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 (fluent), German (intermediate), French (intermediate), Russian (native).

RESEARCH INTERESTS

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

WORK EXPERIENCE

Postdoctoral Researcher — **01/09/2023 – now**
CISPA Helmholtz Center for Information Security. — Saarbrücken, Germany

Postdoctoral Researcher — **01/09/2022 – 31/08/2023**
ICTEAM Institute at UCLouvain. — Louvain-la-Neuve, Belgium

Doctoral Candidate — **23/01/2019 – 31/08/2022**
Department of Mathematical Engineering (INMA) at UCLouvain. — Louvain-la-Neuve, Belgium

Lecturer — **02/10/2017 – 31/08/2018**
Samsung-HSE Lab at Higher School of Economics. — Moscow, Russia

Research Assistant — **09/01/2017 – 18/01/2019**
International Laboratory of Deep Learning and Bayesian Methods at Higher School of Economics. — Moscow, Russia

EDUCATION

PhD in Mathematical Engineering — **2019–22**
Catholic University of Louvain (UCLouvain), Department of Mathematical Engineering (INMA) — Louvain-la-Neuve, Belgium
Thesis: Quasi-Newton Methods with Provable Efficiency Guarantees.
Advisor: Yurii Nesterov.

MSc in Computer Science (GPA: 9.4/10) — **2015–17**
Higher School of Economics, Faculty of Computer Science — Moscow, Russia
Thesis: A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums.
Advisors: Dmitry Kropotov and Dmitry Vetrov.

BSc in Computer Science (GPA: 4.8/5) — **2011–15**
Lomonosov Moscow State University, Faculty of Computational Mathematics and Cybernetics — Moscow, Russia
Thesis: Development of a Stochastic Optimization Method for Machine Learning Problems with Big Data.
Advisors: Dmitry Kropotov and Dmitry Vetrov.

PUBLICATIONS

Preprints

Efficient Gradient Methods for Distributed Saddle Problems — **2026**
R. Luo, A. Rodomanov, S. Stich. [arXiv]

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 papers

Non-Convex Federated Optimization under Cost-Aware Client Selection **2026**
X. Jiang, A. Rodomanov, S. Stich. ICLR 2026:62134-62176. [url] [pdf] [arXiv]

Composite Optimization with Error Feedback: the Dual Averaging Approach **2026**
Y. Gao, A. Rodomanov, J. Rack, S. Stich. ICLR 2026:96602-96632. [url] [pdf] [arXiv]

Accelerated Distributed Optimization with Compression and Error Feedback **2026**
Y. Gao, A. Rodomanov, J. Rack, S. Stich. AISTATS 2026:3304-3312. [url] [pdf] [arXiv]

DADA: Dual Averaging with Distance Adaptation **2026**
M. Moshtaghifar, A. Rodomanov, D. Vankov, S. Stich. ICLR 2026:155565-155587. [url] [pdf] [arXiv]

Exploiting Similarity for Computation and Communication-Efficient Decentralized Optimization **2025**
Y. Takezawa, X. Jiang, A. Rodomanov, S. Stich. ICML 2025:58359-58405. [url] [pdf] [arXiv]

Optimizing (L_0, L_1)-Smooth Functions by Gradient Methods **2025**
D. Vankov, A. Rodomanov, A. Nedich, L. Sankar, S. Stich. ICLR 2025. [url] [pdf] [arXiv]

Stabilized Proximal-Point Methods for Federated Optimization **2024**
X. Jiang, A. Rodomanov, S. Stich. NeurIPS 2024:99735–99772. [url] [pdf] [arXiv]

Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction **2024**
A. Rodomanov, X. Jiang, S. Stich. NeurIPS 2024:26770–26813. [url] [pdf] [arXiv]

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]

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]

Workshop papers

DADA: Dual Averaging with Distance Adaptation **2024**
M. Moshtaghifar, A. Rodomanov, D. Vankov, S. Stich. OPT2024 Workshop @ NeurIPS. [url] [pdf]

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

TALKS AT CONFERENCES AND SEMINARS

Efficient Gradient Methods for Functions with Super-Quadratic Curvature **Jun 2026**
Optimization Seminar at UCLouvain [slides] Louvain-la-Neuve, Belgium
VOCAL Optimization Conference [slides] Mosonmagyaróvár, Hungary

Efficient Distance-Adaptive Subgradient Methods **Aug 2025**
Optimization Seminar at UCLouvain [slides] Louvain-la-Neuve, Belgium

