Eduard GORBUNOV

PERSONAL DATA

PLACE AND DATE OF BIRTH:	Rybinsk, Russia | 22 November 1996
EMAIL:	ed-gorbunov@yandex.ru
WEBSITE:	eduardgorbunov.github.io
WoS RESEARCHER ID:	U-1740-2019
SCOPUS AUTHOR ID:	57207780972
ORCID ID:	0000-0002-3370-4130

RESEARCH INTERESTS

Optimization, Randomized Algorithms, Machine Learning

EDUCATION

SEPTEMBER 2018 – JULY 2020
Master of Science in APPLIED MATHEMATICS
Moscow Institute of Physics and Technology, Moscow

SEPTEMBER 2014 – JULY 2018
Bachelor of Science in APPLIED MATHEMATICS
Moscow Institute of Physics and Technology, Moscow
Thesis: "Accelerated Directional Searches and Gradient-Free Methods with non-Euclidean prox-structure" \| Advisor: Alexander GASNIKOV
GPA: 8.8/10

WORK EXPERIENCE

MAY 2019 – AUGUST 2019
Intern at **Huawei Media Lab,** Moscow

AUGUST 2017 – NOW
Researcher at **Peter Richtárik's Lab,** MIPT, Moscow

BOOKS

1. A. Gasnikov, E. Gorbunov, S. Guz, E. Chernousova, M. Shirobokov, E. Shulgin. **Lecture Notes on Stochastic Processes**, arXiv:1907.01060 (June 2019)

PUBLICATIONS

12. E. Vorontsova, A. Gasnikov, E. Gorbunov and P. Dvurechensky. **Accelerated Gradient-Free Optimization Methods with a Non-Euclidean Proximal Operator**, Automation and Remote Control, August 2019, Volume 80, Issue 8, pp 1487–1501, https://doi.org/10.1134/S0005117919080095 (August 2019)[1]

11. E. Gorbunov, A. Bibi, O. Sener, E. Bergou and P. Richtárik. **A Stochastic Derivative Free Optimization Method with Momentum**, arXiv preprint arXiv:1905.13278 (May 2019)

10. E. Gorbunov, F. Hanzely and P. Richtárik. **A unified theory of SGD: variance reduction, sampling, quantization and coordinate descent**, arXiv preprint arXiv:1905.11261 (May 2019)

---

[1] The date when it first appeared online.

9. D. Dvinskikh, E. Gorbunov, A. Gasnikov, P. Dvurechensky and César A. Uribe. **On Dual Approach for Distributed Stochastic Convex Optimization over Networks**, arXiv preprint arXiv:1903.09844 (March 2019)

8. E. Bergou, E. Gorbunov and P. Richtárik. **Stochastic Three Points Method for Unconstrained Smooth Minimization**, arXiv preprint arXiv:1902.03591 (February 2019)

7. K. Mishchenko, E. Gorbunov, M. Takác and P. Richtárik. **Distributed Learning with Compressed Gradient Differences**, arXiv preprint arXiv:1901.09269 (January 2019)

6. A. Gasnikov, E. Gorbunov, D. Kovalev, A. Mohammed, E. Chernousova. **The global rate of convergence for optimal tensor methods in smooth convex optimization**, Computer Research and Modeling, 2018, Vol. 10:6, `https://doi.org/10.20537/2076-7633-2018-10-6-737-753`, arXiv:1809.00382 (September 2018)

5. E. Gorbunov, E. Vorontsova and A. Gasnikov. **On the upper bound for the mathematical expectation of the norm of a vector uniformly distributed on the sphere and the phenomenon of concentration of uniform measure on the sphere**, Mathematical Notes, 2019, Volume 106, Issue 1, Pages 13–23, `https://doi.org/10.4213/mzm12041`, arXiv:1804.03722 (April 2018)

4. P. Dvurechensky, A. Gasnikov and E. Gorbunov. **An Accelerated Directional Derivative Method for Smooth Stochastic Convex Optimization**, arXiv preprint arXiv:1804.02394 (April 2018)

3. E. Gorbunov, P. Dvurechensky and A. Gasnikov. **An Accelerated Method for Derivative-Free Smooth Stochastic Convex Optimization**, arXiv preprint arXiv:1802.09022 (February 2018)

2. D. Kovalev, E. Gorbunov, E. Gasanov and P. Richtárik **Stochastic Spectral and Conjugate Descent Methods**, Advances in Neural Information Processing Systems 31, arXiv:1802.03703 (February 2018)

