

Peter Richtárik: Curriculum Vitae

1. CONTACT DETAILS

Address: Office 3145, Building 12, 4700 KAUST, Thuwal 23955-6900, Kingdom of Saudi Arabia
Email: peter.richtarik@kaust.edu.sa
Website: <https://richtarik.org>

2. RESEARCHER IDs

dblp: <https://dblp.org/pid/62/8001.html>
orcid: <https://orcid.org/0000-0003-4380-5848>
Web of Science Researcher ID: O-5797-2018

3. RESEARCH INTERESTS

- ◇ machine learning, federated learning, empirical risk minimization
- ◇ big data optimization, convex and non-convex optimization; 0th, 1st, and 2nd order optimization methods
- ◇ randomized algorithms, randomized coordinate descent, stochastic gradient descent, variance reduction
- ◇ randomized numerical linear algebra
- ◇ parallel and distributed computing, supercomputing, gradient compression

4. ACADEMIC POSITIONS

2019–now **Professor**, Computer Science, King Abdullah University of Science and Technology (KAUST), Kingdom of Saudi Arabia
2022–2023 **Adjunct Professor**¹, Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), Abu Dhabi, United Arab Emirates
2017–2019 **Visiting Professor**, Moscow Institute of Physics and Technology, Russia
2017–2019 **Associate Professor**, Computer Science, KAUST, Kingdom of Saudi Arabia
2016–2019 **Associate Professor (Reader)**, Mathematics, University of Edinburgh
2013 **Invited Visiting Scientist**, Simons Institute for the Theory of Computing, UC Berkeley
2009–2016 **Assistant Professor (Lecturer)**, School of Mathematics, University of Edinburgh
2007–2009 **Postdoctoral Fellow**, Center for Operations Research and Econometrics and Department of Mathematical Engineering, Catholic University of Louvain, Belgium (host: Yu. Nesterov)

5. EDUCATION

2007 **PhD, Operations Research, Cornell University**
2006 MS, Operations Research, Cornell University
2001 Mgr, Mathematics, Comenius University, Slovakia, 100% academic grades, ranked #1
2001 Bc, Management, Comenius University, Slovakia, 100% academic grades, ranked #1
2000 Bc, Mathematics, Comenius University, Slovakia, 100% academic grades, ranked #1

¹This position allowed me to supervise Dr. Sarit Khirirat – a postdoc located at MBZUAI.

6. AWARDS & RECOGNITIONS

Awards explicitly addressed to my students, postdocs or coauthors for a talk, poster or paper based on joint research with me are listed in the section “8.4 My Team: Awards and Recognitions”.

2024	Charles Broyden Prize
2024	Oral Paper at NeurIPS 2024 (0.4% acceptance rate ² ; paper [249])
2024	Spotlight Paper at NeurIPS 2024 (for paper [243])
2024	Oral Paper at ICML 2024 (1.5% acceptance rate; paper [231])
2023	#1 in Asia and #3 in Europe in Machine Learning according to CSRankings.org ³
2023	Research.com Computer Science in Saudi Arabia Leader Award
2023	Research.com Mathematics in Saudi Arabia Leader Award
2023	Oral Paper at ICLR 2023 (for paper [184])
2022	Top 20 author at NeurIPS 2022 in terms of the number of papers accepted to the conference ⁴
2022	Research.com Rising Star of Science ⁵ , global rank 214 among all fields of science
2022	Spotlight Paper at ICLR 2022 (for paper [156])
2021	Oral Paper at NeurIPS 2021 (less than 1% acceptance rate; paper [167])
2021	2020 COAP Best Paper Award ⁶ (for paper [65])
2021	One of the 10 Most Cited Articles Published in SIMAX Since 2019 ⁷ for paper [56]
2020	Best Paper Award at the NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning for paper [135]
2020	Top 30–50 author at ICML 2020 (in number of papers accepted)
2020	1st Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [39]
2020	3rd Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [44]
2020	3rd Most Downloaded Paper in “SIAM J. on Optimization” for paper [57]
2020	4th Most Downloaded Paper in “SIAM J. on Optimization” for paper [21]
2019	1st Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [39]
2019	4th Most Downloaded Paper in “SIAM J. on Optimization” for paper [57]
2019	5th Most Downloaded Paper in “SIAM J. on Optimization” for paper [21]
2019	10th Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [44]
2019	Interviewed by Robin.ly for their “Leaders in AI” platform at NeurIPS 2019 ⁸
2019	Best NeurIPS Reviewer Award ⁹
2019	Distinguished Speaker Award , Int. Conf. on Continuous Optimization, Berlin, Germany
2018	Best NeurIPS Reviewer Award ¹⁰
2018	2nd Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [39]

²61 papers out of more than 15,000.

