

Nikita Yudin

Federal Research Center "Computer Science and Control" of Russian Academy of Sciences, Dorodnicyn Computing Center, Moscow, Russia
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EDUCATION

Federal Research Center "Computer Science and Control" of Russian Academy of Sciences, Dorodnicyn Computing Center

Moscow, Russia

- Ph.D. in Theoretical Foundations of Informatics 2020 – Present
 - Scientific supervisors: Alexander Gasnikov and Konstantin Vorontsov
 - Thesis: Adaptive Gauss-Newton Methods and Its Applications in Machine Learning and Numerical Optimization Problems

Lomonosov Moscow State University

Moscow, Russia

- M.S. in Logical and Combinatorial Methods for Data Analysis 2018 – 2020
 - Degree with honors
 - GPA: 5 / 5, 4 / 4

Lomonosov Moscow State University

Moscow, Russia

- B.S. in Mathematical Methods in Information Processing and Decision-Making 2014 – 2018
 - Degree with honors
 - GPA: 4.85 / 5, 3.85 / 4

WORK EXPERIENCE

Theoretical Aspects of Federated Learning Lab

Moscow, Russia

- Head: Aleksandr Beznosikov 2024 – Present
 - Position: junior researcher
 - Description: Conducting research on various topics co-financed by Ivannikov Institute for System Programming (ISP RAS).

Laboratory of Mathematical Foundations of Machine Learning

Moscow, Russia

- Supervisor: Alexander Gasnikov 2023 – Present
 - Position: junior researcher
 - Description: Conducting research on various topics co-financed by Institute for Information Transmission Problems (named after A. Kharkevich).

Laboratory of Mathematical Methods of Optimization

Dolgoprudny, Moscow Region, Russia

- Supervisor: Alexander Gasnikov 2022 – Present
 - Position: researcher
 - Description: Conducting research on various topics co-financed by Moscow Institute of Physics and Technology.

Laboratory of Advanced Combinatorics and Network Applications

Dolgoprudny, Moscow Region, Russia

- Supervisors: Alexander Gasnikov, Andrei Raigorodskii 2021 – Present
 - Position: researcher
 - Description: Conducting research on different tasks co-financed by Moscow Institute of Physics and Technology. Working on and supervising industrial projects.

Multimedia Systems and Technology Lab

Dolgoprudny, Moscow Region, Russia

- Supervisor: Viktor Dvorkovich 2021
 - Position: researcher
 - Description: Conducting research on different tasks co-financed by Moscow Institute of Physics and Technology. Working on industrial projects.

Machine Intelligence Laboratory

Dolgoprudny, Moscow Region, Russia

- Supervisor: Konstantin Vorontsov 2018 – 2019
 - Position: software engineer

- Description: Conducting research on topic modeling, machine learning, natural language processing techniques for transaction data analysis. Working on industrial projects.

RESEARCH INTERESTS

Optimization, High-Order Optimization, Distributed Optimization, Stochastic Optimization, Machine Learning, Federated Learning, Reinforcement Learning

RESEARCH EXPERIENCE

National Research University Moscow Institute of Physics and Technology

Dolgoprudny, Moscow Region, Russia

- Topic: Accelerated Methods for Alternating Minimization 2021 – 2022
 - Supervisor: Alexander Gasnikov
 - Description: Conducting research on various acceleration techniques for alternating minimization in convex and non-convex optimization.

Educational Center "Sirius"

Sochi, Russia

- Topic: Adaptive Gauss-Newton Methods Aug 2020 – 2022
 - Supervisors: Alexander Gasnikov, Dmitry Kamzolov
 - Description: Conducting research on quasi-Newton methods development, investigating properties of Gauss-Newton methods and prox-linear algorithms.

Lomonosov Moscow State University

Moscow, Russia

- Topic: Variational Inference for Neural Stochastic Differential Equations 2019 – 2020
 - Supervisors: Konstantin Vorontsov, Konstantin Rudakov
 - Description: Proposition of effective methods for robust fitting of Wiener processes.

