

# Alexander Tyurin

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## Curriculum Vitae

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### Education

- 2017–2020 **PhD in Computer Science**, *Higher School of Economics*, Moscow, Faculty of Computer Science.  
PhD thesis: [Development of a method for solving structural optimization problems](#)  
Supervisor: Alexander Gasnikov  
Committee: Yurii Nesterov, Anatoli Juditsky, Boris Mordukhovich, Katya Scheinberg, Alexander Nazin
- 2015–2017 **Masters of Computer Science**, *Higher School of Economics*, Moscow, Faculty of Computer Science, *GPA – 9.84 / 10*.  
Master's programme 'Mathematical Methods of Optimization and Stochastics'
- 2011–2015 **Bachelor of Computer Science**, *Lomonosov Moscow State University*, Moscow, Faculty of Computational Mathematics and Cybernetics, *GPA – 4.97 / 5*.

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### Work experience

- 2021–present **Postdoctoral fellow**, KAUST, VISUAL COMPUTING CENTER, Saudi Arabia.
- 2018–2021 **Research and development engineer**, YANDEX SELF-DRIVING CARS, Moscow.  
Using lidar (3D point clouds) and cameras (images) sensors, we develop real-time algorithms for dynamic and static objects detection in a perception team for self-driving cars. Primary responsibilities: from creating datasets and research (Python, SQL, MapReduce) to implementation of proposed algorithms (C++).
- 2018–2021 **Junior research fellow**, HIGHER SCHOOL OF ECONOMICS, Moscow, Part time.  
Working on PhD thesis that is based on 8 publications in Scopus indexed journals.
- 2017–2020 **Teaching assistant**, HIGHER SCHOOL OF ECONOMICS, Moscow.  
Course: Continuous Optimization. Responsibilities: conduct seminars, preparing theoretical and practical homeworks.
- 2018 **Research engineer**, ALTERRA.AI, Moscow.  
Developed NLP assistant algorithms for generic business tasks.
- 2015–2018 **Research engineer**, VISIONLABS, Moscow.  
Developed a face recognition algorithm that showed **top 2** result in an international competition FRVT NIST. Primary responsibilities: metric learning with CNN backbone, preparing a large scale face recognition dataset.

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### Computer skills

Python, C++, L<sup>A</sup>T<sub>E</sub>X, Matlab, SQL, MapReduce, Git, ...

## Languages

Russian **Native**

English **Advanced**

## Publications

- Gruntkowska K., Tyurin A., Richtárik P. EF21-P and Friends: Improved Theoretical Communication Complexity for Distributed Optimization with Bidirectional Compression // arXiv preprint arXiv:2209.15218
- Tyurin A., Sun L., Burlachenko K., Richtárik P. Sharper Rates and Flexible Framework for Nonconvex SGD with Client and Data Sampling // arXiv preprint arXiv:2206.02275
- Tyurin A., Richtárik P. A Computation and Communication Efficient Method for Distributed Nonconvex Problems in the Partial Participation Setting // arXiv preprint arXiv:2205.15580
- Tyurin A., Richtárik P. DASHA: Distributed nonconvex optimization with communication compression, optimal oracle complexity, and no client synchronization // In International Conference on Learning Representations. 2023. (ICLR 2023)
- Szlendak R., Tyurin A., Richtárik P. Permutation Compressors for Provably Faster Distributed Nonconvex Optimization // In International Conference on Learning Representations. 2022. (ICLR 2022)
- Ivanova A., Dvurechensky P., Vorontsova E., Pasechnyuk D., Gasnikov A., Dvinskikh D., Tyurin A. Oracle complexity separation in convex optimization // Journal of Optimization Theory and Applications. 2022.
- Stonyakin F., Tyurin A., Gasnikov A., Dvurechensky P., Agafonov A., Dvinskikh D., Alkousa M., Pasechnyuk D., Artamonov S., Piskunova V. Inexact model: a framework for optimization and variational inequalities // Optimization Methods and Software. 2021. P. 1–47.
- Dvurechensky P., Gasnikov A., Omelchenko A., Tyurin A. A stable alternative to Sinkhorn's algorithm for regularized optimal transport // Lecture Notes in Computer Science. 2020. V. 12095. P. 406–423.
- Dvinskikh D., Omelchenko A., Gasnikov A., Tyurin A. Accelerated gradient sliding for minimizing the sum of functions // Doklady Mathematics. 2020. V. 101. N. 3. P. 244–246.
- Tyurin A. Primal–dual fast gradient method with a model // Computer Research and Modeling. 2020. V. 12, N. 2. P. 263–274. (in russian)
- Dvinskikh D., Tyurin A., Gasnikov A., Omelchenko S. Accelerated and nonaccelerated stochastic gradient descent with model conception // Mathematical Notes. 2020. V. 108. N. 4. P. 511–522 (main co-author).
- Gasnikov A., Tyurin A. Fast gradient descent for convex minimization problems with an oracle producing a  $(\delta, L)$ -model of function at the requested point // Computational Mathematics and Mathematical Physics. 2019. V. 59. N. 7. P. 1085–1097. (main co-author; alphabetical order).
- Stonyakin F., Dvinskikh D., Dvurechensky P., Kroshnin A., Kuznetsova O., Agafonov A., Gasnikov A., Tyurin A., Uribe C., Pasechnyuk D., Artamonov S. Gradient methods for problems with inexact model of the objective // Lecture Notes in Computer Science. 2019. V. 11548. P. 97–114.
- Ogaltsov A., Tyurin A. A heuristic adaptive fast gradient method in stochastic optimization problems // Computational Mathematics and Mathematical Physics. 2019. V. 60. N. 7. P. 1108–1115 (main co-author, alphabetical order).
- Anikin A., Gasnikov A., Dvurechensky P., Tyurin A., Chernov A. Dual approaches to the

minimization of strongly convex functionals with a simple structure under affine constraints // Computational Mathematics and Mathematical Physics. 2017. V. 57. N. 8. P. 1262–1276.