

# 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)

- Real-time toxicity and safety classifier to interrupt harmful generations during inference.
- Circuit-breaker inspired guardrails for controllable and low-latency LLM deployment.

### 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



- Ranked **4th / 40** in a Kaggle competition on molecule-to-text generation.
- 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, DPO).
- Implemented graph ML methods (WL kernels, spectral clustering) and knowledge distillation pipelines.

### Research Paper Studies & Re-implementations



- Re-implemented **RLOO** with modified baseline for improved variance reduction in RLHF.
- Studied and reproduced core components of **CANDI**: hybrid continuous/discrete diffusion models.

## 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)