



Marina Barannikov

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Education

Dauphine-PSL University/Bachelor Degree in Applied Mathematics with Computer Science minor (MIDO)

2023 - Present (Expected June 2026)

Classes :

- Analysis - Linear Algebra - Statistics - Numerical Optimization - Measure Theory, ...
- Python - C- Haskell - Graph Algorithms, ...

Extra-curricular responsibilities :

- Vice President of [Dau'IA](#), university AI student club
- Head of Research of [Unaite](#) : the federation of France AI student associations from 8 top institutes : Organizing the [Unaite Paper club](#) - research seminars for students with scientists from Meta, Hugging Face, ..

Lycée Louis-le-Grand/Mathematics - Computer Science Baccalaureate

2020 - 2023 (High School)

Machine Learning Research Experience

Machine Learning and Robotics at [Hugging Face](#) :

May - August 2024 **Intern** & 2025 **Contributor**

[LeRobot](#) library is an open-source project for making AI model training for robotic action generation accessible to everyone.

During internship : 1. implementation of **task modality** inside transformer-based architecture 2. experiments on **cross-embodiments** 3. optimization of the training pipeline

After : 1. creation of multi-task Mujoco **simulation environments** for evaluation of visual priors in new models 2. contribution to the new **SmolVLA** on community datasets used for training

Research on Deep Reinforcement Learning for Multimodal Models at [AIRI](#) :

July - November 2025 **Research Intern**, Spatial AI team led by [A. Konushin](#)

Research on a model for reverse engineering 3D **Computer-Aided-Design (CAD)** parts from multimodal input, into Python symbolic program codes

Optimized RL training : created a safe and efficient reward computation used for training and evaluation, improved geometric reward signal via normals based 3D point neighbor retrieval, experimented on different loss implementations (GRPO variants).

- Research on geometry-based metrics used in point cloud and BREP encoding.
- Implemented Asynchronous RL in three ways ([1](#), [2](#), [3](#)):
 - custom Torch multiprocessing
 - vLLM generator worker, based on [Async RLHF Paper](#)
 - TRL library patched for new point cloud modality, for loss, and for architecture plugin.

Coding Projects

before 2024

Python and machine learning github.com/marinabar

- Recreating training pipelines and optimizations : Distributed training, quantization, PEFT & Transfer Learning
- Building Deep Learning applications : Practical usage of LLMs and image diffusions for on demand projects of acquaintances

Frameworks: PyTorch, HuggingFace, FastAPI, SkLearn, SLURM, Git, Pandas

Skills: Deep learning model architecture, Experiment setting, Mathematical Analysis & Optimisation of ML algorithms

Independent learning path : Completed self-directed projects alongside my studies, starting from 2019. Ranging from data science to LLMs. [GAN \(2019\)](#) - [BPE Algorithm from scratch \(2024\)](#)

Publications

CADReasoner: Iterative Program Editing for CAD Reverse Engineering

<https://arxiv.org/abs/2603.29847>

Soslan Kabisov, Vsevolod Kirichuk, Andrey Volkov, Gennadii Savrasov, **Marina Barannikov**, Anton Konushin, Andrey Kuznetsov, and Dmitrii Zhemchuzhnikov 2025, AIRI

Findings of the 2026 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)

CADEvolve: Creating Realistic CAD via Program Evolution

<https://arxiv.org/abs/2602.16317>

Maksim Elistratov, **Marina Barannikov**, Gregory Ivanov, Valentin Khrulkov, Anton Konushin, Andrey Kuznetsov, and Dmitrii Zhemchuzhnikov. 2025, AIRI

Manuscript under review

Certificates, Achievements

- **1st place at Human AI Interaction Hackathon** June 2025

at [AGI House](#), San Francisco. In San Francisco after being invited to attend Y Combinator [AI Startup School](#)

- **TOEFL** 111 / 120 2025

- **Harvard CS50** 2019 & CS50 AI 2021 ▪ **Stanford CS324** 2023

cs50.harvard.edu/certificates/47227d4d-3809-4d5c-b641-889259a51bdd - cs50.harvard.edu/certificates/f9a99fc5-8a32-48dd-8227-f217118554d8

- **Deeplearning.AI** Natural Language Processing in TensorFlow 2022

<https://coursera.org/verify/7ZR9H8KNYHYP>

Languages & Teaching

English C2, French C2, Russian C2, Chinese B1

Teaching Mathematics

2023 - 2024

Mentoring high school students in mathematics