

# Curriculum Vitae: Anton Rodomanov

## PERSONAL INFORMATION

---

- Born on 22/01/1994, Russian citizenship, married, 1 daughter.
- E-mail: [anton.rodomanov@cispa.de](mailto:anton.rodomanov@cispa.de).
- Web-page: [arodomanov.github.io](http://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

#### Optimizing $(L_0, L_1)$ -Smooth Functions by Gradient Methods

D. Vankov, A. Rodomanov, A. Nedich, L. Sankar, S. Stich. [\[arXiv\]](#)

2024

#### Stabilized Proximal-Point Methods for Federated Optimization

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

2024

<b>Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction</b>	2024
A. Rodomanov, X. Jiang, S. Stich. [ <a href="#">arXiv</a> ]	
<b>Global Complexity Analysis of BFGS</b>	2024
A. Rodomanov. [ <a href="#">arXiv</a> ]	
<b>Gradient Methods for Stochastic Optimization in Relative Scale</b>	2023
Y. Nesterov and A. Rodomanov. [ <a href="#">arXiv</a> ]	
<b>Conference and workshop papers</b>	
<b>Non-convex Stochastic Composite Optimization with Polyak Momentum</b>	2024
Y. Gao, A. Rodomanov, S. Stich. ICML 2024:14826–14843. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">arXiv</a> ]	
<b>Federated Optimization with Doubly Regularized Drift Correction</b>	2024
X. Jiang, A. Rodomanov, S. Stich. ICML 2024:21912–21945. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">arXiv</a> ]	
<b>Universal Gradient Methods for Stochastic Convex Optimization</b>	2024
A. Rodomanov, A. Kavis, Y. Wu, K. Antonakopoulos, V. Cevher. ICML 2024:42620–42646. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">arXiv</a> ]	
<b>Polynomial Preconditioning for Gradient Methods</b>	2023
N. Doikov and A. Rodomanov. ICML 2023:8162–8187. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">arXiv</a> ]	
<b>A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums</b>	2016
A. Rodomanov and D. Kropotov. ICML 2016:2597–2605. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">supplementary</a> ] [ <a href="#">code</a> ]	
<b>Primal-Dual Method for Searching Equilibrium in Hierarchical Congestion Population Games</b>	2016
P. Dvurechensky, A. Gasnikov, E. Gasnikova, S. Matsievsky, A. Rodomanov, I. Usik. DOOR-SUP 2016:584-595. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	
<b>A Newton-type Incremental Method with a Superlinear Rate of Convergence</b>	2015
A. Rodomanov and D. Kropotov. OPT15@NIPS. [ <a href="#">url</a> ]	
<b>Putting MRFs on a Tensor Train</b>	2014
A. Novikov, A. Rodomanov, A. Osokin, D. Vetrov. ICML 2014:811–819. [ <a href="#">url</a> ] [ <a href="#">pdf</a> ] [ <a href="#">supplementary</a> ] [ <a href="#">poster</a> ] [ <a href="#">slides</a> ] [ <a href="#">code</a> ]	
<b>Journal articles</b>	
<b>Subgradient ellipsoid method for nonsmooth convex problems</b>	2022
A. Rodomanov and Y. Nesterov. Math. Program. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	
<b>New Results on Superlinear Convergence of Classical Quasi-Newton Methods</b>	2021
A. Rodomanov and Y. Nesterov. J. Optim. Theory Appl. 188:744–769. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	
<b>Rates of superlinear convergence for classical quasi-Newton methods</b>	2021
A. Rodomanov and Y. Nesterov. Math. Program. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	
<b>Greedy Quasi-Newton Methods with Explicit Superlinear Convergence</b>	2021
A. Rodomanov and Y. Nesterov. SIAM J. Optim. 31(1):785–811. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	
<b>Smoothness Parameter of Power of Euclidean Norm</b>	2020
A. Rodomanov and Y. Nesterov. J. Optim. Theory Appl. 185:303–326. [ <a href="#">url</a> ]	
<b>A Randomized Coordinate Descent Method with Volume Sampling</b>	2020
A. Rodomanov and D. Kropotov. SIAM J. Optim. 30(3):1878–1904. [ <a href="#">url</a> ] [ <a href="#">arXiv</a> ]	

## TALKS AT CONFERENCES AND SEMINARS

---

<b>Adaptive Gradient Methods for Stochastic Optimization</b>	Oct 2024
Blue Yonder Series on Optimization for Machine Learning [ <a href="#">slides</a> ]	online

