

# Hady Ibrahim

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## EDUCATION

### McMaster University

*Software and Biomedical Engineering*

*Sept. 2021 – May 2026*

- Awards: Provost's Honour Roll Medal (x4), The McMaster University Award of Excellence, iBiomed Showcase (x2).
- TA Positions Include: Introduction to Programming, Digital Systems and Interfacing, Genetic Engineering.

## EXPERIENCE

### Applied Machine Learning Engineer

May 2025 – Aug. 2025

*Shopify*

*Ottawa, ON*

- Delivered a brand-recognition model that raised feature F1 from 12% to 73% and improved the overall model score by 39%; gains were statistically validated by bootstrapping for 95% CI.
- Built a stratified synthetic-data pipeline with LLM annotators and arbitrators, distilled features from a GPT model into a Qwen2.5-VL-7B student model, published versioned synthetic train/test sets, and streamlined labeling with scripts and an interactive CLI.
- Deployed the model across real-time and streaming services and shipped online metrics with time-series dashboards.
- Modernized data products with historical and "latest" prediction tables in dbt, and introduced an LLM-based judge to generate diagnostics and seed GRPO training/evaluation datasets.

### Software Engineering Intern

May 2024 – Aug. 2024

*Apple*

*Cupertino, CA*

- Built a reusable UI exploration engine for macOS and integrated it into daily CI, exercising deep navigation paths to surface edge-case failures early while cutting scripted-test maintenance.
- Added support to interleave scripted workflows into crawls, mimicking real user flows to surface higher-value defects.
- Stood up a daily build pipeline to run large-scale crawls and capture artifacts in cloud storage for reliable triage.

### Software Engineering Intern

May 2023 – Aug. 2023

*Shopify*

*Ottawa, ON*

- Led a 3-engineer effort from design to company-wide rollout, implementing policy-as-code production-readiness checks in CI/CD gates to block risky launches and materially raise release reliability and accountability.
- Drove a 91% drop in overdue production-readiness tasks in the first month by launching an org-wide GitHub bot and workflows across hundreds of repos, with real-time owner feedback.
- Owned internal merge-queue and deployment tooling (CI/CD) and integrated an LLM assistant backed by internal knowledge to streamline developer workflows.

## PROJECTS

### Machine Learning Research at McMaster

January 2025 – Present

*Steerable CNNs for Rotation-Robust Detection of Magnetic Microrobots in Ultrasound Imaging*

*Hamilton, ON*

- Engineered a rotation-aware equivariant CNN (C8 Steerable, PyTorch/escnn) for microrobot detection in ultrasound, keeping features consistent across angles to improve robustness.
- Built a modular training pipeline on a 40k+-frame ultrasound dataset (8 microrobot types) with a two-stage loss (MSE warm-up → CIoU fine-tune) to stabilize localization under low SNR and occlusion.
- Implementing YOLO and Mask R-CNN as baselines to benchmark precision and runtime against the Steerable CNN.

### Island Mesh Generator | *Java, Dijkstra's, Bellman-Ford, Delaunay triangulation, Voronoi, Maven*



- Designed and shipped a modular Java toolset (four services) that interactively generates and visualizes island meshes with rich user customization, keeping features decoupled and easy to extend.
- Implemented irregular terrain generation with Voronoi diagrams, Lloyd relaxation, and Delaunay triangulation to produce realistic coastlines and region maps; exposed seed, scale, city density and more as tunable parameters.
- Built a pathfinding service with interchangeable algorithms (Dijkstra, Bellman-Ford) between cities.

## TECHNICAL SKILLS

**Languages:** Python, SQL, Java, Golang, Ruby, Swift, C/C++, JavaScript, HTML/CSS, R

**Frameworks:** dbt, Apache Airflow, Apache Flink, Ruby on Rails, React, React-Native, Node.js, GraphQL, Pytest, JUnit

**Developer Tools:** Git, Docker, Google Cloud Platform, VS Code, Xcode, PyCharm, IntelliJ, Linux, Vim, Raspberry Pi

**Libraries:** pandas, NumPy, PyTorch, TensorFlow, OpenCV, scikit-learn, HuggingFace, FastAPI, Flask, gRPC