1. E. Vorontsova, A. Gasnikov and E. Gorbunov. **Accelerated Directional Search with non-Euclidean prox-structure**, Automation and Remote Control, April 2019, Volume 80, Issue 4, pp 693–707, `https://doi.org/10.1134/S0005117919040076`, arXiv:1710.00162 (September 2017)

Conference Talks and Posters

6. 1-6 July 2018, 23rd International Symposium on Mathematical Programming, Bordeaux, France. Talk "An Accelerated Directional Derivative Method for Smooth Stochastic Convex Optimization"

5. 10-15 June 2018, Traditional Youth School "Control, Information and Optimization" organized by Boris Polyak and Elena Gryazina, Voronovo, Russia. Poster and Talk "An Accelerated Directional Derivative Method for Smooth Stochastic Convex Optimization"

4. 14 April 2018, Workshop "Optimization at Work", MIPT, Dolgoprudny, Russia. Talk "An Accelerated Method for Derivative-Free Smooth Stochastic Convex Optimization"

3. 5-7 February 2018, KAUST Research Workshop on Optimization and Big Data, KAUST, Thuwal, Saudi Arabia. Joint Poster "Stochastic Spectral Descent Methods" with D. Kovalev and E. Gasanov.

2. 25 November 2017, 60th Scientific Conference of MIPT, Section of Information Transmission Problems, Data Analysis and Optimization, IITP, Moscow, Russia. Talk "About accelerated Directional Search with non-Euclidean prox-structure".

1. 27 October 2017, Workshop "Optimization at Work", MIPT, Dolgoprudny, Russia. Talk "Accelerated Directional Search with non-Euclidean prox-structure".

Research Visits

- 13 January – 24 February 2019, Visual Computing Center, KAUST, Thuwal, Saudi Arabia (Dr. P. Richtárik)
- 14 January – 8 February 2018, Visual Computing Center, KAUST, Thuwal, Saudi Arabia (Dr. P. Richtárik)

Teaching

Teaching assistant for the courses

- Spring 2019: Algorithms and Models of Computation
- Fall 2018: Probability Theory
- Spring 2018: Algorithms and Models of Computation

Reviewing

- ICML 2019. I reviewed 4 papers for ICML 2019.

Languages

Russian: Mothertongue
English: Advanced

Computer Skills

Operating Systems: Microsoft Windows, Linux, Mac OSX
Programming Languages: Python, LaTeX, C, C++

Interests

- Football: 9 years in football school in Rybinsk, Russia. Now I am playing for an amateur team and a student team.
- Table Tennis, Fitness

Scholarships, Honors and Awards

- **10 April, 2019.** The Ilya Segalovich Award – Yandex scientific scholarship (350,000 Russian rubles, internship offer at Yandex.Research, travel grant to attend one international conference; news about award: https://nplus1.ru/news/2019/04/10/ya-awards)
- **September 2018 - January 2019.** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT for scientific achievements (10,000 Russian rubles per month in addition to the regular scholarship)
- **February 2018 - June 2018.** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT for scientific achievements (10,000 Russian rubles per month in addition to the regular scholarship)

- **September 2017 - January 2018.** Increased State Academic Scholarship for 4 year bachelor and master students at MIPT for scientific achievements (10,000 Russian rubles per month in addition to the regular scholarship)
- **November 2017.** Diploma of winner of the Section of Information Transmission Problems, Data Analysis and Optimization at 60th Scientific Conference of MIPT
- **May 2017.** Third Prize at MIPT's Student Olympiad in Mathematics
- **March 2017.** First Prize at MIPT's Team Mathematical Tournament
- **September 2016 - June 2017.** Abramov scholarship for 1-3 year bachelor students with the best grades at MIPT (12,000 Russian rubles per month)
- **December 2015.** Third Prize at MIPT's Student Olympiad in Mathematics
- **February 2015 - June 2015.** Abramov scholarship for 1-3 year bachelor students with the best grades at MIPT (12,000 Russian rubles per month)
- **April 2014.** Participant of Final Round of All-Russian Mathematical Olympiad (scored points: 28 out of 56, 59th place)

Summer Schools

- **June 2018.** Participant of Traditional Youth School "Control, Information and Optimization"
- **June 2017.** Participant of Traditional Youth School "Control, Information and Optimization"
- **July 2015.** Participant of Summer School "Contemporary Mathematics" in Dubna
- **July 2014.** Participant of Summer School "Contemporary Mathematics" in Dubna