<b>Universality of AdaGrad Stepsizes for Stochastic Optimization: Inexact Oracle, Acceleration and Variance Reduction</b> FGS Conference on Optimization [ <a href="#">slides</a> ] EURO Conference on Operational Research [ <a href="#">slides</a> ] ALGOPT Workshop on Algorithmic Optimization [ <a href="#">slides</a> ]	<b>Jun, Jul, Aug 2024</b>  Gijón, Spain Copenhagen, Denmark Louvain-la-Neuve, Belgium
<b>Universal Gradient Methods for Stochastic Convex Optimization</b> MOP Research Seminar on Mathematical Optimization [ <a href="#">slides</a> ] Research Seminar at CORE [ <a href="#">slides</a> ]	<b>Mar, Apr 2024</b> online Louvain-la-Neuve, Belgium
<b>Gradient Methods for Stochastic Optimization in Relative Scale</b> Research Seminar of DAO team at Université Grenoble Alpes [ <a href="#">slides</a> ] SIAM Conference on Optimization (OP23) [ <a href="#">slides</a> ]	<b>Mar, May 2023</b> Grenoble, France Seattle, USA
<b>Modern analysis of local convergence for classical quasi-Newton methods</b> Maths Job Market Seminar at Toulouse School of Economics [ <a href="#">slides</a> ]	<b>Mar 2023</b> Toulouse, France
<b>Universal Stochastic Gradient Methods for Convex Optimization</b> Research Seminar at CISPA Helmholtz Center for Information Security [ <a href="#">slides</a> ]	<b>Jan 2023</b> Saarbrücken, Germany
<b>Subgradient Ellipsoid Method for Nonsmooth Convex Problems</b> 20th French-German-Portugese Conference on Optimization (FGP22) [ <a href="#">slides</a> ]	<b>May 2022</b> Porto, Portugal
<b>New Results on Superlinear Convergence of Classical Quasi-Newton Methods</b> XIII Symposium of Numerical Analysis and Optimization [ <a href="#">slides</a> ] 18th Workshop on Advances in Continuous Optimization (EUROPT 2021) [ <a href="#">slides</a> ]	<b>Mar, Jul 2021</b> Curitiba, Brazil (online) Toulouse, France (online)
<b>Greedy Quasi-Newton Method with Explicit Superlinear Convergence</b> 17th Workshop on Advances in Continuous Optimization (EUROPT 2019) [ <a href="#">slides</a> ] Sixth International Conference on Continuous Optimization (ICCOPT 2019) [ <a href="#">slides</a> ] 19th French-German-Swiss Conference on Optimization (FGS'2019) [ <a href="#">slides</a> ] Seminar in Mathematical Engineering at UCLouvain [ <a href="#">slides</a> ]	<b>Jun, Aug, Sep, Oct 2019</b> Glasgow, UK Berlin, Germany Nice, France Louvain-la-Neuve, Belgium
<b>Lecture: Introduction to Stochastic Optimization</b> DeepBayes Summer School [ <a href="#">slides</a> ] [ <a href="#">video</a> ]	<b>Aug 2018</b> Moscow, Russia
<b>Adaptive gradient methods for stochastic and online optimization</b> Seminar on Bayesian Methods in Machine Learning [ <a href="#">slides</a> ]	<b>Feb 2018</b> Moscow, Russia
<b>Incremental Newton Method for Big Sums of Functions</b> Seminar on Stochastic Analysis in Problems, IUM [ <a href="#">slides (in Russian)</a> ] [ <a href="#">video (in Russian)</a> ]	<b>Oct 2016</b> Moscow, Russia
<b>A Superlinearly-Convergent Proximal Newton-Type Method for the Optimization of Finite Sums</b> International Conference on Machine Learning (ICML) [ <a href="#">slides</a> ] [ <a href="#">video</a> ]	<b>Jun 2016</b> New York, USA
<b>Optimization Methods for Big Sums of Functions</b> Deep Machine Intelligence Workshop at Skoltech [ <a href="#">slides</a> ]	<b>Jun 2016</b> Moscow, Russia
<b>Incremental Newton Method for Minimizing Big Sums of Functions</b> HSE off-site seminar on Machine Learning [ <a href="#">slides</a> ]	<b>May 2016</b> Voronovo, Russia
<b>Introduction to the Tensor Train Decomposition and Its Applications in Machine Learning</b> Seminar on Applied Linear Algebra at HSE [ <a href="#">slides</a> ]	<b>Mar 2016</b> Moscow, Russia
<b>Proximal Incremental Newton Method</b> Seminar on Bayesian Methods in Machine Learning [ <a href="#">slides</a> ]	<b>Feb 2016</b> Moscow, Russia
<b>Probabilistic Graphical Models: a Tensorial Perspective</b> International Conference on Matrix Methods in Mathematics and Applications (MMMA) [ <a href="#">slides</a> ]	<b>Aug 2015</b> Moscow, Russia
<b>A Fast Incremental Optimization Method with a Superlinear Rate of Convergence</b> Summer School on Control, Information and Optimization [ <a href="#">slides</a> ]	<b>Jun 2015</b> Solnechnogorsk, Russia
<b>Markov Chains and Spectral Theory</b> Seminar on Bayesian Methods in Machine Learning [ <a href="#">slides (in Russian)</a> ]	<b>Oct 2014</b> 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

---

**Universal Gradient Methods for Stochastic Convex Optimization**

Joint with A. Kavis, Y. Wu, K. Antonakopoulos, V. Cevher. ICML 2024. [pdf]

**Jul 2024**  
Vienna, Austria

**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 **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 \(JMLR\)](#), [Automatica](#).
- **Conferences:** [Conference on Neural Information Processing Systems \(NeurIPS\)](#), [International Conference on Machine Learning \(ICML\)](#).