# Andrey Veprikov

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## Education

**Moscow Institute of Physics and Technology (MIPT)** *Moscow, Russia*

MSc in Informatics and Computer Engineering *September 2024 - Present*

- Phystech-School of Applied Mathematics and Computer Science, direction «Informatics and computer engineering»
- Department of Intelligent systems

**Moscow Institute of Physics and Technology (MIPT)** *Moscow, Russia*

BSc in Applied Mathematics and Physics *September 2020 - June 2024*

- Phystech-School of applied mathematics and computer science, direction «Applied Mathematics and Physics»
- Department of intelligent systems
- Weighted GPA on ten-point scale: $8.96$

**Data Analysis School** *Moscow, Russia*

Online Courses *November 2023 - December 2023*

- Online intensive «GPT Week»

**Coursera** *Moscow, Russia*

Online Courses *June 2021 - October 2021*

- Specialization «Machine Learning and Data Analysis» by Yandex
- Course «Python for Data Analysis» by Mail.ru

## Work Experience

**Sber AI Lab** *Moscow, Russia*

Research Scientist *August 2024 - Present*

- Research on the topic of fine-tuning LLMs with PEFT

**Laboratory for Problems of Federative Learning of ISP RAS** *Moscow, Russia*

Research Scientist *January 2024 - present*

- Research on the topic of federated learning in optimization

**Laboratory for Distributed Computing Systems IITP RAS** *Moscow, Russia*

Research Scientist *February 2024 - present*

- Research on the topic of feedback loops in AI systems

**Laboratory of Mathematical Methods of Optimization** *Dolgoprudny, Russia*

Research scientist *August 2023 - present*

- Research on the topic of mathematical methods of optimization

**MIPT-Yandex Laboratory** *Moscow, Russia*

Research Scientist *August 2023 - present*

- Research on the topic of optimization for machine learning and artificial intelligence

**Scoltech** *Moscow, Russia*

ML and Research Intern *June 2022 - September 2022*

- Research on the topic of detecting change points in sequences using ML algorithms

## Publications

### Journal Articles

New aspects of black box conditional gradient: Variance reduction and one point feedback
Andrey Veprikov, Alexander Bogdanov, Vladislav Minashkin, Aleksandr Beznosikov
*Chaos, Solitons & Fractals (Q1)* 189 (2024) p. 115654. Elsevier, 2024

Non-smooth setting of stochastic decentralized convex optimization problem over time-varying graphs
Aleksandr Lobanov, Andrey Veprikov, Georgiy Konin, Aleksandr Beznosikov, Alexander Gasnikov, Dmitry Kovalev
*Computational Management Science (Q2)* 20.1 (2023) p. 48. Springer, 2023

### Conference Proceedings

Feature space transformations in a repeated machine learning process
Veprikov Andrey, Khritankov Anton
*66th MIPT conference*, 2024

An Out-of-Shelf Multi-Level Monte Carlo Approach for Average-Reward Reinforcement Learning
Alexander Chernyavskiy, Andrey Veprikov, Vladimir Solodkin, Aleksandr Beznosikov, Aleksandr Panov
*International Conference on Computational Optimization*, 2024

Adversarial Robustness through Wide Local Minima: A Simple Training Technique
Anton S Khritankov, Andrey Veprikov, Sergey Smirnov
*International Conference on Computational Optimization*, 2024

Discrepancy detection based on view learning using labelled and unlabelled data
Veprikov Andrey, Stepikin Alexander, Romanenkova Evgenia, Zaitsev Alexey
*65th MIPT conference*, 2023

### Unpublished articles

Methods for Optimization Problems with Markovian Stochasticity and Non-Euclidean Geometry
Vladimir Solodkin, Andrey Veprikov, Aleksandr Beznosikov
*arXiv preprint arXiv:2408.01848. Submitted to the A* conference AAAI*, 2024

A Mathematical Model of the Hidden Feedback Loop Effect in Machine Learning Systems
Andrey Veprikov, Alexander Afanasiev, Anton Khritankov
*arXiv preprint arXiv:2405.02726. Submitted to the Q1 journal Journal of Machine Learning Research*, 2024

