

Nikita Doikov

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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, 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

- Second-order optimization with lazy Hessians*, 2022
N. Doikov, E.M. Chayti, M. Jaggi, [arXiv:2212.00781](#)
- 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

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| 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