Nikita Doikov

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Residence: Switzerland, Lausanne

RESEARCH INTERESTS

Optimization (numerical methods, convex optimization, second-order methods, tensor methods, global complexity bounds, stochastic methods), Algorithms, Machine Learning, Natural Language Processing

EDUCATION

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

MSc, Skoltech and Higher School of Economics, Russia, GPA – 9.3/10.0 — 2017
Program: Mathematical Methods of Optimization and Stochastics
Thesis: "Regularized Newton method for optimizing strongly convex functions"
Supervisors: Yury Maximov and Yurii Nesterov

BSc, Lomonosov Moscow State University, Russia, GPA – 4.9/5.0 — 2015
Faculty of Computational Mathematics and Cybernetics
Thesis: "Adaptive regularization of probabilistic topic models"
Supervisor: Konstantin Vorontsov

WORK EXPERIENCE

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

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

Junior Research Scientist at **Samsung-HSE Laboratory**, Moscow — 2018

Junior Software Engineer at **Yandex**, Moscow, Maps Routing team — 2015 – 2016

Research Engineer at **Computing Centre of RAS**, Moscow, Topic Modelling — 2015

INTERNSHIPS AND RESEARCH VISITS

Research Visitor at **Université Grenoble Alpes**, DAO team — Sep 2019

Software Engineering Intern at **Google**, Zürich — Aug – Nov 2018

Research Visitor at **KAUST**, Visual Computing Center — Oct – Nov 2017

Research Intern at **Skoltech**, Center for Energy Systems — Oct 2016 – Nov 2017

Software Engineering Intern at **Google**, Zürich — Jul – Sep 2016

TECHNICAL SKILLS

Advanced: Algorithms and Data Structures, Numerical Optimization Methods, Machine Learning, Data Analysis, Natural Language Processing, Computer Vision

Machine Learning: classification and clustering, learning with latent variables, regularization, graphical models, neural networks, deep learning, structural learning, reinforcement learning, variational inference

Technologies: C++, Python, Matlab, R, SQL, Intel Assembler, UNIX OS architecture, MapReduce, Flume, BigARTM, Vowpal Wabbit, word2vec, BERT, libsvm, liblinear, Theano, Lasagne, DistBelief, TensorFlow, LaTeX, Git, SVN

PUBLICATIONS

Journals

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

Convex optimization based on global lower second-order models, 2020
N. Doikov and Yu. Nesterov, Advances in Neural Information Processing Systems (NeurIPS)

Stochastic Subspace Cubic Newton Method, 2020
F. Hanzely, N. Doikov, P. Richtárik and Yu. Nesterov, Proceedings of the 37th International Conference on Machine Learning (ICML)

Inexact Tensor Methods with Dynamic Accuracies, 2020
N. Doikov and Yu. Nesterov, Proceedings of the 37th International Conference on Machine Learning (ICML)

Randomized Block Cubic Newton Method, 2018
N. Doikov and P. Richtárik, Proceedings of the 35th International Conference on Machine Learning (ICML)

Preprints

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

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

Gradient Regularization of Newton Method with Bregman Distances, 2021
N. Doikov and Yu. Nesterov, arXiv:2112.02952

TEACHING EXPERIENCE

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

ACADEMIC SERVICE

Conference reviews: ICML 2019, 2020, 2021, 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

CONFERENCES AND SCHOOLS

- 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 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