

Vadim HEMZELLEC-DAVIDSON

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Objective: 4–6 month internship in AI Research

Spring / Summer 2026

PROJECTS

DragonLLM — LLM Safety & Guardrails (Jan 2026)

- Developing a real-time toxicity and safety classifier to interrupt harmful generations during inference.
- Inspired by Qwen-Guardrails and circuit-breaker architectures for controllable LLM deployment.
- Focus on alignment, safety evaluation, and low-latency integration for production models.

Hi!ckathon (Hi!Paris) Finalist, 2025



- Ranked **2nd/68 (tied)** in model performance within a team of 6.
- Designed a gated architecture combining a probabilistic router (XGBoost) and expert regressors for zero-inflated targets.

Molecular Graph Captioning — Kaggle Competition, 2025



- Retrieval-based graph machine learning approach to generate natural language captions from molecular graphs.
- Leveraged graph embeddings for molecule–text alignment in a chemistry-informed setting.

ALTEGRAD (MVA) Labs, 2025



- Fine-tuned Qwen LLMs with PEFT (LoRA) and implemented preference optimization (GRPO, DRPO).
- Implemented graph ML methods (WL kernels, spectral clustering) and knowledge distillation pipelines.

Research Paper Studies & Re-implementations



- Re-implemented **RLOO** with modified baseline and comparison with PPO / GRPO.
- Studied and reproduced core components of **CANDI**: hybrid continuous/discrete diffusion models on the Text8 dataset.

WORK EXPERIENCE

Blockchain AkademIA, Metz - Internship

Jun 2025 - Aug 2025

Contributed to the regional democratization of blockchain and AI by supporting the integration of a new solution within the company and leveraging N8N for automation workflows.

Aerow, Paris - Internship

Jun 2024 - Jul 2024

Conducted an inventory of potential Research Tax Credit (CIR) eligible topics across all areas of expertise at the company.

EDUCATION

Ecole Polytechnique

2025 - Present

Master of Science in Data Science

Relevant coursework: Advanced learning for text and graph data (ALTEGRAD - MVA), Deep Learning, Machine Learning, Optimization, Reinforcement Learning, Representation Learning (MVA), AI for sound.

Telecom SudParis

2023 - Present

Engineering degree in Applied Mathematics

Relevant coursework: Machine Learning, Continuous Optimization for ML, Stochastic Processes, Bayesian Inference (HMM, Particle Filtering), Applied Statistics.

Lycee Fabert

2021 - 2023

Intensive Preparatory Classes (MPSI–MP*), competitive entrance preparation for top engineering schools.

Somerset Virtual Academy

2021

Academica Dual Diploma.

SKILLS

Languages Python, C, Java, SQL, Bash

ML / DL PyTorch, Transformers, vLLM, Scikit-learn, PEFT, LoRA

Topics LLM Alignment, RLHF, Graph ML, Diffusion Models, Safety

Languages French (native), English (C1), Spanish (B2)