DANIIL DMITRIEV

daniildmitriev.github.io dmitrievdaniil97@gmail.com

EDUCATION

PhD student, ETH AI Center — **ETH Zurich**
advised by Prof. Afonso Bandeira and Prof. Fanny Yang — 2021 to 2025 (expected)

Master's of Data Science — **EPFL**
GPA: 5.57 out of 6.0 — 2018 to 2021

Bachelor's of Applied Mathematics and Computer Science — **MIPT**
GPA: 3.77 out of 4.0 — 2014 to 2018

WORK & RESEARCH EXPERIENCE

- **UC Berkeley** Simons Institute for the Theory of Computing *Berkeley, Oct* 2024 – Dec 2024
  Visiting graduate student in the program "Modern paradigms in generalization"

- **Bloomberg L.P.** Research AI Intern in News Intelligence team *London,* Sep 2020 – Jan 2021
  Applied diversification methods to improve the output of the recommendation system. Created pipeline for the experiments and compared the common diversification approaches (MMR, DPP) across multiple metrics.

- **EPFL** Research Scholar Student in Machine Learning and Optimization lab *Lausanne,* Sep 2018 – Aug 2020
  Worked on neural networks compression (model pruning, model quantization, gradient compression). Was involved in developing models in PyTorch, implementing and analysing pruning methods both during and before training.

- **Amazon** Software Engineering Intern in Computer Vision team *Berlin,* Jul 2018 – Sep 2018
  Implemented image captioning in Python, MXNet. Used reinforcement learning to optimize non-differentiable objectives for evaluating quality of the caption. Showed advantage compared to differentiable loss-functions.

- **Google** Software Engineering Intern in Key Visualizer team *New York City,* Jul 2017 – Oct 2017
  Used clustering and time series analysis (DBSCAN, Granger Causality) in Python and Java to find dependencies in complex multivariate temporal data.

PUBLICATIONS

- **DD*,** R. Buhai*, S. Tiegel, A. Wolters, G. Novikov, A. Sanyal, D. Steurer, F. Yang, "*Robust mixture learning when outliers overwhelm small groups",* NeurIPS, 2024

- **DD,** K. Szabó, A. Sanyal, "*On the growth of mistakes in differentially private online learning: a lower bound perspective",* COLT, 2024

- D. Schröder*, **DD*,** H. Cui*, B. Loureiro, "*Asymptotics of learning with deep structured (random) features*", ICML, 2024

- G. Arpino, **DD**, N. Grometto, *"Greedy heuristics and linear relaxations for the random hitting set problem",* APPROX, 2024 (*alphabetical order*)

- D. Schröder, H. Cui, **DD**, B. Loureiro, "*Deterministic equivalent and error universality of deep random features learning*", ICML, 2023

- **DD**, M. Zhukovskii, "*On monotonicity of Ramanujan function for binomial random variables*", Statistics & Probability Letters, 2021 (*alphabetical order*)

- T. Lin, S. U. Stich, L. Barba, **DD**, M. Jaggi, "*Dynamic model pruning with feedback*", ICLR, 2020

- **DD**, M. Zhukovskii, "*On a connection of two theoretical graph problems with conjectures of Ramanujan and Samuels*", Russian Mathematical Surveys, 2018 (*alphabetical order*)

TALKS

- *Arizona State University, reading group, 2024*
- *University of Pennsylvania, reading group, 2024*
- *ETH Zurich, DACO seminar, 2024*
- *ICTP, Trieste, Youth in High Dimensions, 2024*
- *University of Copenhagen, DeLTA seminar, 2024*
- *ETH Zurich, Graduate seminar in probability, 2023*
- Les Diablerets*, Workshop on spin glasses, 2022*

TEACHING

- *ETH Zurich (TA),* Mathematics of Data Science (Fall 2021), Mathematics of Machine Learning (Spring 2022)
- *EPFL (TA)*, Artificial Neural Networks (Spring 2020, Spring 2021)
- Supervising MSc theses at ETH Zurich: Carolin Heinzler (Fall 2023), Krish Agrawal, Ulysse Faure (Spring 2024)
- Teaching at Berkeley Math Circle (Fall 2024)

SERVICE

- Reviewer at NeurIPS 2024 (Top reviewer), ICLR 2025
- Organizer of Theory breakfast at ETH Zurich (Spring 2024)

STUDENT PROJECTS

- *Empirical Study of Gradient-Based Optimization Methods in High-Dimensional Regime,* Master Project, 2021, supervised by *Dr. Federica Gerace* and *Prof. Lenka Zdeborová*
  Investigated gradient descent and variants of SGD for the phase retrieval (regression) and symmetric door (classification) prototypical problems. Following the teacher-student framework looked into simple and overparametrized settings and showed the effect of momentum.
- *Topological Perspective of Brain Development*, 2020, supervised by *Dr. Lida Kanari* and *Prof. Kathryn Hess Bellwald*
  Applied tools from the Topological Data Analysis, such as Persistence Diagrams, to compare multiple in silico and in vivo datasets of the mice astrocyte cells. Proposed a way to combine spacial and structural properties of the cells.