Optimizing (L_0, L_1)-Smooth Functions by Gradient Methods **Nov, Dec 2024**
Research Seminar at Université Grenoble Alpes [slides] Grenoble, France
Research Seminar at Weierstrass Institute [slides] Berlin, Germany

Adaptive Gradient Methods for Stochastic Optimization **Oct 2024**
Blue Yonder Series on Optimization for Machine Learning [slides] online

Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction **Jun, Jul, Aug 2024**
FGS Conference on Optimization [slides] Gijón, Spain
EURO Conference on Operational Research [slides] Copenhagen, Denmark
ALGOPT Workshop on Algorithmic Optimization [slides] Louvain-la-Neuve, Belgium

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 **Mar, May 2023**
Research Seminar of DAO team at Université Grenoble Alpes [slides] Grenoble, France
SIAM Conference on Optimization (OP23) [slides] Seattle, USA

Modern analysis of local convergence for classical quasi-Newton methods **Mar 2023**
Maths Job Market Seminar at Toulouse School of Economics [slides] Toulouse, France

Universal Stochastic Gradient Methods for Convex Optimization **Jan 2023**
Research Seminar at CISPA Helmholtz Center for Information Security [slides] Saarbrücken, Germany

Subgradient Ellipsoid Method for Nonsmooth Convex Problems **May 2022**
20th French-German-Portugese Conference on Optimization (FGP22) [slides] Porto, Portugal

New Results on Superlinear Convergence of Classical Quasi-Newton Methods **Mar, Jul 2021**
XIII Symposium of Numerical Analysis and Optimization [slides] Curitiba, Brazil (online)
18th Workshop on Advances in Continuous Optimization (EUROPT 2021) [slides] Toulouse, France (online)

Greedy Quasi-Newton Method with Explicit Superlinear Convergence **Jun, Aug, Sep, Oct 2019**
17th Workshop on Advances in Continuous Optimization (EUROPT 2019) [slides] Glasgow, UK
Sixth International Conference on Continuous Optimization (ICCOPT 2019) [slides] Berlin, Germany
19th French-German-Swiss Conference on Optimization (FGS'2019) [slides] Nice, France
Seminar in Mathematical Engineering at UCLouvain [slides] Louvain-la-Neuve, Belgium

Lecture: Introduction to Stochastic Optimization **Aug 2018**
DeepBayes Summer School [slides] [video] Moscow, Russia

Adaptive gradient methods for stochastic and online optimization **Feb 2018**
Seminar on Bayesian Methods in Machine Learning [slides] Moscow, Russia

Incremental Newton Method for Big Sums of Functions **Oct 2016**
Seminar on Stochastic Analysis in Problems, IUM [slides (in Russian)] [video (in Russian)] Moscow, Russia

A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums — **Jun 2016**
International Conference on Machine Learning (ICML) [slides] [video] — New York, USA

Optimization Methods for Big Sums of Functions — **Jun 2016**
Deep Machine Intelligence Workshop at Skoltech [slides] — Moscow, Russia

Incremental Newton Method for Minimizing Big Sums of Functions — **May 2016**
HSE off-site seminar on Machine Learning [slides] — Voronovo, Russia

Introduction to the Tensor Train Decomposition and Its Applications in Machine Learning — **Mar 2016**
Seminar on Applied Linear Algebra at HSE [slides] — Moscow, Russia

Proximal Incremental Newton Method — **Feb 2016**
Seminar on Bayesian Methods in Machine Learning [slides] — Moscow, Russia

Probabilistic Graphical Models: a Tensorial Perspective — **Aug 2015**
International Conference on Matrix Methods in Mathematics and Applications (MMMA) [slides] — Moscow, Russia

A Fast Incremental Optimization Method with a Superlinear Rate of Convergence — **Jun 2015**
Summer School on Control, Information and Optimization [slides] — Solnechnogorsk, Russia

Markov Chains and Spectral Theory — **Oct 2014**
Seminar on Bayesian Methods in Machine Learning [slides (in Russian)] — Moscow, Russia

Low-Rank Representation of MRF Energy by means of the TT-Format — **May 2014**
SIAM Conference in Imaging Science (SIAM-IS) [slides] — Hong-Kong, China

Fast Gradient Method — **Apr 2014**
Seminar on Bayesian Methods in Machine Learning [slides (in Russian)] — Moscow, Russia

TT-Decomposition for Compact Representation of Tensors — **Oct 2013**
Seminar on Bayesian Methods in Machine Learning [slides (in Russian)] — Moscow, Russia

