

ANDRII SEMENOV

1005, Lausanne, Switzerland

✉ [Email](#) [in](#) [Profile](#) [G](#) [GitHub](#) [Website](#) [G](#) [Scholar](#)

EDUCATION

École polytechnique fédérale de Lausanne

MSc in Data Science

Sep 2024 -

- [School of Computer and Communication Sciences](#)
- [Machine Learning and Optimization Laboratory](#)

Moscow Institute of Physics and Technology

BSc in Applied Mathematics and Physics

Sep 2020 - Aug 2024

- [Landau Phystech School of Physics and Research](#)
- [Chair of Problems of Physics and Astrophysics](#)
- Affiliated with [Yandex chair of Data Analysis](#)
- Advisor: [Aleksandr Beznosikov](#)
- Thesis: "[Contrastive Learning for Enhancement of Model Interpretability in Computer Vision](#)"

WORK EXPERIENCE

Research Student | [Machine Learning and Optimization Laboratory, EPFL](#)

Aug 2024 -

- Head: Professor [Martin Jaggi](#)

Research Student | [MIPT-Yandex Fundamental Research Laboratory](#)

Jul 2023 - Aug 2024

- Machine Learning and Optimization
- Head: [Aleksandr Beznosikov](#)

Research Student | [Laboratory of Mathematical Methods of Optimization, MIPT](#)

Jul 2023 - Aug 2024

- Optimization
- Head: Professor [Alexander Gasnikov](#)

Deep Learning Engineer | Huawei-MIPT research group

Nov 2023 - Aug 2024

- Deep Learning and Reinforcement Learning
- Head: Professor [Roland Hildebrand](#)

Teaching Assistant | Department of Mathematical Fundamentals of Control, MIPT

Jan 2024 - Aug 2024

- Reinforcement Learning [course](#). Lecturer: [Yudin Nikita](#)

Research Student | [Lab of Fundamental and Applied Research of Relativistic Objects](#)

Nov 2022 - Apr 2024

- Theoretical Physics, Astrophysics
- Head: DSc [Elena Nokhrina](#)

Research Physicist | [P.N.Lebedev Physical Institute](#)

Nov 2022 - Jul 2023

- Theoretical Physics, Astrophysics

SKILLS

Stack	Python, C++, C#, L ^A T _E X, PostgreSQL, MySQL, Git, Linux, macOS
Language	English – C1, Russian – native, Ukrainian – native
Hobbies	Swimming, Football

RESEARCH INTERESTS

Federated Learning, Natural Language Processing, Computer Vision and applications of Stochastic Optimization in Deep Learning

PUBLICATIONS

Just a Simple Transformation is Enough for Data Protection in Vertical Federated Learning

Dec 2024

Preprint

Andrei Semenov, Philip Zmushko, Alexander Pichugin, Aleksandr Beznosikov

- [arXiv](#)
- [Code](#)

Mixed Newton Method for Optimization in Complex Spaces

Jul 2024

Preprint

Nikita Yudin, Roland Hildebrand, Sergey Bakhurin, Alexander Degtyarev, Anna Lisachenko, Ilya Kuruzov, Andrei Semenov, Mohammad Alkousa

- [arXiv](#)
- [PDF](#)

Gradient Clipping Improves AdaGrad when the Noise Is Heavy-Tailed

Jun 2024

Preprint

Savelii Chezhegov, Yaroslav Klyukin, Andrei Semenov, Aleksandr Beznosikov, Alexander Gasnikov, Samuel Horváth, Martin Takáč, Eduard Gorbunov

- [arXiv](#)
- [Code](#)

Sparse Concept Bottleneck Models: Gumbel tricks in Contrastive Learning

Feb 2024

Preprint

Andrei Semenov, Vladimir Ivanov, Aleksandr Beznosikov, Alexander Gasnikov

- [arXiv](#)
- [Code](#)

Bregman Proximal Method for Efficient Communications under Similarity

Nov 2023

International Conference on Computational Optimization, 2024 (Oral Presentation)

