

Nikita Doikov

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Residence: Switzerland, Lausanne

RESEARCH INTERESTS

Optimization, Computational Mathematics, Scientific Computing, Statistics, Machine Learning, Algorithmic Foundations of AI

EDUCATION

PhD, [UCLouvain](#), Belgium 2021

Thesis: “[New second-order and tensor methods in Convex Optimization](#)”

Supervisor: [Yurii Nesterov](#)

MSc, [Higher School of Economics](#) and [Skoltech](#), Russia, GPA – 9.3/10.0 2017

Faculty of Computer Science

BSc, [Lomonosov Moscow State University](#), Russia, GPA – 4.9/5.0 2015

Faculty of Computational Mathematics and Cybernetics

WORK EXPERIENCE

Postdoctoral Researcher at **EPFL**, Switzerland (2 years) 09.2022 – now

[Machine Learning and Optimization Laboratory](#), hosted by [Martin Jaggi](#)

Postdoctoral Researcher at **UCLouvain**, Belgium (1 year) 09.2021 – 08.2022

[ICTEAM](#) / [CORE](#), hosted by [Yurii Nesterov](#)

Intern at **Google**, Switzerland (4 months) Summer 2018

Seminar Teacher at **HSE**, Russia (1 year in total) Spring 2016, 2017

Intern and Teacher at **Skoltech**, Russia (1 year) 2016

Intern at **Google**, Switzerland (3 months) Summer 2016

Software Engineer at **Yandex**, Russia (9 months) 2015

TEACHING AND MENTORING

Overall, I have taught over 350 students in the following courses:

- Large-scale Optimization and Applications at [Skoltech](#) (highest evaluation) 2017
- Optimization Methods at [Faculty of CS](#), [HSE](#) (highest evaluation) 2017, 2018
- Bayesian Methods in Machine Learning at [HSE](#) 2017, 2018, 2019
- Optimization models and methods II at [UCLouvain](#) 2021

Led more than 12 intern, MSc and PhD student research projects

TECHNICAL SKILLS

Advanced: Algorithms and Data Structures, Optimization and Numerical Methods, Machine Learning

Technologies: C++, Python, Matlab, R, SQL, Intel Assembler, UNIX OS architecture, MapReduce, Flume, TensorFlow, PyTorch, JAX

Languages: English (fluent), French (basic), Russian (native)

ACADEMIC SERVICE

Conference reviews: COLT, NeurIPS, ICML

Journal reviews: Mathematical Programming, SIAM Journal on Optimization, SIAM Journal on Scientific Computing, Journal of Optimization Theory and Applications, Journal of Global Optimization, IMA Journal of Numerical Analysis, Computational Optimization and Applications, Optimization Methods and Software, IEEE Transactions on Information Theory

Symposium organization: *Optimization Methods with Worst-Case Complexity Guarantees* at FGS-2024 conference in Spain with [Geovani Nunes Grapiglia](#)

PUBLICATIONS

17 papers published in the leading peer-reviewed journals and conferences on Mathematical Optimization, Statistics, Machine Learning, and AI

Selected Refereed Publications:

Spectral Preconditioning for Gradient Methods on Graded Non-convex Functions, 2024
N. Doikov, S.U. Stich, and M. Jaggi, [ICML](#)

Super-Universal Regularized Newton Method, 2024
N. Doikov, K. Mishchenko, and Yu. Nesterov, [SIAM Journal on Optimization](#)

Second-order optimization with lazy Hessians, 2023
N. Doikov, E.M. Chayti, and M. Jaggi, [ICML \(Oral Presentation\)](#)

Local Convergence of Tensor Methods, 2021
N. Doikov and Yu. Nesterov, [Mathematical Programming Journal](#)

Convex optimization based on global lower second-order models, 2020
N. Doikov and Yu. Nesterov, [NeurIPS \(Oral Presentation\)](#)

Contracting Proximal Methods for Smooth Convex Optimization, 2020
N. Doikov and Yu. Nesterov, [SIAM Journal on Optimization](#)

All papers are available on: doikov.com or [Google Scholar](#)