³According to CS Rankings in the 5 year period 2019–2023, I rank #1 in Machine Learning in all of Asia: 1) Peter Richtárik at KAUST (14), 2) Sung Ju Hwang at KAIST (13.6), 3) Jinwoo Shin at KAIST (13.2), 4) Jun Zhu at Tsinghua (12.3), 5) Masashi Sugiyama at Tokyo (12), 6) Junchi Yan at Shanghai Jiao Tong (10.4) 7) Taiji Suzuki at Tokyo (9.6), 8) Kun Zhang at MBZUAI (9.3). If KAUST was in Europe, I would rank #3 in Europe in the same metric: 1) Andreas Krause at ETH (17.5), 2) Bernhard Schölkopf at Max Planck (14.9), 3) Peter Richtárik at KAUST (14), 4) Volkan Cevher at EPFL (12.5), 5) Max Welling at Amsterdam (12.2), 6) Stephan Günnemann at TU Munich (12.1), 7) Yishay Mansour at Tel Aviv (9.6), 8) Shie Mannor at Technion (9.3), 9) Francis Bach at ENS (9.2), 10) Shimon Whiteson at Oxfröd (8.9), 11) José Miguel Hernández-Lobato at Cambridge (8.8).

⁴https://github.com/sanagno/neurips_2022_statistics (my team had 12 papers accepted; I was a coauthor on 9)

⁵<https://research.com/u/peter-richtarik>

⁶For the best paper published in Computational Optimization and Applications in 2020.

⁷<https://sinews.siam.org/Details-Page/10-most-highly-cited-articles-from-simax-since-2019-1>

⁸From Robin.ly LinkedIn Post: “We are interviewing the world’s leading AI academics this week at NeurIPS2019. Look forward to sharing much more on the state of AI research, how it’s fueling AI commercialization & what we can expect from AI in the next decade. Spotlight interviews with Yoshua Bengio, Peter Richtárik, Charles Onu, Max Welling, Shimon Whiteson, Sharon Zhou, Liwei Wang, Song Han & many more. ”

⁹“Thank you for all your hard work reviewing for NeurIPS 2019! We are delighted to inform you that you were one of the 400 highest-scoring reviewers this year! You will therefore be given access (for a limited period of time) to one free registration to this year’s conference; you will later receive additional information by email explaining how to access your registration. ”

¹⁰“We are delighted to inform you that you were one of the 218 highest-scoring reviewers this year! You will therefore be given access (for a limited period of time) to one free registration to this year’s conference.”

2018	6th Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [44]
2017	1st Most Read Paper in “Optimization Methods and Software” for paper [41]
2017	1st Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [39]
2017	1st Most Trending Paper in “Mathematical Programming” for paper [10]
2017	Announcement of “Federated Learning” by Google (based on papers [51, 52])
2016–2017	2nd Most Downloaded Paper in “SIAM J. on Optimization” for paper [21]
2016	SIAM SIGEST Outstanding Paper Award for paper [21]
2016	EUSA Best Research or Dissertation Supervisor Award ¹¹ (2nd Prize)
2016–now	Turing Fellow, The Alan Turing Institute , London
2016	EPSRC Fellowship in Mathematical Sciences ¹²
2014	Nominated for the Chancellor’s Rising Star Award ¹³ , University of Edinburgh
2013	Simons Institute Visiting Scientist Fellowship , UC Berkeley
2013	Nominated for the 2014 Microsoft Research Faculty Fellowship ¹⁴
2011 & 2012	Nominated for the Innovative Teaching Award , University of Edinburgh
2011–2017	Honorary Fellow , Heriot-Watt University
2007	CORE Fellowship , Université catholique de Louvain
2002	Cornell University Graduate Fellowship
2001	Dean’s Prize and Rector’s Prize , Comenius University
1992–2001	Winner of Numerous Mathematical Olympiads and Competitions

