

Bhavdeep Arora

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EDUCATION

Toronto Metropolitan University

Toronto, ON

Bachelor of Science (Honours) Computer Science · Software Engineering Concentration

May 2026

- Relevant Coursework: Data Structures & Algorithms, Software Engineering, Operating Systems, Data Science

TECHNICAL SKILLS

Languages: Python, Java, C/C++/C#, JavaScript, HTML/CSS, Go, Rust

Frameworks: React, Node.js, Tailwind, Django, Flask, ASP.NET

Developer Tools: Git, Docker, Google Cloud Platform, TravisCI

Data & Cloud: Hadoop, Apache Spark, MySQL, MongoDB, SQLite, AWS, Azure, Firebase

PROJECTS & RESEARCH

Thunderhead | *Go, Reverse Proxy, HTTP, Behavioral Analysis* | [Live](#) | [Github](#)

- Engineered a lightweight reverse proxy in Go that analyzes inbound HTTP traffic across five behavioral heuristics—including crawl velocity, robots.txt violations, request frequency, and header anomalies—to identify automated bot activity without third-party security services
- Developed a configurable risk-scoring engine that assigns request scores from 0–100 and applies graduated mitigations (allow, tarpit, or block), enabling adaptive defense against malicious traffic while minimizing impact on legitimate users

Funes | *Rust, Ollama, SQLite, Vector Embeddings, CLI* | [Github](#)

- Built a local-first semantic memory system in Rust that indexes files, notes, and shell history into vector embeddings, enabling natural-language retrieval across a developer's knowledge base without cloud infrastructure
- Architected a background indexing daemon with filesystem monitoring, chunking pipelines, and SQLite-backed vector storage; integrated local embedding and generation models to support contextual search, synthesized answers, and privacy-preserving knowledge management

Lacunae | *Python, PyTorch, U-Net, fastMRI, HDF5* | [Github](#)

- Trained a 7.7M-parameter U-Net on ~100 GB of fastMRI single-coil knee MRI data to reconstruct diagnostic-quality images from 8× undersampled k-space measurements
- Designed Cartesian undersampling pipelines with low-frequency center retention; achieved **SSIM: 0.7803** and **PSNR: 30.8 dB** on held-out validation scans, validating clinical viability of accelerated acquisition

Verso | *Next.js 15, TypeScript, Prisma, PostgreSQL, Clerk, Hardcover GraphQL* [Live](#) | [Github](#)

- Built a full-stack book discovery platform that delivers personalized recommendations through a swipe-based interface, integrating the Hardcover GraphQL API and persisting user preference data in PostgreSQL via Prisma
- Designed an end-to-end recommendation workflow with authentication, animated user interactions, and server-side synchronization, deploying production infrastructure on Vercel and extending functionality through a companion React Native application

LEADERSHIP & VOLUNTEER EXPERIENCE

Data for Good Toronto | *Data Analyst*

May 2026 – Present

- Collaborate with a cross-functional team of analysts, engineers, and stakeholders to evaluate datasets for non-profit and social impact organizations, supporting evidence-based decision making
- Develop data-cleaning, transformation, and exploratory analysis workflows in Python and pandas, contributing to end-to-end analytics pipelines for community-focused projects

SciXchange | *Technical Assistant*

September 2023 – April 2024

- Guided 50+ visitors through interactive science exhibits, translating technical STEM concepts into engaging and accessible explanations for diverse audiences
- Supported hands-on educational activities and event operations, fostering participant engagement and scientific curiosity through public outreach initiatives