Victor GERTNER

BioAI PhD Student

French Native - English Fluent

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EDUCATION

Institut Polytechnique de Paris **Palaiseau, France**

Master 2 Data Science directed by Ecole Polytechnique *September 2023 - March 2024*

- Classes: Audio and music information retrieval, Natural Language Processing, Advanced AI for text and graphs (Altegrad), Deep Learning, Reinforcement Learning, Causal inference, Structured data learning and prediction, Law and ethics of artificial intelligence.

Télécom Sud Paris - Institut Polytechnique de Paris **Evry, France**

Applied Mathematics Engineering *September 2021 - June 2024*

- Ranked in top 2% of class.
- Applied mathematics: Probability, Statistics, Modeling, Bayesian Estimation, Machine Learning, Statistical Learning, Monte Carlo Methods, Optimization, Surveys, Markov Chains, Kalman Filter.
- Computer Science: Operating systems, Java, Database.

EXPERIENCE

MINES Paris - CBIO **Paris, France**

PhD Student in Geometric Deep Learning *October 2025 - Present*

∗ Pursuing a PhD under the supervision of Vincent Mallet and Frédéric Cazals.
∗ Research focused on: *Multimodal Embeddings of Protein Structures Geared Towards the Prediction of Interactions.*
∗ Combining geometric deep learning, structural bioinformatics, and multimodal data integration to improve understanding and prediction of protein interactions.

Inria Marseille - COMPO Team **Marseille, France**

R&D Engineer: Machine Learning *May 2025 - September 2025*

∗ Maintaining software packages and conducting research on learning differential equations (Neural-ODE) using machine learning methods applied to pharmacokinetics.
∗ Developing models to automatically discover dynamic systems from limited experimental data, comparing them to traditional pharmacokinetic modeling approaches, with the aim of contributing to scientific publications.

Iktos **Paris, France**

AI Research Intern *April 2024 - September 2024*

∗ Developed a 3D Molecule Generation Model targeting proteins of interest for drug development. Autoregressive model based on building blocks generation.
∗ Applied advanced AI techniques, including Equivariant Graph Neural Networks, Diffusion Models, Distance Matrix inversion to predict molecular conformations and optimize ligand-protein interactions.

ENS Lyon **Lyon, France**

Research Intern *June 2022 - July 2022*

∗ Conducted research in the Probability Laboratory.
∗ Developed mathematical and computer models for cancer cell population evolution under treatment.

PROJECTS

ESM C Interpretability using Sparse AutoEncoders **2025, ongoing**

∗ Developed tools for interpreting ESM Cambrian (Protein Language Model) using Sparse Autoencoders (SAE) to extract biologically meaningful features from activations.
∗ Implemented SAE to process activations from different ESMC activations and trained autoencoders with L1 sparsity and top-k activation constraints. The implementation follows the guidelines from Anthropic (Anthropic, 2023).

Molecule Retrieval with Natural Language Queries **2024**

∗ Developed a system to retrieve molecules from a list using only text queries.
∗ Implemented co-training of text and molecule encoders using contrastive learning.