

Curriculum Vitae: Anton Rodomanov

PERSONAL INFORMATION

- Born on 22/01/1994, Russian citizenship, married, 1 daughter.
- E-mail: anton.rodomanov@cispa.de.
- Web-page: arodomanov.github.io.
- Address: Saarbrücken, Germany.
- Languages: English (advanced), German (basic), French (basic), Russian (native).

RESEARCH INTERESTS

Convex Optimization, Numerical Algorithms, Complexity Estimates, Randomized Methods, Machine Learning, Statistics.

EDUCATION

PhD in Mathematical Engineering

[Catholic University of Louvain \(UCLouvain\)](#), [Department of Mathematical Engineering \(INMA\)](#)

Thesis: [Quasi-Newton Methods with Provable Efficiency Guarantees](#).

Advisor: [Yurii Nesterov](#).

2019–22

Louvain-la-Neuve, Belgium

MSc in Computer Science

[Higher School of Economics](#), [Faculty of Computer Science](#)

Thesis: A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums.

Advisors: [Dmitry Kropotov](#) and [Dmitry Vetrov](#).

2015–17

Moscow, Russia

BSc in Computer Science

[Lomonosov Moscow State University](#), [Faculty of Computational Mathematics and Cybernetics](#)

Thesis: Development of a Stochastic Optimization Method for Machine Learning Problems with Big Data.

Advisors: [Dmitry Kropotov](#) and [Dmitry Vetrov](#).

2011–15

Moscow, Russia

WORK EXPERIENCE

Postdoctoral Researcher

[CISPA Helmholtz Center for Information Security](#).

01/09/2023 – now

Saarbrücken, Germany

Postdoctoral Researcher

[ICTEAM Institute](#) at [UCLouvain](#).

01/09/2022 – 31/08/2023

Louvain-la-Neuve, Belgium

Doctoral Candidate

[Department of Mathematical Engineering \(INMA\)](#) at [UCLouvain](#).

23/01/2019 – 31/08/2022

Louvain-la-Neuve, Belgium

Lecturer

Samsung-HSE Lab at [Higher School of Economics](#).

02/10/2017 – 31/08/2018

Moscow, Russia

Research Assistant

[International Laboratory of Deep Learning and Bayesian Methods](#) at [Higher School of Economics](#).

09/01/2017 – 18/01/2019

Moscow, Russia

PUBLICATIONS

Preprints

Stabilized Proximal-Point Methods for Federated Optimization

X. Jiang, A. Rodomanov, S. Stich. [\[arXiv\]](#)

2024

Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction

A. Rodomanov, X. Jiang, S. Stich. [\[arXiv\]](#)

2024

Global Complexity Analysis of BFGS 2024
A. Rodomanov. [\[arXiv\]](#)

Gradient Methods for Stochastic Optimization in Relative Scale 2023
Y. Nesterov and A. Rodomanov. [\[arXiv\]](#)

Conference and workshop papers

Non-convex Stochastic Composite Optimization with Polyak Momentum 2024
Y. Gao, A. Rodomanov, S. Stich. ICML 2024:14826–14843. [\[url\]](#) [\[pdf\]](#) [\[arXiv\]](#)

Federated Optimization with Doubly Regularized Drift Correction 2024
X. Jiang, A. Rodomanov, S. Stich. ICML 2024:21912–21945. [\[url\]](#) [\[pdf\]](#) [\[arXiv\]](#)

Universal Gradient Methods for Stochastic Convex Optimization 2024
A. Rodomanov, A. Kavis, Y. Wu, K. Antonakopoulos, V. Cevher. ICML 2024:42620–42646. [\[url\]](#) [\[pdf\]](#) [\[arXiv\]](#)

Polynomial Preconditioning for Gradient Methods 2023
N. Doikov and A. Rodomanov. ICML 2023:8162–8187. [\[url\]](#) [\[pdf\]](#) [\[arXiv\]](#)

A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums 2016
A. Rodomanov and D. Kropotov. ICML 2016:2597–2605. [\[url\]](#) [\[pdf\]](#) [\[supplementary\]](#) [\[code\]](#)

Primal-Dual Method for Searching Equilibrium in Hierarchical Congestion Population Games 2016
P. Dvurechensky, A. Gasnikov, E. Gasnikova, S. Matsievsky, A. Rodomanov, I. Usik. DOOR-SUP 2016:584-595. [\[url\]](#) [\[arXiv\]](#)

A Newton-type Incremental Method with a Superlinear Rate of Convergence 2015
A. Rodomanov and D. Kropotov. OPT15@NIPS. [\[url\]](#)

