotlin
**Dev Tools**: Git, VS/VS Code, Node.js, Docker, Kubernetes, Helm, Postgres, Jenkins, Datadog, GCP, Azure
**Frameworks/Libs**: React, Fastify, Prisma, Spring Boot (DI, Filters, MDC, WebSockets), .NET, Boost, FlatBuffers