Aleksandr Beznosikov, Darina Dvinskikh, Dmitry Bylinkin, Andrei Semenov, Alexander Gasnikov

- [arXiv](#)
- [PDF](#)
- [ICOMP 2024](#)

HONORS AND AWARDS

University

- **Autumn 2024:** 1st degree personal scholarship for contributions to the development of numerical optimization methods
- **Autumn 2024:** K. V. Rudakov scientific academic scholarship (\$2700 during one semester)
- **Spring 2024:** Participated in MIPT "Match of the Century" football tournament
- **Autumn 2023:** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT
- **Summer 2023:** Participated in the Terra Quantum AG Summer School. Studied Neural Networks and received an award for the best project in Parameter-Efficient Fine-Tuning
- **Spring 2023:** Participated in MIPT "Match of the Century" football tournament
- **Autumn 2022:** MIPT football tournament contestant. Currently team captain
- **Spring 2022:** Honorable Award in MIPT Swimming championship
- **Spring 2022:** Participated in MIPT "Match of the Century" football tournament
- **Spring 2022:** Organized students Olympiad in Physics
- **Winter 2021–2022:** Organized film screenings at the MIPT
- **Winter 2021:** Passed Landau Theoretical Minimum exam
- **Autumn 2021:** Third prize at the MIPT football tournament
- **2021 – 2023:** Abramov scholarship for 1-3 year bachelor students with the best grades at MIPT
- **2020:** Increased Scholarship for students with Olympiad awards

School

- **Autumn 2020:** Silver medal in GeCAA (International Olympiad in Astronomy and Astrophysics), was held online during the first semester at University because of pandemic risk
- **Winter 2019–2020:** Prize-Winner, ExPhO.
- **Autumn 2018:** Honorable Mention in IAO, Colombo, Sri-Lanka

PROJECTS

Learning@Scale | nanoGPT-like codebase for training models

Oct 2024 –

EPFL, Machine Learning and Optimization Laboratory

[Project Link](#)

- This repository is designed to help researchers create reproducible experiments
- Inspired by the [epfml/llm-baselines](#) codebase and the [nanoGPT](#) benchmark

PAUS | Optimization, Machine Learning

Nov 2023

MIPT, Laboratory of Mathematical Methods of Optimization

[Project Link](#)

- Numerical simulations for [paper](#)
- Implemented a new distributed algorithm for convex-concave saddle-point problems in non-euclidean setup
- The paper was accepted to [ICOMP 2024](#) with an Oral Presentation

Llama-LoRA project | Natural Language Processing, Transformers

Jul 2023

Terra Quantum AG

[Project Link](#)

- Best project award at [Terra Quantum](#) Summer School in Neural Networks
- Studied a novel methods of Parameter-Efficient Tuning of LLMs
- Tuned a 13B and 7B models on custom dataset containing my Telegram chats
- Pushed my models to HuggingFace hub. Where they got 10000+ downloads! [HuggingFace Link](#)

Solar System Model in Python | Python, Computational Physics

Nov 2020 – Dec 2020

Moscow Institute of Physics and Technology

[Project Link](#)

- We have developed a simple model approximating the Solar System and implemented it on Python

TALKS

- 9 October 2024, [MLO Group Meeting](#). Talk on the "Defense against Feature Reconstruction attacks"
[[slides](#)]
- 26 March 2024, MIPT-Yandex Optimization Seminar. Talk on "Model Reconstruction Attacks"
[[video](#)]
- 12 March 2024, MIPT-Yandex Optimization Seminar. Talk on "Concept Bottleneck Models"
[[video](#)]

TEACHING

Moscow Institute of Physics and Technology

Teaching Assistant

Jan 2024 –

- Autumn 2024: Machine Learning. Part of the [MSAI](#) team, course [repository](#)
- Spring 2024: Reinforcement Learning. Owner of the course [repository](#)

REVIEWING

- [ICLR](#): 3 papers in 2024