Putting MRFs on a Tensor Train 2014
A. Novikov, A. Rodomanov, A. Osokin, D. Vetrov. ICML 2014:811–819. [\[url\]](#) [\[pdf\]](#) [\[supplementary\]](#) [\[poster\]](#) [\[slides\]](#) [\[code\]](#)

Journal articles

Subgradient ellipsoid method for nonsmooth convex problems 2022
A. Rodomanov and Y. Nesterov. Math. Program. [\[url\]](#) [\[arXiv\]](#)

New Results on Superlinear Convergence of Classical Quasi-Newton Methods 2021
A. Rodomanov and Y. Nesterov. J. Optim. Theory Appl. 188:744–769. [\[url\]](#) [\[arXiv\]](#)

Rates of superlinear convergence for classical quasi-Newton methods 2021
A. Rodomanov and Y. Nesterov. Math. Program. [\[url\]](#) [\[arXiv\]](#)

Greedy Quasi-Newton Methods with Explicit Superlinear Convergence 2021
A. Rodomanov and Y. Nesterov. SIAM J. Optim. 31(1):785–811. [\[url\]](#) [\[arXiv\]](#)

Smoothness Parameter of Power of Euclidean Norm 2020
A. Rodomanov and Y. Nesterov. J. Optim. Theory Appl. 185:303–326. [\[url\]](#)

A Randomized Coordinate Descent Method with Volume Sampling 2020
A. Rodomanov and D. Kropotov. SIAM J. Optim. 30(3):1878–1904. [\[url\]](#) [\[arXiv\]](#)

TALKS AT CONFERENCES AND SEMINARS

Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction Jun, Jul 2024
FGS Conference on Optimization [\[slides\]](#) Gijón, Spain
EURO Conference on Operational Research [\[slides\]](#) Copenhagen, Denmark

Universal Gradient Methods for Stochastic Convex Optimization Mar, Apr 2024
MOP Research Seminar on Mathematical Optimization [\[slides\]](#) online
Research Seminar at CORE [\[slides\]](#) Louvain-la-Neuve, Belgium

Gradient Methods for Stochastic Optimization in Relative Scale Research Seminar of DAO team at Université Grenoble Alpes [slides] SIAM Conference on Optimization (OP23) [slides]	Mar, May 2023 Grenoble, France Seattle, USA
Modern analysis of local convergence for classical quasi-Newton methods Maths Job Market Seminar at Toulouse School of Economics [slides]	Mar 2023 Toulouse, France
Universal Stochastic Gradient Methods for Convex Optimization Research Seminar at CISPA Helmholtz Center for Information Security [slides]	Jan 2023 Saarbrücken, Germany
Subgradient Ellipsoid Method for Nonsmooth Convex Problems 20th French-German-Portuguese Conference on Optimization (FGP22) [slides]	May 2022 Porto, Portugal
New Results on Superlinear Convergence of Classical Quasi-Newton Methods XIII Symposium of Numerical Analysis and Optimization [slides] 18th Workshop on Advances in Continuous Optimization (EUROPT 2021) [slides]	Mar, Jul 2021 Curitiba, Brazil (online) Toulouse, France (online)
Greedy Quasi-Newton Method with Explicit Superlinear Convergence 17th Workshop on Advances in Continuous Optimization (EUROPT 2019) [slides] Sixth International Conference on Continuous Optimization (ICCOPT 2019) [slides] 19th French-German-Swiss Conference on Optimization (FGS'2019) [slides] Seminar in Mathematical Engineering at UCLouvain [slides]	Jun, Aug, Sep, Oct 2019 Glasgow, UK Berlin, Germany Nice, France Louvain-la-Neuve, Belgium
Lecture: Introduction to Stochastic Optimization DeepBayes Summer School [slides] [video]	Aug 2018 Moscow, Russia
Adaptive gradient methods for stochastic and online optimization Seminar on Bayesian Methods in Machine Learning [slides]	Feb 2018 Moscow, Russia
Incremental Newton Method for Big Sums of Functions Seminar on Stochastic Analysis in Problems, IUM [slides (in Russian)] [video (in Russian)]	Oct 2016 Moscow, Russia
A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums International Conference on Machine Learning (ICML) [slides] [video]	Jun 2016 New York, USA
Optimization Methods for Big Sums of Functions Deep Machine Intelligence Workshop at Skoltech [slides]	Jun 2016 Moscow, Russia
Incremental Newton Method for Minimizing Big Sums of Functions HSE off-site seminar on Machine Learning [slides]	May 2016 Voronovo, Russia
Introduction to the Tensor Train Decomposition and Its Applications in Machine Learning Seminar on Applied Linear Algebra at HSE [slides]	Mar 2016 Moscow, Russia
Proximal Incremental Newton Method Seminar on Bayesian Methods in Machine Learning [slides]	Feb 2016 Moscow, Russia
Probabilistic Graphical Models: a Tensorial Perspective International Conference on Matrix Methods in Mathematics and Applications (MMMA) [slides]	Aug 2015 Moscow, Russia
A Fast Incremental Optimization Method with a Superlinear Rate of Convergence Summer School on Control, Information and Optimization [slides]	Jun 2015 Solnechnogorsk, Russia
Markov Chains and Spectral Theory Seminar on Bayesian Methods in Machine Learning [slides (in Russian)]	Oct 2014 Moscow, Russia
Low-Rank Representation of MRF Energy by means of the TT-Format SIAM Conference in Imaging Science (SIAM-IS) [slides]	May 2014 Hong-Kong, China
Fast Gradient Method Seminar on Bayesian Methods in Machine Learning [slides (in Russian)]	Apr 2014 Moscow, Russia
TT-Decomposition for Compact Representation of Tensors Seminar on Bayesian Methods in Machine Learning [slides (in Russian)]	Oct 2013 Moscow, Russia

