

Дмитрий Ковалев

ЛИЧНЫЕ ДАННЫЕ

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ОПЫТ РАБОТЫ

2023-н.в.	Ведущий исследователь Яндекс , Москва, Россия
2022-2023	Постдокторантura Католический университет Лувена , Лувен-ла-Нёв, Бельгия
2021-2023	Стажер-исследователь Исследовательский центр доверенного искусственного интеллекта Институт системного программирования им. В.П. Иванникова РАН Москва, Россия
2022	Исследователь Лаборатория продвинутой комбинаторики и сетевых приложений Московский физико-технический институт , Долгопрудный, Россия

ОБРАЗОВАНИЕ

2019-2022	Доктор философии (PhD) по компьютерным наукам Научно-технологический университет имени короля Абдаллы , Тувал, Саудовская Аравия Руководитель: Peter Richtárik Диссертация: " Optimal Algorithms for Affinely Constrained, Distributed, Decentralized, Minimax, and High-Order Optimization Problems " Диссертационный совет: – Внешний: Юрий Нестеров , Аркадий Немировский – Внутренний: David E. Keyes , Di Wang , Matteo Parsani
2018-2021	Магистр прикладных математики и физики Московский физико-технический институт , Долгопрудный, Россия Руководитель: Александр Гасников
2018-2019	Магистр компьютерных наук Научно-технологический университет имени короля Абдаллы , Тувал, Саудовская Аравия Руководитель: Peter Richtárik
2014-2018	Бакалавр прикладных математики и физики Московский физико-технический институт , Долгопрудный, Россия Руководитель: Александр Гасников

НАУЧНЫЕ ИНТЕРЕСЫ

Оптимизация, Федеративное и распределенное обучение
Машинное обучение, Глубокое обучение

НАВЫКИ

ПРОГРАММИРОВАНИЕ	C/C++, Python, JAX, PyTorch, Алгоритмы и структуры данных (Мастер Codeforces)
МАТЕМАТИКА	Математический анализ, Линейная алгебра, Теория вероятностей и статистика, Выпуклый Анализ
Компьютер	macOS, LaTeX, Git
Языки	Русский, Английский

НАГРАДЫ

1. Национальная премия “Лидеры ИИ” 2025, Конференция “AI Journey”
2. Премия имени Б.Т. Поляка для молодых учёных 2025, Университет Иннополис
3. Студенческая премия за отличные успехи в науке, Научно-технологический университет имени короля Абдаллы, 2021
4. Лучшая студенческая работа воркшопа FL-ICML 2021
5. Научная премия Яндекса 2021, Яндекс
6. Научная премия Яндекса 2020, Яндекс
7. Стипендия Абрамова за отличные успехи в учебе, Московский физико-технический институт, 2015-2017
8. Азиатская физическая олимпиада (APhO) 2014, похвальная грамота, Сингапур
9. Russian President's Scholarship for High School Students, given for prize-winning at final round of All-Russian School Olympiads, 2012-2014
10. Призер заключительного этапа Всеросийской олимпиады школьников по физике, Санкт-Петербург, 2014
11. Победитель регионального этапа Всеросийской олимпиады школьников по информатике, Москва, 2014
12. Победитель регионального этапа Всеросийской олимпиады школьников по математике, Москва, 2014
13. Победитель заключительного этапа Всеросийской олимпиады школьников по физике, Владивосток, 2013
14. Призер заключительного этапа Всеросийской олимпиады школьников по физике, Саранск, 2012

