ELNUR GASANOV

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PUBLICATIONS

Speeding Up Stochastic Proximal Optimization In The High Hessian Dissimilarity Setting
Elnur Gasanov, Peter Richtárik
Submitted to AISTATS 2025

Error Feedback Reloaded: From Quadratic to Arithmetic Mean of Smoothness Constants
Peter Richtárik, Elnur Gasanov, Konstantin Burlachenko

- Proceedings of the 12th International Conference on Learning Representations (ICLR 2024)
- https://arxiv.org/abs/2402.10774

Error Feedback Shines when Features are Rare
Peter Richtárik, Elnur Gasanov, Konstantin Burlachenko
https://arxiv.org/abs/2305.15264

Understanding Progressive Training Through the Framework of Randomized Coordinate Descent
Rafał Szlendak, Elnur Gasanov, Peter Richtárik

- Proceedings of the 27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024)
- https://arxiv.org/abs/2306.03626

Adaptive Compression for Communication-Efficient Distributed Training
Maksim Makarenko, Elnur Gasanov, Abdurakhmon Sadiev, Rustem Islamov, Peter Richtárik

- Transactions on Machine Learning Research
- https://arxiv.org/abs/2211.00188

3PC: Three Point Compressors for Communication-Efficient Distributed Training and a Better Theory for Lazy Aggregation
Peter Richtárik, Igor Sokolov, Ilyas Fatkhullin, Elnur Gasanov, Zhize Li, Eduard Gorbunov

- Proceedings of the 39th International Conference on Machine Learning (ICML 2022)
- https://arxiv.org/abs/2202.00998

FLIX: A Simple and Communication-Efficient Alternative to Local Methods in Federated Learning
Elnur Gasanov, Ahmed Khaled, Samuel Horvath, Peter Richtárik

- Proceedings of the 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022)
- https://arxiv.org/abs/2111.11556

Lower Bounds and Optimal Algorithms for Smooth and Strongly Convex Decentralized Optimization Over Time-Varying Networks
Dmitry Kovalev, Elnur Gasanov, Alexander Gasnikov, Peter Richtárik

- Proceedings of the 35th Conference on Neural Information Processing Systems (NeurIPS 2021)
- https://arxiv.org/abs/2106.04469

From Local SGD to Local Fixed-Point Methods for Federated Learning
Grigory Malinovsky, Dmitry Kovalev, Elnur Gasanov, Laurent Condat, Peter Richtárik

- Proceedings of the 37th International Conference on Machine Learning (ICML 2020)
- https://arxiv.org/abs/2004.01442

Stochastic Spectral and Conjugate Descent Methods
Dmitry Kovalev, Eduard Gorbunov, Elnur Gasanov, Peter Richtárik

- Proceedings of the 32th Conference on Neural Information Processing Systems (NeurIPS 2018)
- https://arxiv.org/abs/1802.03703

Creation of approximating scalogram description in a problem of movement prediction
Elnur Gasanov, Anastasia Motrenko

- "Machine Learning and Data Analysis", Vol. 3, #2, 2017
- http://jmlda.org/papers/doc/2017/no2/Gasanov2017ECoGAnalysis.pdf (in russian)

CAREER SYNOPSIS

Ph.D. researcher at KAUST Center of Excellence for Generative AI, specializing in Distributed Learning.
Authored numerous peer-reviewed papers, especially featured in top conferences such as ICML and NeurIPS.
Honored with the Dean's List Award for academic distinction at KAUST.
Teaching Assistant at the Federated Learning course.

EDUCATION

Ph.D. in Computer Science Jan. 2020 - May 2025
King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
Research Focus: Compression and Personalization for Federated Learning
Academic PI: Peter Richtárik

Master of Science in Computer Science Sep. 2018 - Dec. 2019
King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
GPA: **3.67/4.00**

Bachelor of Science in Applied Mathematics and Physics Sep. 2014 - Jun. 2018
Moscow Institute of Physics and Technology, Moscow, Russia
Average Grade: **8.66/10.00**

PROFESSIONAL EXPERIENCE

Ph.D. Researcher 01/2020 - Present
King Abdullah University of Science and Technology, Artificial Intelligence Initiative
Conducted research in Distributed Learning, collaborating with a team of 15+ researchers. Published 5 papers in peer-reviewed conferences and journals. Utilized various Python packages (JAX, FedJAX, Optax) in computational experiments. Recognized with the Dean's List Award (Top 20%) for outstanding academic performance.

Research Scientist Intern 06/2024 - 07/2024
The Exploration and Petroleum Engineering Center - Advanced Research Center, Aramco
Project Title: Selective Memorization (Forgetting): Strategies for Partial Data Removal in AI Systems
Developed a novel technique for addressing Machine Unlearning challenges; co-designed a repository implemented in the PyTorch framework. A paper presenting the results is planned for submission to the CVPR2025 conference.

Teaching Assistant 09/2023 - 09/2023
King Abdullah University of Science and Technology, KAUST Academy
Course: Federated Learning, Professor Peter Richtárik
Facilitated hands-on lab exercises, enhancing student understanding and practical skills. Designed and prepared two comprehensive lab exercises to supplement course material.

Research Scientist Intern 06/2019 - 07/2019
University of Grenoble-Alpes, Laboratory Jean Kuntzmann

Developed asynchronous lock-free algorithms for gradient descent, deriving convergence rates for both full and stochastic gradient cases. Analyzed the algorithm with constant and diminishing stepsizes.

AWARDS AND RECOGNITIONS

Invited to give a talk at a Federated Learning course	University of Tartu, Estonia	2023
CEMSE Dean's List Award (Top 20%)	KAUST, Saudi Arabia	2022
Best Reviewer Award (Top 10%) at ICML 2022	ICML Program Chairs, USA	2022
KAUST Fellowship for MS/PhD students	KAUST, Saudi Arabia	2018
Increased State Academic Scholarship	Ministry of Education, Russia	2017
Academic Excellence Scholarship	Non-profit Fund, Russia	2014-2017
Prize-Winner of "Future Scientists"	Moscow State University, Russia	2014
Prize-Winner of Economics Olympiad at the Regional Level	Ministry of Education, Russia	2013
Prize-Winner of Physics Olympiad at the Regional Level	Ministry of Education, Russia	2012-2014
Prize-Winner of Math Olympiad at the Regional Level	Ministry of Education, Russia	2012, 2014

SKILLS

Mathematical	Calculus, Linear Algebra, Algorithm Theory, Deep Learning
Computational	Python, JAX, FedJAX, PyTorch
Tools	LaTeX, Git
Languages	English (Advanced), Russian (Native)

EXTRA CURRICULARS AND HOBBIES

Hobbies: Fitness, Volleyball
Volunteer: National Park Hunsrueck II, Deuselbach, Germany, 2017
Volunteer: Environment and Legality at Vesuvio National Park, Ottaviano, Italy, 2016
Volunteer: University "5top100" conference, 2016
Volunteer: Promoting Biodiversity in Neckertal, Brunnadern SG, Switzerland, 2015