Sofya Dymchenko

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https://svdcvt.github.io

Experience

Mar 2022 – current
Doctoral Researcher. *DataMove, INRIA and University of Grenoble-Alpes (UGA)* Grenoble, France
My research is at the intersection of AI4Science and High-Performance Computing, in particular, methods for efficient training of PDE surrogates. I work on the Melissa project.

Jun 2021 – Dec 2021
Research Intern. *Computational Intelligence Lab, Skoltech* Moscow, Russia
Development of algorithms for an optimal transport problem applied to the mesh generation task.

Feb 2020 – Aug 2020
Research Intern. *Media Algorithms Laboratory, Huawei R&D centre* Moscow, Russia
Application of generative NNs to a personalised noise reduction problem.

Sep 2019 – Feb 2024
Seminar Tutor, Teaching Assistant.
Various courses on machine learning and Python programming for master and bachelor level with very different background.

Education

Mar 2022 – current
PhD in Computer Science. Grenoble, France
DataMove, Laboratoire d'Informatique de Grenoble, INRIA and UGA
Thesis: High-Performance Online Deep Neural Network Training from Synthetic Data.
Supervised by Bruno Raffin. The defence is planned in February 2026.

Sep 2019 – Jun 2021
MSc in Mathematics and Computer Science. Moscow, Russia
Statistical Learning Theory programme, Skolkovo Institute of Science and Technology and HSE
Thesis: Efficient Sinkhorn Algorithm Utilising Toeplitz Matrices and Mesh Application.
Supervised by Ivan Oseledets, GPA: 4.89/5

Sep 2015 – Jun 2019
BSc in Mathematics. *National Research University Higher School of Economics (HSE)* Moscow, Russia
Thesis: Regional Languages Recognition Using Multimodal Deep Learning
Supervised by Ekaterina Artemova, GPA: 7.87/10

Publications

S. Dymchenko, A. Purandare, and B. Raffin. MelissaDL x Breed: Towards Data-Efficient On-line Supervised Training of Multi-parametric Surrogates with Active Learning. In *AI4S 2024 - 5th Workshop on artificial intelligence and machine learning for scientific applications*, pages 1–9, Atlanta (Georgia), United States, Nov. 2024. IEEE [link].

S. Dymchenko and B. Raffin. Loss-driven sampling within hard-to-learn areas for simulation-based neural network training. In *MLPS 2023 - Machine Learning and the Physical Sciences Workshop at NeurIPS 2023 - 37th conference on Neural Information Processing Systems*, pages 1–5, New Orleans, United States, Dec. 2023 [link].

Other

Technical skills: Python (Pytorch, Jax, MPI/Ray, Pandas&co), Git, Bash, Nix, Slurm, C/C++.
Languages: English (fluent), Russian (native), French (intermediate).
Responsibilities:

- Advising Master-level interns
- Reviewed papers for Workshop on Advancing Neural Network Training (NeurIPS23, ICML24) [link].
- Helped to organise the Grenoble Artificial Intelligence for Physical Sciences workshop 2024 [link].
- Participated as a member of the doctoral school council and the laboratory synergy (organised events).

Hobbies: rock climbing, table tennis, coffee, photography, various arts&crafts, pottery, running, swimming, cycling, animal care (volunteer in a shelter).