ПУБЛИКАЦИИ

1. Decentralized Optimization with Coupled Constraints (Demyan Yarmoshik, Alexander Rogozin, Nikita Kiselev, Daniil Dorin, Alexander Gasnikov, Dmitry Kovalev). *International Conference on Learning Representations*, 2025.
2. On Linear Convergence in Smooth Convex-Concave Bilinearly-Coupled Saddle-Point Optimization: Lower Bounds and Optimal Algorithms (Ekaterina Borodich, Dmitry Kovalev). *International Conference on Machine Learning*, 2025.
3. An Optimal Algorithm for Strongly Convex Min-Min Optimization (Dmitry Kovalev, Alexander Gasnikov, Grigory Malinovsky). *Uncertainty in Artificial Intelligence*, 2025.
4. Lower Bounds and Optimal Algorithms for Non-Smooth Convex Decentralized Optimization over Time-Varying Networks (Dmitry Kovalev, Ekaterina Borodich, Alexander Gasnikov, Dmitrii Feoktistov). *Advances in Neural Information Processing Systems*, 2024.
5. Decentralized convex optimization on time-varying networks with application to Wasserstein barycenters (Olga Yufereva, Michael Persianov, Pavel Dvurechensky, Alexander Gasnikov, Dmitry Kovalev). *Computational Management Science*, 2024.
6. Decentralized saddle-point problems with different constants of strong convexity and strong concavity (Dmitry Metelev, Alexander Rogozin, Alexander Gasnikov, Dmitry Kovalev). *Computational Management Science*, 2024.

7. **Decentralized saddle point problems via non-Euclidean mirror prox** (Alexander Rogozin, Aleksandr Beznosikov, Darina Dvinskikh, Dmitry Kovalev, Pavel Dvurechensky, Alexander Gasnikov). *Optimization Methods and Software*, 2024.
8. **Convex-Concave Interpolation and Application of PEP to the Bilinear-Coupled Saddle Point Problem** (Valery Krivchenko, Alexander Gasnikov, Dmitry Kovalev). *Russian Journal of Nonlinear Dynamics*, 2024.
9. **Non-smooth setting of stochastic decentralized convex optimization problem over time-varying graphs** (Aleksandr Lobanov, Andrew Veprikov, Georgiy Konin, Aleksandr Beznosikov, Alexander Gasnikov, Dmitry Kovalev). *Computational Management Science*, 2023.
10. **Decentralized Convex Optimization over Time-Varying Graphs** (Alexander Rogozin, Alexander Gasnikov, Aleksander Beznosikov, Dmitry Kovalev). *Encyclopedia of Optimization*, 2023.
11. **Smooth monotone stochastic variational inequalities and saddle point problems: A survey** (Aleksandr Beznosikov, Boris Polyak, Eduard Gorbunov, Dmitry Kovalev, Alexander Gasnikov). *European Mathematical Society Magazine*, 2023.
12. **Is consensus acceleration possible in decentralized optimization over slowly time-varying networks?** (Dmitry Metelev, Alexander Rogozin, Dmitry Kovalev, Alexander Gasnikov). *International Conference on Machine Learning*, 2023.
13. **Stochastic distributed learning with gradient quantization and double-variance reduction** (Samuel Horvath, Dmitry Kovalev, Konstantin Mishchenko, Peter Richtarik, Sebastian Stich). *Optimization Methods and Software*, 2023.
14. **Accelerated primal-dual gradient method for smooth and convex-concave saddle-point problems with bilinear coupling** (Dmitry Kovalev, Alexander Gasnikov, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2022.
15. **Communication acceleration of local gradient methods via an accelerated primal-dual algorithm with an inexact prox** (Abdurakhmon Sadiev, Dmitry Kovalev, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2022.
16. **Optimal algorithms for decentralized stochastic variational inequalities** (Dmitry Kovalev, Aleksandr Beznosikov, Abdurakhmon Sadiev, Michael Persianov, Peter Richtarik, Alexander Gasnikov). *Advances in Neural Information Processing Systems*, 2022.
17. **Optimal gradient sliding and its application to optimal distributed optimization under similarity** (Dmitry Kovalev, Aleksandr Beznosikov, Ekaterina Borodich, Alexander Gasnikov, Gesualdo Scutari). *Advances in Neural Information Processing Systems*, 2022.
18. **The first optimal acceleration of high-order methods in smooth convex optimization** (Dmitry Kovalev, Alexander Gasnikov). *Advances in Neural Information Processing Systems*, 2022.
19. **The first optimal algorithm for smooth and strongly-convex-strongly-concave minimax optimization** (Dmitry Kovalev, Alexander Gasnikov). *Advances in Neural Information Processing Systems*, 2022.
20. **Accelerated variance-reduced methods for saddle-point problems** (Ekaterina Borodich, Vladislav Tominin, Yaroslav Tominin, Dmitry Kovalev, Alexander Gasnikov, Pavel Dvurechensky). *EURO Journal on Computational Optimization*, 2022.
21. **An optimal algorithm for strongly convex minimization under affine constraints** (Adil Salim, Laurent Condat, Dmitry Kovalev, Peter Richtarik). *International Conference on Artificial Intelligence and Statistics*, 2022.
22. **IntSGD: Adaptive floatless compression of stochastic gradients** (Konstantin Mishchenko,

