

Nivid Patel

Available for 4/8 month co-op work terms

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EDUCATION

University of Waterloo

Waterloo, ON

Honours, Bachelors of Computer Science - AI + HCI Specialization, **GPA: 3.8**

Sept. 2022 – Apr 2027

- **Top 1%** Student Honour Roll - Awarded \$15,000 Faculty of Math Scholarship, \$2000 Scholarship of Distinction
- Relevant Coursework: Data Structures and Algorithms, Object-Oriented Programming, Database Systems, Operating Systems, Compilers, Computer Architecture, Machine Learning, Combinatorics, Linear Algebra

EXPERIENCE

Software Engineer Intern

Sept 2024 – Apr 2025

theScore Inc. — 2× Co-op Term Ratings: Excellent

Toronto, ON

- Initiated to build a **REST** API in **Elixir** and **GraphQL**, to allow patrons to register with a user's referral code, acquiring over **50k+** referred users, contributing to **\$80M+** in total cash handle and **\$2.5M+** in GGR.
- Proactively engineered a centralized Pylinter pipeline to replace Pylint CLI checks across all **67+** theScore-BET repos reducing validation latency across polyrepo microservices through parallelized **AST** parsing.
- Optimized **GitOps** deployment orchestrator in **Golang** with mutex-controlled canary sequencing for **ArgoCD** clusters, implementing progressive syncing patterns with automated rollback mechanisms and YAML error log.
- Engineered **distributed** event-driven artifact promotion pipeline using **Python** asyncio and **JFrog** REST APIs, automating **Docker** image lifecycle management, eliminating **120+** engineering toil hours.

Undergraduate Researcher - LLM Lossless Data Compression

Sept 2025 - Present

University of Waterloo — Research Term Rating: 99/100

Waterloo, ON

- Architected **RAG** arithmetic encoder leveraging **cross-attention** mechanisms and **FAISS** semantic retrieval to enhance probabilistic distribution modeling, achieving **2.1x** compression ratios through **Shannon entropy**.
- Optimized neural compressor using dynamic prefix masking with retrieved Wikipedia embeddings via **Qwen3-0.6B transformer**, improving weighted bit allocation and context-aware **logit** calibration by **34%** over baselines.
- Synthesized **25+** papers on **transformer**-based compression, variational autoencoders, and RAG, implementing hybrid **PyTorch** pipeline integrating **FAISS Vector DB** with **arithmetic encoding** for lossless compression.

Machine Learning Intern

Sept 2024 – Present

UW Stocks Club

Waterloo, ON

- Engineered portfolio optimization framework integrating Black-Litterman Bayesian priors with **PPO** reinforcement learning agents in Gymnasium, synthesizing short-interest **signals** and momentum factors for alpha generation.
- Architected high-frequency backtesting engine using **kdb+/q** for tick-level **time series** storage and **vectorized** replay, implementing walk-forward optimization with Sharpe/Sortino analytics, reducing strategy latency by **90%**.

Software Developer Intern

Jan 2024 – Apr 2024

Canadian Institute for Health Information — Co-op Term Rating: Excellent

Ottawa, ON

- Refactored components of internal website using **Tailwind CSS** and **React**, aggregating **1000+** data points.
- End-to-end tested live HTML to PDF API using **Python** and **Postman**, providing up-to-date PDF reports.
- Streamlined stakeholder CMS website using **Drupal** for templating, accelerating content editor development.

Microsoft Azure AI Research Intern


May 2023 – Aug 2023

University of Waterloo — Co-op Term Rating: Excellent

Waterloo, ON

- Led a team of 5 to prototype an AI Research Assistant using Azure ML & Cloud to aid in disease research.
- Ingested disease data into **ML Studio** for text classification training, employing **Read API** to get JSON output.
- Received a distinguished academic **award** for facilitating a 45-minute PPT to **30+** faculty staff and stakeholders.

PROJECTS

F1 Battle — Python, FastF1, TypeScript, Three.js, Next.js 

Sept 2025 – Present

Smart AirBNB — PostgreSQL, PostGIS, Flask, React, TypeScript 

May 2025 – Aug 2025

TECHNICAL SKILLS

Languages: Python, Java, C/C++, SQL, JavaScript, TypeScript, HTML/CSS

Frameworks: Node.js, Tailwind, React, Next.js, Flask, TensorFlow, PyTorch, MongoDB

Developer Tools: Git, Linux, Bash, Helm, AWS, GCP, Docker, Kubernetes, Postman