POSTERS

Randomized Minimization of Eigenvalue Functions

Joint with Y. Nesterov. Optimization and Statistical Learning Workshop. [\[pdf\]](#)

Jan 2023

Les Houches, France

Quasi-Newton and Second-Order Methods for Convex Optimization

Joint with N. Doikov and Y. Nesterov. ICTEAM Welcome Day. [\[pdf\]](#)

Oct 2021

Louvain-la-Neuve, Belgium

A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums

Joint with D. Kropotov. ICML 2016. [\[pdf\]](#)

Jun 2016

New York, USA

A Newton-type Incremental Method with a Superlinear Convergence Rate

Joint with D. Kropotov. OPT15@NIPS. [\[pdf\]](#)

Dec 2015

Montreal, Canada

A Fast Incremental Optimization Method with a Superlinear Rate of Convergence

Joint with D. Kropotov. Microsoft Research PhD Summer School. [\[pdf\]](#)

Jul 2015

Cambridge, UK

Putting MRFs on a Tensor Train

Joint with A. Novikov, A. Osokin and D. Vetrov. ICML 2014. [\[pdf\]](#)

Jun 2014

Beijing, China

RESEARCH VISITS

[UCLouvain](#)

Hosted by [Yurii Nesterov](#).

Apr 2024

Louvain-la-Neuve, Belgium

[DAO team](#) at [Université Grenoble Alpes](#)

Hosted by [Jérôme Malick](#).

Mar 2023

Grenoble, France

[CISPA Helmholtz Center for Information Security](#)

Hosted by [Sebastian U. Stich](#).

Jan 2023

Saarbrücken, Germany

[Laboratory for Information and Inference Systems \(LIONS\)](#) at [EPFL](#)

Hosted by [Volkan Cevher](#).

Jul, Nov 2022

Lausanne, Switzerland

AWARDS

[Increased State Academic Scholarship](#) for research and academic achievements, at [Higher School of Economics](#)

2017

[Golden HSE Award](#) in the [Silver Nestling](#) nomination, at [Higher School of Economics](#)

2016

[Scholarship of the Lukoil Fund](#), at [Higher School of Economics](#)

2016

[Ilya Segalovich Scholarship](#) (from Yandex), at [Higher School of Economics](#)

2016

[Travel award](#), at [International Conference on Machine Learning \(ICML\)](#)

2016

[Best thesis award](#) (1st place), at [Lomonosov Moscow State University](#)

2015

TEACHING EXPERIENCE

[Optimization Models and Methods II](#), exercise sessions

Graduate-level course at [UCLouvain](#). Lectures by [François Glineur](#) and [Geovani Grapiglia](#).

2021–22

Louvain-la-Neuve, Belgium

[Optimization Methods in Machine Learning](#), exercise sessions

Graduate-level course at [Lomonosov Moscow State University](#), [Yandex School of Data Analysis](#) and [Moscow Institute of Physics and Technology](#). Lectures by [Dmitry Kropotov](#).

2015–18

Moscow, Russia

[Continuous Optimization](#), exercise sessions

Undergraduate-level course at [Higher School of Economics](#). Lectures by [Dmitry Kropotov](#).

2017–18

Moscow, Russia

[Machine Learning](#), exercise sessions

Graduate-level course at [Skoltech](#). Lectures by [Victor Kitov](#).

2015

Moscow, Russia

REVIEWING

- **Journals:** [Mathematical Programming](#), [SIAM Journal on Optimization \(SIOPT\)](#), [Journal of Optimization Theory and Applications \(JOTA\)](#), [Journal of Machine Learning Research \(JMLR\)](#), [Automatica](#).
- **Conferences:** [Conference on Neural Information Processing Systems \(NeurIPS\)](#), [International Conference on Machine Learning \(ICML\)](#).