Bokun Wang, Dmitry Kovalev, Peter Richtarik). *International Conference on Learning Representations*, 2022.

23. **Lower bounds and optimal algorithms for smooth and strongly convex decentralized optimization over time-varying networks** (Dmitry Kovalev, Elnur Gasanov, Alexander Gasnikov, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2021.
24. **A linearly convergent algorithm for decentralized optimization: Sending less bits for free!** (Dmitry Kovalev, Anastasia Koloskova, Martin Jaggi, Peter Richtarik, Sebastian Stich). *International Conference on Artificial Intelligence and Statistics*, 2021.
25. **ADOM: accelerated decentralized optimization method for time-varying networks** (Dmitry Kovalev, Egor Shulgin, Peter Richtarik, Alexander V Rogozin, Alexander Gasnikov). *International Conference on Machine Learning*, 2021.
26. **Near-optimal decentralized algorithms for saddle point problems over time-varying networks** (Aleksandr Beznosikov, Alexander Rogozin, Dmitry Kovalev, Alexander Gasnikov). *Optimization and Applications: 12th International Conference, OPTIMA 2021, Petrovac, Montenegro, September 27–October 1, 2021, Proceedings 12*, 2021.
27. **Towards accelerated rates for distributed optimization over time-varying networks** (Alexander Rogozin, Vladislav Lukoshkin, Alexander Gasnikov, Dmitry Kovalev, Egor Shulgin). *Optimization and Applications: 12th International Conference, OPTIMA 2021, Petrovac, Montenegro, September 27–October 1, 2021, Proceedings 12*, 2021.
28. **Linearly converging error compensated SGD** (Eduard Gorbunov, Dmitry Kovalev, Dmitry Makarenko, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2020.
29. **Optimal and practical algorithms for smooth and strongly convex decentralized optimization** (Dmitry Kovalev, Adil Salim, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2020.
30. **Don't jump through hoops and remove those loops: SVRG and Katyusha are better without the outer loop** (Dmitry Kovalev, Samuel Horvath, Peter Richtarik). *Algorithmic Learning Theory*, 2020.
31. **Accelerated methods for saddle-point problem** (Mohammad S Alkousa, Alexander Vladimirovich Gasnikov, Darina Mikhailovna Dvinskikh, Dmitry A Kovalev, Fedor Sergeevich Stonyakin). *Computational Mathematics and Mathematical Physics*, 2020.
32. **Revisiting stochastic extragradient** (Konstantin Mishchenko, Dmitry Kovalev, Egor Shulgin, Peter Richtarik, Yura Malitsky). *International Conference on Artificial Intelligence and Statistics*, 2020.
33. **Acceleration for compressed gradient descent in distributed and federated optimization** (Zhize Li, Dmitry Kovalev, Xun Qian, Peter Richtarik). *International Conference on Machine Learning*, 2020.
34. **From local SGD to local fixed-point methods for federated learning** (Grigory Malinovskiy, Dmitry Kovalev, Elnur Gasanov, Laurent Condat, Peter Richtarik). *International Conference on Machine Learning*, 2020.
35. **Variance reduced coordinate descent with acceleration: New method with a surprising application to finite-sum problems** (Filip Hanzely, Dmitry Kovalev, Peter Richtarik). *International Conference on Machine Learning*, 2020.
36. **RSN: randomized subspace Newton** (Robert Gower, Dmitry Kovalev, Felix Lieder, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2019.
37. **Stochastic proximal Langevin algorithm: Potential splitting and nonasymptotic rates** (Adil Salim, Dmitry Kovalev, Peter Richtarik). *Advances in Neural Information Processing Systems*, 2019.

