Nassim ARIFETTE

M2 Student in Mathématiques, Vision, Apprentissage | École Normale Supérieure Paris-Saclay
27 allée de la croix aux bergers, 91090 Lisses, France
+33 6 84 74 90 60| nassim.ari@gmail.com | github.com/BPMazino | linkedin.com/in/nassim-arifette

Education

•Master 2 (M2) in Mathematics, Vision, Learning *2024 – Present*
École Normale Supérieure Paris-Saclay Gif-sur-Yvette
– Convex Optimization, Deep learning for medical imaging, 3D Modelisation and Point Clouds, Geometric Deep Learning, Computer Vision, Generative Models

•Master 1 (M1) in Artificial Intelligence *2023 – 2024*
Université Paris-Saclay Orsay
– Deep Learning, NLP, Optimization, Statistics, Information Theory, Neural Network Verification.

•LDD Informatique-Mathématiques (Research Track) *2021 – 2023*
Université Paris-Saclay Orsay
– Statistical Learning, Advanced Algorithmics, Database Systems

•Summer School in Artificial Intelligence *June 2022*
Centrale Supélec

Experience & Research Projects

•Internship: 3D Medical Image-to-Image Translation *Apr 2025 – Today*
BioMaps, CEA & Université Paris-Saclay (Supervised by Dima Rodriguez) Saclay
– Tasked with developing a 3D CycleGAN for translating 3D CT scans to MRI scans.
– Responsible for implementing a subsequent vessel segmentation model on the translated images.

•Research Project: Set Analysis of ReLU Neural Networks *Jan 2024 – Apr 2024*
École Polytechnique, LIX (Supervised by Éric Goubault, Sylvie Putot) Palaiseau
– Analyzed and benchmarked set-based analysis methods (SAS 2021) on ReLU networks using tropical polyhedra representations.
– Developed and implemented novel over-approximation techniques for tropical rational functions using affine and sub-differential methods.

•Internship: Constrained Neural Networks for Phylogenetics *Jun 2023 – Aug 2023*
Collège de France, CIRB (Supervised by Laurant Jacob) Paris
– Enhanced a neural network for predicting evolutionary distances by integrating geometric and tree-based constraints.
– Implemented and compared iterative projection algorithms (POCS, Dykstra's) to enforce model constraints and improve accuracy.

•Research Project: Vocal Force Modeling *Mar 2023 – May 2023*
Université Paris-Saclay, LISN (Supervised by Marc Evrard) Orsay
– Engineered a vocal strength restoration model by augmenting a speech corpus with controlled acoustic degradations.
– Conducted a comprehensive review of data augmentation techniques for speech corpora.

•Research Project: Formal Proofs in Coq *Oct 2022 – Jan 2023*
ENS Paris-Saclay, LMF (Supervised by C. Keller) Gif-sur-Yvette
– Developed formal commutation proofs for binary integer representations using the Coq proof assistant.
– Integrated new proofs into the Trakt database, a Coq-based proof solver.

Technical Skills

Programming: Python, OCaml, SQL, C, C++, Rust Coq, JavaScript
AI/ML Frameworks: PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib
Mathematical Fields: Deep Learning Theory, Computer Vision, NLP, Optimization, Statistics
Developer Tools: Git, GitHub, LaTeX, Linux/Unix, Jupyter Notebooks
Languages: French (Native), English (Professional Proficiency)

Personal Projects

•AI Paper Implementations
A curated repository of seminal AI/ML papers implemented from scratch.

– Strengthened understanding of core architectures by building models like PointNet, YOLOv1.
– Focused on code clarity, efficiency, and faithfulness to the original papers.