

AMINE BOUBRIT

Machine Learning Researcher

🌐 amineboubrit.com | ✉ amineboubrit@protonmail.com | 🔗 amineboubrit | 📶 Lundii1

RESEARCH INTERESTS

Generative modeling, representation learning, and efficient machine learning, with interests in multimodal and foundation models.

EDUCATION

École de Technologie Supérieure (ÉTS)

Bachelor of Engineering in Software Engineering

Montréal, QC

Expected May 2027

- **Relevant Coursework:** Data Structures & Algorithms, Intelligent Systems, Mathematical Programming, Quantum Programming, Parallel Computing Architecture

CÉGEP Édouard-Montpetit

Diploma of Collegial Studies in Computer Science

Longueuil, QC

May 2023

PUBLICATIONS & MANUSCRIPTS

J. Vakil, **A. Boubrit**, A. Shaw, E. R. Verma, C. Escobedo, A. Pasricha, C. Kohlbrenner, A. Roncone. “Beyond the End-Effector: Learning Whole-Body Representations for Collision-Aware Manipulation.” In preparation for IEEE Robotics and Automation Letters (RA-L).

A. Boubrit[†], A. Shaw[†], L. Antieau, W. Xie, M. Feit, A. Roncone, N. Correll. “TouchIQ: Online Tactile Adaptation for Robotic Manipulation.” In preparation for Robotics: Science and Systems (RSS), 2027. ([†]Equal contribution)

RESEARCH EXPERIENCE

École de Technologie Supérieure (ÉTS), LiNCS Laboratory

Research Intern — Advisors: Pierre André Ménard & Sylvie Ratté

Montréal, QC

Sep. 2026 – Dec. 2026

- Developing explainable AI methods for multimodal clinical data spanning video, speech, text signals, supporting both classical ML and neural architectures.
- Designing interactive visualization modules linking model predictions, extracted features, and source data for interpretation by clinical researchers.
- Engineering cross-platform Python modules for integration into the LiNCS clinical-data analysis platform.

University of Colorado Boulder, Department of Computer Science

Research Assistant

Remote

Nov. 2025 – Present

- Co-authoring a manuscript for IEEE RA-L; built MuJoCo evaluation environments with varied near-body geometry and ran training and testing for ACT and PC-ACT policy variants.
- Conducted controlled model evaluations showing learned proximity representations reduced forbidden-contact exposure from 9.5% to 1.9% while improving task success from 38% to 54%.
- Developed a high-fidelity MuJoCo simulation of a light-based tactile/proximity sensor for TouchIQ, reproducing real-world sensing behavior for sim-to-real experimentation.
- Contributed to “Cutting the Cord: System Architecture for Low-Cost, GPU-Accelerated Bimanual Mobile Manipulation” (arXiv:2603.09051), receiving acknowledgment for technical contributions.

École de Technologie Supérieure (ÉTS), Multimedia Lab

Research Assistant and Mitacs Accelerate Research Intern — Advisor: Prof. Sheldon Andrews

Montréal, QC

Sep. 2025 – June 2026

- Developing a full-stack sports analytics platform for Boxing Canada and INSPQ enabling real-time biomechanical video analysis for Olympic coaching staff.
- Replaced ByteTrack with an XMem-based video object segmentation pipeline, substantially reducing occlusion-induced tracking failures in high-velocity athletic footage.
- Deployed and fine-tuned pose estimation and predictive models in a production environment.

- Reduced end-to-end processing latency 4× through backend pipeline and UI architecture optimization, enabling real-time feedback during training sessions.
- Conducted data-quality audits resolving dataset annotation errors; presented and validated the system to the Boxing Canada Director and national coaching staff.

Quminex

Machine Learning Research Intern

Remote

Feb. 2026 – Apr. 2026

- Adapted seismic diffusion models for synthetic geomagnetic field generation; designed a UNet with a localized self-attention bottleneck at the 8×8 resolution layer.
- Built an automated spatial data pipeline with *rasterio* to ingest and filter high-dimensional GeoTIFF rasters, producing a normalized corpus of 68,000 localized 64×64 tensor tiles.
- Improved diffusion model training stability by replacing running-statistics normalization with GroupNorm and applying exponential moving average (EMA) to model weights.
- Evaluated spatial fidelity via RAPS Log-MAE (0.080) and Variogram NMAE (0.158), confirming preserved autocorrelation structure.
- Drafted an architectural roadmap for extending the UNet into a resolution-agnostic conditional diffusion model.

SELECTED PROJECTS

GemmaEvolve | *Python, Ollama, Docker, gVisor*

Apr. 2026

- Engineered an asynchronous evolutionary code-generation pipeline with a filesystem-backed program database, checkpoint/resume, and staged evaluation modules.
- Integrated local LLM inference via Ollama and built hardened Docker/gVisor execution sandboxes to safely evaluate generated code against deterministic benchmarks.

GlobeX (OSINT Dashboard) | *React 19, TypeScript, Python, WebSockets*

Mar. 2026

- Built a real-time 3D intelligence dashboard ingesting live aircraft, maritime, and satellite telemetry through a Python WebSocket proxy, with LLM-based event classification.

AWARDS

Mitacs Accelerate Research Award | *Own the Podium (C\$15,000)*

2025

INDUSTRY EXPERIENCE

Employment and Social Development Canada (ESDC)

Montréal, QC

Data Developer Intern

Jan. 2025 – Apr. 2025

- Designed and optimized SQL and Python data pipelines for large-scale federal reporting systems.
- Built an automated Resource Decision-Making tool in Python, improving forecasting and resource allocation for the reporting group.

Clear-Com

Saint-Bruno, QC

Software Test Automation Engineering Intern

Mar. 2023 – Jul. 2023

- Architected the automated testing framework for the flagship product, serving as technical lead for automation across a 10-developer team.
- Developed 30+ automated test suites in Pytest and Selenium; debugged AngularJS UI components, resolving 25+ defects.