

# Arnav Nagzirkar

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## EDUCATION

### University of Toronto

Sep. 2022 – April 2027

*Honours Bachelor of Science in Computer Science, Statistics and Economics*

Relevant Courses: Data Structures and Algorithms, Software Design, Systems Programming, Computer Organization, Software Engineering, Introduction to Machine Learning, Probability and Statistics I & II, Regression Analysis, Design and Analysis of Experiments, Applied Econometrics I

## EXPERIENCE

### Artificial Intelligence & Machine Learning Intern

October 2025 – Present

*VJDS International Inc. (IBM SkillsBuild & Rüpen)*

*Remote*

- Built an **AI-powered MVP platform** combining **real-time signal extraction** with **LLM-based decision systems** to deliver personalized structured outputs.
- Implemented client-side **computer vision pipelines** using **MediaPipe FaceMesh & BlazePose**, enabling lightweight inference and preserving data privacy.
- Developed **structured prompt templates** and OpenAI function-calling logic to ensure deterministic generation and minimize hallucinations.
- Integrated **React, Supabase, and Vercel serverless APIs** to ship a production-ready prototype and document ML architecture for future scaling.

### Applied Machine Learning Intern

October 2025 – Present

*InnScience Labs Inc.*

*Remote*

- Developed **semantic search pipelines** using **Vespa.ai** and vector embeddings to retrieve and rank relevant research papers and patents, optimizing indexing and query processing for low-latency retrieval.
- Enhanced the **TechLink™** recommendation system by tuning similarity metrics, embedding models, and partner-matching logic to improve precision and scalability of AI-driven researcher matching.
- Integrated ML-powered search and recommendation components into a **Next.js** and **Tailwind CSS** frontend, enabling real-time retrieval workflows and interactive dashboards.

### Software Engineering Intern

June 2025 – August 2025

*Kavodax*

*Remote*

- Led a team of 3 interns to build a blockchain-based cross-border payment system, reducing remittance fees to **under 1%** and transfer times to **under 3 minutes**.
- Architected modular systems for user onboarding, multi-currency transfers, and wallet management using **Next.js, FastAPI, Tailwind CSS**, and the **Stellar** blockchain, and integrated external services
- Implemented secure authentication, KYC workflows, and data handling using OVH Cloud, PostgreSQL on CloudSQL, AWS S3 for file storage, enabling SaaS-style multi-user onboarding and UI support.

## PROJECTS

### StocksNow | Python, Flask, HuggingFace, XGBoost, yfinance, Plotly

December 2024 – Present

- Built a full-stack quantitative research platform with sentiment, prediction, and backtesting modules, combining **NLP, ML, and alpha factor modeling** into a unified research workflow.
- Engineered **15+ predictive factors** (momentum, volatility, cross-asset correlations) and trained **ensemble models** (XGBoost + LSTM), boosting next-day directional accuracy by **12%** over baseline.
- Designed a portfolio simulation engine supporting long-short, risk-parity, and mean-variance strategies with **transaction cost, slippage, and Kelly sizing** modeling, cutting backtest runtime from **3 min to 5 s**.
- Developed an institutional-grade backtesting and analytics suite computing **Sharpe, Sortino, alpha/beta, IC decay, and Fama-French attribution**, improving reporting depth and transparency.
- Containerized** the application, integrated **CI/CD pipelines** with GitHub Actions, and deployed scalable inference services to **AWS ECS**, reducing deployment time by **85%** and enabling **daily model retraining**.

## TECHNICAL SKILLS


**Languages:** Python, C/C++, Java, SQL (PostgreSQL), JavaScript, TypeScript, R, HTML, CSS

**Machine Learning & Quant Research:** XGBoost, LSTM, Transformers (HuggingFace), PyTorch, scikit-learn, Alpha Factor Modeling, Alpha Factor Research, Signal Decay Analysis, Feature Engineering, pandas, NumPy

**Frameworks & Libraries:** React, Next.js, Flask, FastAPI, Django, Node.js, React Native, TensorFlow, LangChain

**Cloud & DevOps:** AWS (S3, ECS), CloudSQL, OVH Cloud, Docker, GitHub Actions (CI/CD)

**Tools & Platforms:** Git, Jupyter, yfinance, Plotly, Tailwind CSS, Hugging Face Hub, Stata

**Certifications:** AWS Certified Cloud Practitioner , IBM Artificial Intelligence Fundamentals 