

Aaryan Gupta

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EDUCATION

University of Toronto

Honours BSc in Computer Science, Minor in Business + Co-op | **GPA: 3.91/4.0**

Mississauga, ON

Aug. 2023 – May 2028

- **Awards:** Dean's List Scholar (2023–2025)
- **Teaching Assistant:** CSC263 Data Structures & Analysis (Jan. 2026 – Present)

EXPERIENCE

Software Engineer, Research

Jan. 2026 – Present

Rotman School of Management, University of Toronto

Toronto, ON

- Building a corporate finance simulator used by 200+ MBA students to model investment decisions, financing strategies, and their real-time impact on financial statements.
- Architecting full-stack application with Next.js, TypeScript, and PostgreSQL; designing database schema to support multi-scenario financial modeling with sub-second query response times.
- Collaborating directly with finance faculty to translate academic models into interactive learning tools.

Software Engineer Intern

Jul. 2025 – Aug. 2025

Capgemini

- Shipped 3 enterprise features in SAPUI5 for internal platforms serving 300K+ employees globally.
- Integrated frontend components with OData services and REST APIs; reduced API response times by 20% through query optimization and lazy-loading implementation.
- Collaborated with cross-functional teams in Agile sprints; participated in code reviews and design discussions.

Machine Learning Intern

Jun. 2025 – Jul. 2025

SelectAI

- Built end-to-end computer vision pipeline processing 10K+ images daily for retail inventory detection; integrated YOLOv8 outputs with downstream classification models for client product.
- Reduced inference latency by 60% through multithreaded execution and tensor optimization; improved model confidence scores by 15% via data augmentation and hyperparameter tuning.
- Containerized ML pipelines with Docker for reproducible deployment across development and production environments.

PROJECTS

Concurrent EXT2 File System | C, POSIX Threads, Linux

Oct. 2025 – Dec. 2025

- Implemented a thread-safe EXT2 file system interface supporting mkdir, cp, rm, hard/symbolic links by directly manipulating inodes, bitmaps, and directory entries on raw disk images.
- Engineered fine-grained locking across inode tables and block bitmaps; passed all sequential and concurrency stress tests with zero race conditions or deadlocks.

KnowledgeNexus | React, TypeScript, Three.js, Node.js, Express, SQLite

Oct. 2025 – Nov. 2025

- Built an AI-powered learning platform with interactive 3D knowledge graphs; integrated Google Gemini to extract and link concepts from uploaded lecture notes automatically.
- Designed REST APIs for note processing and implemented performant graph rendering with custom lighting and orbit controls for smooth navigation of 500+ concept nodes.

Unix Shell | C, Linux, POSIX

Jan. 2025 – Apr. 2025

- Implemented custom shell supporting pipes, I/O redirection, background processes, and job control using fork/exec and signal handlers; achieved stable operation under 200+ concurrent process workloads.

TECHNICAL SKILLS

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

Backend & Databases: Node.js, Express, Django, Flask, PostgreSQL, MongoDB, MySQL, REST APIs, GraphQL

Frontend: React, Next.js, Three.js, Tailwind CSS, Chakra UI, Vite, Responsive Design

ML/AI: PyTorch, TensorFlow, OpenCV, YOLOv8, scikit-learn, NumPy, pandas

Systems: POSIX Threads, Socket Programming, Concurrency, Memory Management, File Systems

Tools: Git, Docker, Linux, Valgrind, GDB, Make, Jest, GitHub Actions, Jira, Agile/Scrum