Zero Order Algorithm for Decentralised Optimization Problems
Andrey Veprikov, Egor Petrov, Grigory Evseev, Alexander Beznosikov
*The paper accepted to the conference AIJ by Sberbank*, 2024

Markov Compression: Looking to the Past Helps Accelerate the Future
Andrey Veprikov, Vladimir Solodkin, Mikhail Rudakov, Petr Babkin, Alexander Derevyagin, Aleksandr Beznosikov
*Submitted to the A* conference ICLR*, 2024

## Additional Education

**School on Tensor Methods in Mathematics and Data Sciences** — *Shenzhen, China*
Shenzhen MSU–BIT University — *November 2024*
- Lectures on state-of-the-art results on tensor methods in modern artificial intelligence systems
- Presentation at the poster session

**International School ASCOMP** — *Innopolis, Russia*
Innopolis University — *October, 2024*
- Lectures on state-of-the-art results in numerical optimization methods
- Presentation at the poster session

**School for Teaching Assistants** — *Moscow, Russia*
Yandex — *August 2024*
- Lectures on modern concepts of learning
- Team work on projects for their further implementation in the educational programs of various universities

**Control, Information and Optimization on Behalf of B. T. Polak 2024** — *Novosibirsk, Russia*
MIPT, HSE, MSU, Wildberries — *July 2024*
- School on optimization methods and machine learning
- Development of B.T. Polyak's ideas in modern science

**Intensive on Reproducing State-of-the-art Scientific Results** — *Sochi, Sirius, Russia*
Yandex — *October 2023*
- Lectures on modern scientific and engineering achievements in the IT sphere
- Teamwork on projects to reproduce experiments from scientific articles and infer their robustness

**Control, Information and Optimization on Behalf of B. T. Polak 2023** — *Nizhny Novgorod, Russia*
MIPT, HSE, MSU, Wildberries — *June 2023*
- School on optimization methods and machine learning
- Development of B.T. Polyak's ideas in modern science

# Projects

**Just Relax It** *Moscow, Russia*

Department of Intelligence Systems *September 2024 - December 2024*

- Python library designed to streamline the optimization of discrete probability distributions in neural networks
- Blog Post and Documentation

**Final Projects** *Moscow, Russia*

Coursera *June 2021 - October 2021*

- Project «Internet user identification» on Yandex Specialization
- Project «Computer vision using neutron networks» on Mail.ru Course

**ML Computer Vision Projects** *Dolgoprudny, Russia*

Moscow Institute of Physics and Technology (MIPT) *September 2021 - December 2021*

- Transforming Perfect Photos
- Identifying Clouds from a Photo

**SQL Database «TV Channel»** *Dolgoprudny, Russia*

Moscow Institute of Physics and Technology (MIPT) *September 2020 - Dec 2021*

- Creating my own SQL database for the TV channel in MS SQL

# Skills

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|---|---|
| **Programming** | Python (PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas etc.), C/C++, SQL, Algorithms and Data Structures |
| **Miscellaneous** | Git, Linux, LaTeX, Microsoft Office |
| **Math** | Numerical Optimization, Probability Theory, Linear Algebra, Mathematical Analysis |
| **Languages** | English (C1), Russian (native) |

# Achievements

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|---|---|---|
| 2023-now | **Scholarship,** K.V. Rudakov Scholarship | *MIPT* |
| 2023-now | **Scholarship,** Enhanced Government Social Scholarship | *MIPT* |
| 2023-now | **Scholarship,** Contribution to the Development of Numerical Methods of Optimization | *MIPT* |
| 2024 | **Diploma,** Honor for High Achievements in the Field of Science | *MIPT* |
| 2022-24 | **Scholarship,** Excellent Grades Scholarship | *MIPT* |
| 2022-23 | **Scholarship,** Abramov Scholarship | *MIPT* |
| 2020 | **Gold Medal,** Graduating with Honors from School | *Izhevsk* |
| 2020 | **Grant,** Grant for Gifted Children of the Udmurt Republic | *Izhevsk* |