

# Alexander Rogozin

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Moscow, Russia

 [GitHub](#)  [Google Scholar](#)  [LinkedIn](#)

**EDUCATION**

**Moscow Institute of Physics and Technology**, Moscow, Russia 2020 - Present  
*PhD Student, Phystech School of Applied Mathematics and Informatics*

**Moscow Institute of Physics and Technology**, Moscow, Russia 2018 - 2020  
*Master of Science, Department of Control and Applied Mathematics*  
*Thesis: "Decentralized Optimization over Time-Varying Networks"*  
**GPA:** 8.8/10, ranking top-10%

**Yandex School for Data Analysis**, Moscow, Russia 2017 - 2019  
*Big Data Engineer*

**Moscow Institute of Physics and Technology**, Moscow, Russia 2014 - 2018  
*Bachelor of Science, Department of Control and Applied Mathematics*  
*Thesis: Distributed Optimization over Time-Varying Networks*  
**GPA:** 9.2/10, ranking top-5%

**RESEARCH EXPERIENCE**

**Senior Analyst** at Pinely (June 2022 – September 2022).

- Working on feature engineering for a high-frequency trading system.
- *Skills:* feature engineering, statistics, visualization.

**Lead Researcher** (November 2020 – May 2022), **Researcher** (October 2019 - October 2020) at Joint MIPT-Huawei project on Digital Power Predistortion.

- Working with neural networks for signal processing and noise suppression at base stations. Objectives include finding best optimization methods for specific Huawei tasks, model compression and exploring new model architectures.
- *Team Leading:* Currently leading a group of 4 students and coordinating a team of 8 researchers (including 1 professor and 1 Ph.D). The team I lead has compressed the neural model by 60% and developed a nonlinear analogue of Batch-Normalization technique which significantly improved approximation quality. This results may be implemented in Huawei hardware modules at base stations and decrease power consumption.
- *Skills:* neural networks, numerical optimization, signal processing.

**Research Intern** at Huawei Moscow Research Center (May 2019 - July 2019).

- Implemented an algorithm for demand routing in WDM telecom networks and developed a method evaluating the maximum possible efficacy of the routing. The routing algorithm results coincided with the upper bound in ~80% of test cases.
- *Skills:* discrete optimization, linear programming.

**Research Intern** at Joint Institute for Nuclear Research, Dubna, Russia (July 2017 - August 2017).

- Worked with ML algorithms in high-energy physics. Developed a ML algorithm for particle detection reaching roc-auc 0.97 on synthetic data ([link](#) to report).
- *Skills:* various classification and clustering ML algorithms.

**MAIN PUBLICATIONS**

**Optimal Distributed Optimization on Slowly Time-Varying Graphs.** Alexander Rogozin, César A, Uribe, Alexander Gasnikov, Nikolay Malkovsky, Angelia Nedić. *IEEE Transactions on Control of Network Systems*, [arxiv:1805.06045](#), 2020.

**ADOM: Accelerated Decentralized Optimization Method for Time-Varying Networks.** Dmitry Kovalev, Egor Shulgin, Peter Richtárik, Alexander Rogozin, Alexander Gasnikov. *Proceedings of the 38th International Conference on Machine Learning*, [arxiv:2102.09234](#), 2021.

**Distributed Saddle-Point Problems Under Similarity.** Aleksandr Beznosikov, Gesualdo Scutari, Alexander Rogozin, Alexander Gasnikov. *Advances in Neural Information Processing Systems 34*, [arXiv:2107.10706](#).

**PUBLICATIONS** **Towards accelerated rates for distributed optimization over time-varying networks.** Alexander Rogozin, Vladislav Lukoshkin, Alexander Gasnikov, Dmitry Kovalev, Egor Shulgin. *International Conference on Optimization and Applications*, [arXiv:2009.11069](#), 2021.

**Penalty-Based Method for Decentralized Optimization over Time-Varying Graphs.** Alexander Rogozin, Alexander Gasnikov. *International Conference on Optimization and Applications*, [arxiv:1911.08527](#), 2020.

**An Accelerated Method For Decentralized Distributed Stochastic Optimization Over Time-Varying Graphs.** Alexander Rogozin, Mikhail Bochko, Pavel Dvurechensky, Alexander Gasnikov, Vladislav Lukoshkin. *Conference on Decision and Control 2021*, [arXiv:2103.15598](#).

**Near-Optimal Decentralized Algorithms for Saddle Point Problems over Time-Varying Networks.** Aleksandr Beznosikov, Alexander Rogozin, Dmitry Kovalev, Alexander Gasnikov. *International Conference on Optimization and Applications 2021*, [arXiv:2107.05957](#), 2021.

**Decentralized Distributed Optimization for Saddle Point Problems.** Alexander Rogozin, Pavel Dvurechensky, Darina Dvinkikh, Alexander Beznosikov, Dmitry Kovalev, Alexander Gasnikov. [arXiv:2102.07758](#).

**Fast Linear Convergence of Randomized BFGS.** Dmitry Kovalev, Robert M. Gower, Peter Richtárik, Alexander Rogozin. [arXiv:2002.11337](#).

**OTHER PROJECTS**

- Developed a bytecode interpreter for Python, a [library](#) for graph computations and a [telegram bot](#) (academic projects). Contributed a visualization tool to [catboost](#) (Yandex open-source ML library).
- Worked on experiments sections for papers in convex optimization (links [one](#), [two](#)).
- Rank 50/1200+ in machine learning contest "Sustainable Industry: Rinse Over Run" hosted on [drivendata.org](#).

**SKILLS**

**Programming Languages:** Python, C, C++.

**ML Tools:** Numpy, Scipy, Matplotlib, Pandas, Sklearn, OpenCV, Vowpal Wabbit.

**Deep Learning:** PyTorch + TorchScript, Tensorflow, Keras.

**Dev Tools:** Git, Pytest, Docker.

**Other:** tmux, SQL, Octave, MatLab, GAMS.

**Soft Skills:** team leading, interaction with the customer.

**TEACHING AND MENTORING EXPERIENCE**

- Lecturer in Optimization Methods for Machine Learning at [MADE](#) (Mail.ru Big Data Academy, 2020-present, [link](#) to one of the lecture videos) and MIPT (fall 2020).
- Tutor for Probability theory at MIPT department of Control and Applied Mathematics (2018-2020).
- Supervisor of students at Sirius summer school (2020, 2021), Sochi, Russia. Derived lectures and mentored 9 students in total. The work ended up with 3 publications in peer-reviewed journals and a [library](#) for numerical simulations.
- Currently supervising a thesis of a Bachelor student.

**HONORS AND AWARDS**

<b>Winner of Russian National Physics Olympiad</b> <i>Saransk, Russia</i>	<b>April 2012</b>
<b>Awardee of Gazprombank Stipend</b> <i>Moscow, Russia</i>	<b>November 2017</b>
<b>Winner of 62 MIPT conference</b> <b>Applied mathematics and informatics section</b> <i>Moscow, Russia</i>	<b>December 2019</b>