



# Maxence Debes

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MSc data science student with a strong background in mathematics and computer science. Specialized in advanced machine learning and the implementation of state-of-the-art AI algorithms.  
Looking for a 6-month end-of-studies internship in AI/machine learning for spring-summer 2026.

## Projects

### Hi! Paris Hackathon 2025 (2nd Place)

- Ranked 2nd out of 80+ teams in the 2025 edition of the Hi!Paris data science hackathon. Task: Predicting student PISA scores from complex socio-economic backgrounds.
- Engineered a Gated Model (router composed of two XGBoost regressors), achieving an  $R^2$  score of 0.79 on the final test set.

### Molecular Graph Captioning (Active Kaggle Competition)

- Development of a retrieval-based architecture using contrastive learning to align molecular graph embeddings with natural language descriptions in a joint latent space.
- Implementation of a dedicated graph neural network encoder using PyTorch Geometric, optimized for semantic alignment through BERTScore and BLEU-4 metrics.

### DragonLLM — LLM Toxicity & Guardrails (Upcoming, Jan 2026)

- Objective: Train a classifier designed to interrupt generation when the Language Model begins producing toxic or harmful content.
- Implementing Qwen3-Guardrails and circuit-breaker inspired architectures for real-time safety enforcement in a specialized AI model for the finance sector.

### Data Privacy & Anonymization — Project Cassiopee

- Investigated privacy and re-identification risks in anonymized healthcare datasets through OSINT techniques, contributing to ethical and responsible use of medical data for AI research.

### Automated Parking Optimization

- Engineered a hybrid algorithm combining A\* search (for pathfinding) and Simulated Annealing (for global optimization) to minimize retrieval costs.

## Work Experience

### IT Intern — Batigere Maison Familiale

Jul 2025 — Aug 2025

- Optimized digital infrastructure by migrating the company to SharePoint in order to enhance collaboration and document management, with adoption by 100% of employees.
- Designed and implemented a GDPR compliance policy, reinforcing data security and ensuring regulatory compliance.

### Java Programmer Intern — Atos

Jul 2024 — Aug 2024

- Designed and implemented a telework tracking application using the JHipster application generator to facilitate accessibility to workstations.

## Education

### École Polytechnique — Polytechnic Institute of Paris

2025 — present

MSc Data Science

**Relevant coursework:** *Advanced Learning for Text and Graph Data (ALTEGRAD — Joint MVA Course), Deep Learning, Machine Learning, Reinforcement Learning, Representation Learning (Joint MVA Course), Optimization for Data Science, Generative Models.*

### Télécom SudParis — Polytechnic Institute of Paris

2023 — present

Master's Degree in Mathematics and Computer Science

**Relevant coursework:** *Real Analysis and Integration, Statistics and Data Analysis, Optimization, Scientific Computing, Machine Learning and Data Mining, Applied Statistics, Stochastic Processes, Continuous Optimization for Learning.*

## Skills & Interests

**Technical Skills:** Python, PyTorch, Transformers, Scikit-learn, Pandas, SQL, Java, Git, Linux,  $\LaTeX$

**Languages:** French (Native), English (C1 — TOEIC 965/990), German (A2)

**Engagement & Interests:** Former President of student association; Handball (Competitive) & Music