Lomonosov Moscow State University

Moscow, Russia

- Topic: Application of Co-Occurrence-Based Topic Models to Bank Transaction Data Analysis 2018 – 2019
 - Supervisors: Konstantin Vorontsov, Konstantin Rudakov
 - Description: Research on application of NLP techniques for transaction data analysis.

Lomonosov Moscow State University

Moscow, Russia

- Topic: Indirect Control of Dynamic Object 2017 – 2018
 - Supervisor: Sergey Gurov
 - Description: Design of an online system for real-time gesture recognition.

Lomonosov Moscow State University

Moscow, Russia

- Topic: Hand Movement Detection Using Electroencephalographic Signal 2016 – 2017
 - Supervisor: Sergey Gurov
 - Description: Research on multidimensional signal analysis and classification of EEG-recorded actions.

PUBLICATIONS

(* denotes equal contribution)

JOURNALS

Optimization in complex spaces with the mixed Newton method

Sergei Bakhurin, Roland Hildebrand, Mohammad Alkousa, Alexander Titov, **Nikita Yudin**

Journal of Global Optimization, 2024, <https://doi.org/10.1007/s10898-023-01355-z>.

Survey of convex optimization of Markov decision processes

Varvara Rudenko, **Nikita Yudin**, Aleksandr Vasin

Computer Research and Modeling, 2023, Vol. 15, No. 2, pp. 329-353 (Russian).

Adaptive Gauss–Newton Method for Solving Systems of Nonlinear Equations

Nikita Yudin

Doklady Mathematics, 2021, Vol. 104, No. 2, pp. 293–296.

Modified Gauss–Newton method for solving a smooth system of nonlinear equations

Nikita Yudin

Computer Research and Modeling, 2021, Vol. 13, No. 4, pp. 693–719 (Russian).

CONFERENCES

Embedded Online Machine Learning (oral)

Nikita Yudin*, Dmitry Kamzolov*, Vadim Sinolits, Alexey Erchenko, Pavel Golovkin

International Conference Engineering and Telecommunication (En&T), IEEE, 2021

AWARDS

- Lomonosov Universiade in Applied Mathematics and Informatics 2018
Description: Prize-Winner

TALKS

International Conference Engineering and Telecommunication (En&T) (English) 2021
Topic: Embedded Online Machine Learning

Conference "Optimization without Borders" (English) 2021
Topic: Flexible Gauss-Newton Methods

RESEARCH VISITS

MBZUAI, Abu Dhabi, United Arab Emirates Apr 2023 – Jul 2023
Worked with Martin Takáč and Samuel Horváth

Sirius University of Science and Technology, Sochi, Russia Oct 2022 – Nov 2022

Sirius University of Science and Technology, Sochi, Russia Jul 2021 – Aug 2021

Sirius University of Science and Technology, Sochi, Russia Aug 2020

TEACHING

- Reinforcement Learning course at MIPT and Innopolis University 2022 – Present
Role: Lecturer
- Optimization Methods course at MIPT 2021 – Present
Role: Teaching fellow
- Neurobayesian Methods at HSE, MSU, MADE and YSDA 2018 – 2021
Role: Teaching assistant
- Bayesian Methods in Machine Learning at HSE, MSU and YSDA 2018 – 2021
Role: Teaching assistant
- Probabilistic Topic Models at MIPT and MSU 2020 – 2021
Role: Teaching fellow
- Mathematical Foundations of Machine Learning at MIPT, MSU and MAI 2020 – 2021
Role: Teaching fellow

LANGUAGES

- Russian: Mother tongue.
- English: Fluent.

SKILLS

- Machine Learning, Statistics and Probability Theory, Optimization Methods and Control, Reinforcement Learning, Deep Learning, Probabilistic Machine Learning, Natural Language Processing, Computer Vision, Automatic Speech Recognition.
- \LaTeX .
- Programming languages: Python, C/C++, x86 Assembler.
- Libraries: Pytorch, JAX, TensorFlow, Scientific Python Packages (NumPy, SciPy, Matplotlib, pandas), scikit-learn.
- Operational Systems: Linux, MacOS, Windows OS.