Sofya Dymchenko

Grenoble, France
email: sofya.dymchenko@inria.fr
date of birth: 07.03.1998

Research Interests

High performance computing, deep learning, large-scale programming, data assimilation/simulation. Prev.: audio and image processing, generative models, theoretical ML/DL.

Education

Mar 2022 – current
PhD in Computer Science. Grenoble, France
DataMove, LIG, University of Grenoble-Alpes
SA: Bruno Raffin

Sep 2019 – Jun 2021
MSc in Mathematics and Computer Science. Moscow, Russia
Statistical Learning Theory program, Skolkovo Institute of Science and Technology jointly with HSE
Master Thesis: Efficient Sinkhorn Algorithm Utilizing Toeplitz Matrices and Mesh Application.
SA: Ivan Oseledets, GPA: 4.89/5

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

Feb 2020; May 2021
Math of Machine Learning Winter School;
Conference on Modern Probability Theory and its Applications in ML. Sochi, Russia
Organized by Sirius University and HSE University (HDI Lab)
Computation optimal transport, MCMC, Statistical inference, Stochastic methods, Mathematics of ML and DL.

Jan 2020
Winter Mathematics and Theoretic Informatics School. St.Petersburg, Russia
Organized by Chebyshev Laboratory, St.Petersburg University (SPbU)

Aug 2018
Machine Learning School on Multimodal Data Analysis. St.Petersburg, Russia
Organized by Speech Technology Center (STC) and ITMO University
I took the 5th place in an in-class emotion recognition competition based on audio-visual information.

Experience

Mar 2022 – current
PhD student, Researcher. *DataMove, INRIA research center* Grenoble, France
The research connects traditional HPC and deep learning. I am investigating and developing novel strategies for on-line deep learning at large scale when training is performed from synthetic data provided by multiple solver runs to sample the parameter space.

Jun 2021 – Dec 2021
Research Intern. *Computational Intelligence Lab, Skoltech* Moscow, Russia
Development of efficient algorithms utilizing algebra methods. I implemented in Python a solver algorithm of optimal transport problem with application to mesh generation task. The renowned algorithm was reconsidered for special case of distributions with shift-invariant locations, thus the time and memory complexities were reduced from quadratic to log-linear and linear.

Feb 2020 – Aug 2020
Research Intern. *Media Algorithms Laboratory, Huawei* Moscow, Russia
I independently researched and implemented in Python novel methods for audio enhancement problem in audio, especially those that use generative neural architectures and attention mechanisms. In addition, I helped my team with experiments to tackle personalized noise reduction problem, subsequently, contributed to development of new company's product.

Sep 2019 – Dec 2021
Seminar Tutor, Data Culture Courses. *Faculty of Mathematics, HSE*
Machine Learning course, Python Programming course

Projects

Dec 2019
Banach Wasserstein GAN: PyTorch Reprise. *[github.com/new-okaerinasai/bwgan_pytorch]*
In collaboration with my friend I re-implemented a deep adversarial neural network for image generation and conducted plenty of experiments using GPU. This appears to be the only open-source PyTorch implementation and gives comparable results to state-of-the-art algorithms.

Skills

Python (with data science stack, pytorch, tensorflow), LaTeX, git, bash, C/C++.

Languages English (Advanced, C1, IELTS 7.5), Russian (native speaker), French (beginner).