POSTERS

Efficient Gradient Methods for Functions with Super-Quadratic Curvature — **Jul 2026**
Joint with N. Doikov and S. Stich. FoCM 2026. [pdf] — Vienna, Austria

Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction — **Dec 2024**
Joint with X. Jiang and S. Stich. NeurIPS 2024. [pdf] — Vancouver, Canada

Universal Gradient Methods for Stochastic Convex Optimization — **Jul 2024**
Joint with A. Kavis, Y. Wu, K. Antonakopoulos, V. Cevher. ICML 2024. [pdf] — Vienna, Austria

Randomized Minimization of Eigenvalue Functions — **Jan 2023**
Joint with Y. Nesterov. Optimization and Statistical Learning Workshop. [pdf] — Les Houches, France

Quasi-Newton and Second-Order Methods for Convex Optimization — **Oct 2021**
Joint with N. Doikov and Y. Nesterov. ICTEAM Welcome Day. [pdf] — Louvain-la-Neuve, Belgium

A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums — **Jun 2016**
Joint with D. Kropotov. ICML 2016. [pdf] — New York, USA

A Newton-type Incremental Method with a Superlinear Convergence Rate — **Dec 2015**
Joint with D. Kropotov. OPT15@NIPS. [pdf] — Montreal, Canada

A Fast Incremental Optimization Method with a Superlinear Rate of Convergence — **Jul 2015**
Joint with D. Kropotov. Microsoft Research PhD Summer School. [pdf] — Cambridge, UK

Putting MRFs on a Tensor Train — **Jun 2014**
Joint with A. Novikov, A. Osokin and D. Vetrov. ICML 2014. [pdf] — Beijing, China

RESEARCH VISITS

UCLouvain — **Jun 2026**
Hosted by Yurii Nesterov. — Louvain-la-Neuve, Belgium

UCLouvain — **Aug 2025**
Hosted by Geovani Grapiglia. — Louvain-la-Neuve, Belgium

Weierstrass Institute — **Dec 2024**
Hosted by Vladimir Spokoiny. — Berlin, Germany

Université Grenoble Alpes — **Nov 2024**
Hosted by Anatoli Juditsky. — Grenoble, France

UCLouvain — **Apr 2024**
Hosted by Yurii Nesterov. — Louvain-la-Neuve, Belgium

DAO team at Université Grenoble Alpes — **Mar 2023**
Hosted by Jérôme Malick. — Grenoble, France

CISPA Helmholtz Center for Information Security — **Jan 2023**
Hosted by Sebastian Stich. — Saarbrücken, Germany

Laboratory for Information and Inference Systems (LIONS) at EPFL — **Jul, Nov 2022**
Hosted by Volkan Cevher. — 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

Lectures on Modern Optimization Methods, lectures — **2025**
Graduate-level course at Saarland University. Joint with Sebastian Stich. — Saarbrücken, Germany

Optimization Models and Methods II, exercise sessions — **2021–22**
Graduate-level course at UCLouvain. Lectures by François Glineur and Geovani Grapiglia. — Louvain-la-Neuve, Belgium

Optimization Methods in Machine Learning, exercise sessions — **2015–18**
Graduate-level course at Lomonosov Moscow State University, Yandex School of Data Analysis and Moscow Institute of Physics and Technology. Lectures by Dmitry Kropotov. — Moscow, Russia

Continuous Optimization, exercise sessions — **2017–18**
Undergraduate-level course at Higher School of Economics. Lectures by Dmitry Kropotov. — Moscow, Russia

Machine Learning, exercise sessions — **2015**
Graduate-level course at Skoltech. Lectures by Victor Kitov. — Moscow, Russia

REVIEWING

- **Journals:** Mathematical Programming, SIAM Journal on Optimization (SIOPT), Journal of Optimization Theory and Applications (JOTA), Journal of Machine Learning Research (JMLR), Optimization Methods and Software, Applied Mathematics & Optimization (AMOP), Computational Optimization and Applications (COAP), Automatica.
- **Conferences:** Conference on Neural Information Processing Systems (NeurIPS), International Conference on Machine Learning (ICML), ACM Symposium on Theory of Computing (STOC).

TECHNICAL SKILLS

- **Programming languages:** Python, C++, Rust.
- **Machine learning & Scientific computing:** NumPy, SciPy, PyTorch, Pandas, Scikit-learn, Eigen.
- **Development & Code quality:** Ruff, uv, MyPy, pytest, CMake, Clang-Format, Clang-Tidy, Sanitizers.
- **Version control & CI/CD:** Git, GitHub, GitHub Actions, Pre-commit hooks.
- **Document preparation:** LaTeX.