Sohum Guha

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EDUCATION

McGill University   Montreal, QC
Honours Bachelor of Computer Science, Minor in Statistics   *Aug. 2023 – Apr. 2027*

EXPERIENCE

Software Engineer Intern   Summer 2024
RBC (via Tech Mahindra)   *Toronto, ON*
GenAI Web Application Development:

- Co-developed a GenAI web app generating Gherkin instructions for business/finance teams, **streamlining communication** with developers.
- Designed and deployed **REST APIs** with Litestar (Python) and SQL Server, supporting **high-volume queries** from internal users.
- Built a dynamic frontend with Jinja + HTMX, enabling **real-time updates** without page reloads.

DevOps Engineering:

- Led migration of **thousands of artifacts** from Nexus to JFrog Artifactory, improving reliability and maintainability of pipelines.
- Standardized migration playbooks, creating **best-practice documentation adopted across teams**.
- Integrated and automated workflows across Helios, Nexus, Jenkins, GitHub, Azure, and OpenShift.
- Assisted in transitioning **dozens of CI/CD pipelines** from JFrog to GitHub Actions, reducing build and deployment times.

Undergraduate Research Assistant   May 2025 – September 2025
Cook & Krishnaswamy Lab, McGill University   *Montreal, QC*
Automated Data Analysis Pipeline

- Designed and deployed a fully automated pipeline processing **terabytes of multimodal data** (behavioral logs, video, and neural signals), reducing analysis time by **90%**.
- Implemented **incremental extraction, error-tolerant recovery, and synchronization algorithms** to align heterogeneous data streams and ensure data integrity across facilities.
- Built a standardized reporting system generating **publication-ready visualizations** (performance metrics, sensitivity analyses, spatial heatmaps) with automated scheduling.
- Developed an **OpenCV-based GUI tool** for video preprocessing (cropping and alignment), improving efficiency and enabling cross-platform deployment.

McGill AI Lab   2024 – Present
McGill University   *Montreal, QC*
- Engaged in **student-led ML projects** and **discussions of cutting-edge AI research papers**.

PROJECTS

Fantasy Premier League Optimizer: *Full-Stack ML Web App: Predicting Most Optimal Fantasy Team*
- Developed an **end-to-end ML pipeline** on **200k+ scraped match logs**, with in-depth **Jupyter analysis** and feature engineering; trained and tuned **XGBoost models** using spike-aware methods to capture high-variance player performance.
- Designed a **full-stack architecture** (Flask, React, Tailwind, PostgreSQL) integrating live FPL/fixture scraping, persistent team saving, and automated season resets to support real-time optimization.

Transformer From Scratch: *Deep Learning*
- Implemented the **Attention is All You Need** architecture in PyTorch, including multi-head attention, positional encodings, and feed-forward layers for sequence-to-sequence tasks such as **English→French translation**.
- Benchmarked against LSTM/GRU baselines, demonstrating the **efficiency and scalability** of Transformers for NLP tasks.

CERTIFICATIONS

Machine Learning Specialization — *Coursera, Andrew Ng*

TECHNICAL SKILLS

Java, Python, JavaScript, C, SQL, HTML/CSS, Git, GitHub, Jinja, HTMX, Flask, React, Tailwind, Spring Boot, Nexus, JFrog Artifactory, Jenkins, PyTorch, TensorFlow, Keras, scikit-learn, NumPy, OpenCV