38. **Stochastic spectral and conjugate descent methods** (Dmitry Kovalev, Peter Richtarik, Eduard Gorbunov, Elnur Gasanov). *Advances in Neural Information Processing Systems*, 2018.
39. **A hypothesis about the rate of global convergence for optimal methods (Newton's type) in smooth convex optimization** (Alexander Gasnikov, Dmitry Kovalev). *Computer research and modeling*, 2018.

ПРЕПРИНТЫ

1. **SGD with Adaptive Preconditioning: Unified Analysis and Momentum Acceleration** (Dmitry Kovalev). *arXiv preprint arXiv:2506.23803*, 2025.
2. **Understanding gradient orthogonalization for deep learning via non-euclidean trust-region optimization** (Dmitry Kovalev). *arXiv preprint arXiv:2503.12645*, 2025.
3. **On Solving Minimization and Min-Max Problems by First-Order Methods with Relative Error in Gradients** (Artem Vasin, Valery Krivchenko, Dmitry Kovalev, Fedyor Stonyakin, Nazari Tupitsa, Pavel Dvurechensky, Mohammad Alkousa, Nikita Kornilov, Alexander Gasnikov). *arXiv preprint arXiv:2503.06628*, 2025.
4. **Decentralized finite-sum optimization over time-varying networks** (Dmitry Metelev, Savelii Chezhegov, Alexander Rogozin, Aleksandr Beznosikov, Alexander Sholokhov, Alexander Gasnikov, Dmitry Kovalev). *arXiv preprint arXiv:2402.02490*, 2024.
5. **Optimal algorithm with complexity separation for strongly convex-strongly concave composite saddle point problems** (Ekaterina Borodich, Georgiy Kormakov, Dmitry Kovalev, Aleksandr Beznosikov, Alexander Gasnikov). *arXiv preprint arXiv:2307.12946*, 2023.
6. **On scaled methods for saddle point problems** (Aleksandr Beznosikov, Aibek Alanov, Dmitry Kovalev, Martin Takac, Alexander Gasnikov). *arXiv preprint arXiv:2206.08303*, 2022.
7. **Decentralized distributed optimization for saddle point problems** (Alexander Rogozin, Aleksandr Beznosikov, Darina Dvinskikh, Dmitry Kovalev, Pavel Dvurechensky, Alexander Gasnikov). *arXiv preprint arXiv:2102.07758*, 2021.
8. **Fast linear convergence of randomized BFGS** (Dmitry Kovalev, Robert M Gower, Peter Richtarik, Alexander Rogozin). *arXiv preprint arXiv:2002.11337*, 2020.
9. **Distributed fixed point methods with compressed iterates** (Selim Chraibi, Ahmed Khaled, Dmitry Kovalev, Peter Richtarik, Adil Salim, Martin Takac). *arXiv preprint arXiv:1912.09925*, 2019.
10. **Stochastic Newton and cubic Newton methods with simple local linear-quadratic rates** (Dmitry Kovalev, Konstantin Mishchenko, Peter Richtarik). *arXiv preprint arXiv:1912.01597*, 2019.