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 complexity bounds, stochastic methods), Algorithms, Machine Learning

EDUCATION

PhD, UCLouvain, Belgium — 2021
Thesis: "New second-order and tensor methods in Convex Optimization"
Supervisor: Yurii Nesterov

MSc, Higher School of Economics, Russia, GPA – 9.3/10.0 — 2017
Program: Mathematical Methods of Optimization and Stochastics

BSc, Lomonosov Moscow State University, Russia, GPA – 4.9/5.0 — 2015
Faculty of Computational Mathematics and Cybernetics

EMPLOYMENT

Postdoctoral Researcher at **EPFL**, Switzerland, — 2022 – *now*
Machine Learning and Optimization Laboratory

Doctoral and Postdoctoral Researcher at **UCLouvain**, Belgium, — 2019 – 2022
ICTEAM / CORE

Software Engineering Intern at **Google**, Zürich, Switzerland — Aug – Nov 2018
Monitoring for notifications in Google Maps

Software Engineering Intern at **Google**, Zürich, Switzerland — Jul – Sep 2016
YouTube Matching System

Software Engineer at **Yandex**, Moscow, Russia — 2015 – 2016
Large-scale algorithms in the Maps Routing team

TEACHING

Optimization models and methods II at UCLouvain — 2021
Teacher assistant. Lecturers: François Glineur and Geovani Grapiglia

Bayesian Methods in Machine Learning at HSE — 2017, 2018, 2019
Teacher assistant. Lecturer: Dmitry Vetrov

Optimization Methods at Faculty of Computer Science, HSE — 2017, 2018
Seminars and practical sessions. Lecturer: Dmitry Kroporov

Large-scale Optimization and Applications at Skoltech — 2017
Seminars and practical sessions. Lecturers: Elena Gryazina and Yury Maximov

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, LaTeX, Git, SVN

PUBLICATIONS

Journals

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

Shuffle SGD is Always Better than SGD: 2023
Improved Analysis of SGD with Arbitrary Data Orders,
A. Koloskova, N. Doikov, S.U. Stich, and M. Jaggi, arXiv:2305.19259

Super-Universal Regularized Newton Method, 2022
N. Doikov, K. Mishchenko, and Yu. Nesterov, arXiv:2208.05888

Lower Complexity Bounds for Minimizing Regularized Functions, 2022
N. Doikov arXiv:2202.04545

ACADEMIC SERVICE

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

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

CONFERENCES AND SCHOOLS

- 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

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

LANGUAGES

Russian: native
English: professional working proficiency
French: basic