Alexander Tyurin

Curriculum Vitae

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*.

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.

Computer skills

Python, C++, LaTeX, 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. 2022. (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 (δ, 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.