INVITED TALKS, CONFERENCES, AND SCHOOLS

- Weierstrass Institute ([WIAS](#)), research seminar, Berlin, 2024
- [CISPA Helmholtz Center](#), research seminar, Saarbrücken, 2024
- [ETH AI Center](#), research seminar of [Optimization & Decision Intelligence Group](#), Zurich, 2024
- Research seminar of [Optimization of Machine Learning Systems Group](#), University of Basel, 2024
- Research seminar of [Inria centre](#) at the University Grenoble Alpes, 2024
- Workshop on [Algorithmic Optimization: Tools for AI and Data Science](#), Louvain, 2024
- International Conference on Machine Learning ([ICML](#)), Vienna, 2024
- European Conference on Operational Research ([EURO](#)), Copenhagen, 2024
- 21st Conference on Advances in Continuous Optimization ([EUROPT](#)), Lund, 2024
- French-German-Spanish conference on Optimization ([FGS](#)), Gijón, 2024
- Workshop on Nonsmooth Optimization and Applications ([NOPTA](#)), Antwerp, 2024
- 20th Workshop on Advances in Continuous Optimization ([EUROPT](#)), Budapest, 2023
- International Conference on Machine Learning ([ICML](#)), Hawaii, 2023
- SIAM Conference on Optimization ([OP23](#)), Seattle, 2023
- Workshop on Advances in Continuous Optimization ([EUROPT](#)), Lisbon, 2022
- French-German-Portuguese conference on Optimization ([FGP](#)), Porto, 2022
- Workshop on Advances in Continuous Optimization ([EUROPT](#)), online, 2021
- [Symposium on Numerical Analysis and Optimization](#), UFPR, online, 2021
- Conference on Neural Information Processing Systems ([NeurIPS](#)), online, 2020
- International Conference on Machine Learning ([ICML](#)), online, 2020
- Research seminar of [Optimization and Learning for Data Science](#) group, Grenoble, 2019
- French-German-Swiss conference on Optimization ([FGS](#)), Nice, 2019
- International Conference on Continuous Optimization ([ICCOPT](#)), Berlin, 2019
- Workshop on Advances in Continuous Optimization ([EUROPT](#)), Glasgow, 2019
- Summer School on [Optimization, Big Data and Applications](#) in Veroli, 2019
- Traditional School [Control, Information and Optimization](#) in Moscow, 2018 – 2019

- International Conference on Machine Learning ([ICML](#)), Stockholm, 2018
- [Recent Advances in Algorithms](#) in St. Petersburg, 2017
- [Deep Hack](#) Artificial Intelligence competition and lecture series at [MIPT](#), 2016
- Participant of the [MIPT fall programming training](#), 2014
- Winter and Summer [Programming Training Camps](#) in Petrozavodsk, 2012 – 2014
- [Winter Programming School](#) on Advanced Algorithms in Kharkiv, 2012

ACHIEVEMENTS AND AWARDS

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| 2023–2024 | Two MSc student theses successfully defended at EPFL under my direct supervision |
| 2023 | ICML Oral Presentation (less than 2.4% of all submissions) |
| 2020 | ICML Top Reviewer
NeurIPS Oral Presentation (less than 1.12% of all submissions) |
| 2019 | Best Paper Presentation Award at OBA School
NeurIPS Top Reviewers Award |
| 2018 | Best Talk Award at Control, Information and Optimization School by B.T. Polyak
ICML travel award |
| 2015–2016 | Participant of Challenge24 Finals – International 24-hour Programming Contest |
| 2015 | Top-200 in Facebook Hacker Cup
Moscow festival of sport programming – First degree diploma |
| 2012–2015 | University Advanced Scholarship |
| 2014 | Moscow festival of sport programming – Second degree diploma
All Siberian open programming contest – Second degree diploma
Participant of ACM ICPC NEERC – Third degree diploma |
| 2013 | Top-600 in Russian Code Cup |
| 2011 | Prizewinner of ROI (Russian National Olympiad in Informatics among high school students) – 26th place
Gold medal for extraordinary successes in study |
| 2010 | Prizewinner of ROI – 90th place |