

Nikita Doikov

Email: nikita.doikov@epfl.ch

Homepage: doikov.com

Residence: Switzerland, Lausanne

RESEARCH INTERESTS

Optimization (numerical methods, convex optimization, second-order methods, tensor methods, global worst-case bounds, complexity, stochastic methods), Computer Science, Computational Mathematics, Algorithms, Statistics, Machine Learning (theory and practice)

EDUCATION

PhD , UCLouvain , Belgium Thesis: “ New second-order and tensor methods in Convex Optimization ” Supervisor: Yurii Nesterov	2021
MSc , Higher School of Economics , Russia, GPA – 9.3/10.0 Faculty of Computer Science Program: Mathematical Methods of Optimization and Stochastics	2017
BSc , Lomonosov Moscow State University , Russia, GPA – 4.9/5.0 Faculty of Computational Mathematics and Cybernetics Program: Applied Mathematics and Computer Science	2015

EMPLOYMENT

Postdoctoral Researcher at EPFL , Switzerland (2 years) Machine Learning and Optimization Laboratory	09.2022 – 08.2024
Postdoctoral Researcher at UCLouvain , Belgium (1 year) ICTEAM / CORE	09.2021 – 08.2022
Software Engineering Intern at Google , Zürich, Switzerland (4 months)	08.2018 – 11.2018
Research Intern at Skoltech , Moscow, Russia (1 year)	10.2016 – 09.2017
Software Engineering Intern at Google , Zürich, Switzerland (3 months)	07.2016 – 09.2016
Software Engineer at Yandex , Moscow, Russia (9 months)	11.2015 – 07.2016

TEACHING

Optimization models and methods II at UCLouvain	2021
Bayesian Methods in Machine Learning at HSE	2017, 2018, 2019
Optimization Methods at Faculty of Computer Science , HSE	2017, 2018
Large-scale Optimization and Applications at Skoltech	2017
Direct supervision of MSc student projects and theses (MIPT , HSE , and EPFL)	

TECHNICAL SKILLS

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

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

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

PUBLICATIONS

Journals

- Super-Universal Regularized Newton Method*, 2024
N. Doikov, K. Mishchenko, and Yu. Nesterov, [SIAM Journal on Optimization](#)
- Gradient Regularization of Newton Method with Bregman Distances*, 2023
N. Doikov and Yu. Nesterov, [Mathematical Programming Journal](#)
- High-Order Optimization Methods for Fully Composite Problems*, 2022
N. Doikov and Yu. Nesterov, [SIAM Journal on Optimization](#)
- Affine-invariant contracting-point methods for Convex Optimization*, 2022
N. Doikov and Yu. Nesterov, [Mathematical Programming Journal](#)
- Local Convergence of Tensor Methods*, 2021
N. Doikov and Yu. Nesterov, [Mathematical Programming Journal](#)
- Minimizing Uniformly Convex Functions by Cubic Regularization of Newton Method*, 2021
N. Doikov and Yu. Nesterov, [Journal of Optimization Theory and Applications](#)
- Contracting Proximal Methods for Smooth Convex Optimization*, 2020
N. Doikov and Yu. Nesterov, [SIAM Journal on Optimization](#)

Refereed conference papers

- Linearization Algorithms for Fully Composite Optimization*, 2023
M.L. Vladarean, N. Doikov, M. Jaggi, and N. Flammarion, [COLT](#)
- Polynomial Preconditioning for Gradient Methods*, 2023
N. Doikov, A. Rodomanov, [ICML](#)
- Second-order optimization with lazy Hessians*, 2023
N. Doikov, E.M. Chayti, and M. Jaggi, [ICML](#)
- Convex optimization based on global lower second-order models*, 2020
N. Doikov and Yu. Nesterov, [NeurIPS](#)
- Stochastic Subspace Cubic Newton Method*, 2020
F. Hanzely, N. Doikov, P. Richtárik, and Yu. Nesterov, [ICML](#)
- Inexact Tensor Methods with Dynamic Accuracies*, 2020
N. Doikov and Yu. Nesterov, [ICML](#)
- Randomized Block Cubic Newton Method*, 2018
N. Doikov and P. Richtárik, [ICML](#)

Preprints

- Spectral Preconditioning for Gradient Methods on Graded Non-convex Functions*, 2024
N. Doikov, S.U. Stich, and M. Jaggi, [arXiv:2402.04843](#)
- First and zeroth-order implementations of the regularized Newton method with lazy approximated Hessians*, N. Doikov and G. N. Grapiglia [arXiv:2309.02412](#) 2023
- Minimizing Quasi-Self-Concordant Functions by Gradient Regularization of Newton Method*, N. Doikov [arXiv:2308.14742](#) 2023
- On Convergence of Incremental Gradient for Non-Convex Smooth Functions*, 2023
A. Koloskova, N. Doikov, S.U. Stich, and M. Jaggi, [arXiv:2305.19259](#)
- Lower Complexity Bounds for Minimizing Regularized Functions*, 2022
N. Doikov [arXiv:2202.04545](#)

ACADEMIC SERVICE

Conference reviews: ICML 2019, 2020, 2021, 2022, 2023, 2024; NeurIPS 2019, 2020, 2021, 2022

Journal reviews: SIAM Journal on Optimization, 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

INVITED TALKS, CONFERENCES AND SCHOOLS

- 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*
- 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

*The talk was given.

ACHIEVEMENTS AND AWARDS

- | | |
|-------------|---|
| 2023 | ICML Oral Presentation |
| 2020 | ICML Top Reviewer
NeurIPS Oral Presentation |
| 2019 | Best Paper Presentation Award at OBA School
NeurIPS Top Reviewers Award |
| 2018 | Best Talk Award at Control, Information and Optimization School
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 |