7. GRANTS

7.1 MY GRANTS¹⁵

2024–2029	\$11,000,000 (Co-PI) , KAUST Center of Excellence for Generative AI
2024	1,000,000 SAR (PI) , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2023–2024	\$60,000 (PI) , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2023–2024	\$650,000 (PI) , KAUST Baseline Research Grant ¹⁶
2022–2023	\$60,000 (PI) , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2022–2023	\$40,000 (PI) , Top-up to KAUST Baseline Research Grant
2022–2023	\$540,000 (PI) , KAUST Baseline Research Grant
2021–2022	\$540,000 (PI) , KAUST Baseline Research Grant
2021–2022	\$100,000 (PI) , AI Initiative Funding
2020–2021	\$540,000 (PI) , KAUST Baseline Research Grant
2020	\$100,000 (PI) , AI Initiative Seed Funding, “Algorithmic, Systems and Privacy Aspects of Split Learning”, Joint with: Marco Canini (KAUST, Co-I) and Panos Kalnis (KAUST, Co-I)
2019–2020	\$200,000 (PI) , Extreme Computing Research Center (ECRC) funding, KAUST, “Optimization for Machine Learning”, Joint with: Tong Zhang (HKUST, PI)
2019–2020	\$540,000 (PI) , KAUST Baseline Research Grant
2018–2019	£216,843 (Co-I) , Innovate UK Grant, “Renewable Energy Performance Score (REPScore)”, Joint with: Enian (PI), Daniel Friedrich (Edinburgh, PI)
2018–2021	\$974,789 (Co-I) , CRG2017 Grant, “Analyzing Large Scale 3D Shape Collections”, Joint with: Peter Wonka (KAUST, PI), Maks Ovsjanikov (École Polytechnique, Co-I)
2017–2019	RUB 7,960,000 (PI) , Visiting Professor Grant, Moscow Institute of Physics and Technology

¹¹EUSA = Edinburgh University Students’ Association. One first and one second prize are given each year across all disciplines and levels of seniority at the University of Edinburgh.

¹²In total, 5 fellowships in mathematics were awarded in the UK in this round at all levels of seniority.

¹³One of two nominated from the School of Mathematics.

¹⁴Selected universities can nominate a single candidate. No European scientists got the award in 2014.

¹⁵All small grants (value below \$10k) are excluded from this list. The total value of the 16 small grants excluded is £42,090. Funding from the VCC and ECRC centers at KAUST is excluded from this list.

¹⁶Unrestricted basic research funding offered each year to KAUST Professors.

2018	\$10,000 (PI) , KICP grant in support of KAUST Research Workshop on Optimization and Big Data, 2018
2018–2019	\$400,000 (PI) , KAUST Baseline Research Grant ¹⁷
2017–2018	\$79,281 (PI) , KAUST Office of Sponsored Research Conference Support Grant URF/1/3347-01, “Optimization and Big Data”, Joint with: Marco Canini (KAUST, PI)
2016–2020	£70,000 EPSRC CASE ¹⁸ PhD Studentship for Filip Hanzely
2017–2018	\$400,000 (PI) , KAUST Baseline Research Grant
2016–2017	\$133,333 (PI) , KAUST Baseline Research Grant (4 months of cover: March-June 2017)
2016–2020	£45,000 (PI) , Amazon Research Grant
2016–2020	£823,211 (PI) , EPSRC Early Career Fellowship in Mathematical Sciences EP/N005538/1, “Randomized Algorithms for Extreme Convex Optimization”
2016–2020	\$20,000 (PI) , Amazon EC2 Grant (partner funding associated with the EPSRC Fellowship)
2015	£20,000 (PI) , Alan Turing Institute Scoping Workshop Grant, “Distributed Machine Learning and Optimization”, Joint with: Artur Czumaj (Warwick, PI), Ilias Diakonikolas (Edinburgh, PI), Mark Girolami (Warwick, PI), Raphael Hauser (Oxford, PI), John Shawe-Taylor (UCL, PI)
2015	£12,000 (PI) , Alan Turing Institute Scoping Workshop Grant, “Theoretical and Computational Approaches to Large Scale Inverse Problems”, Joint with: Simon Arridge (UCL, PI), John Aston (Cambridge, PI), Carola-Bibiane Schönlieb (Cambridge, PI), Andrew Stuart (Warwick, PI), Jared Tanner (Oxford, PI)
2014–2017	\$180,000 , Google Europe Doctoral Fellowship for Jakub Konečný
2013–2015	£125,849 (PI) , EPSRC First Grant EP/K02325X/1, “Accelerated Coordinate Descent Methods for Big Data Optimization”
2014–2015	£40,000 (PI) , School of Mathematics Grant, “Accelerated Coordinate Descent Methods for Big Data Optimization”, matching funding for my postdoc Z. Qu
2013	£18,785 (PI) , NAIS Travel Grant, my 2 students spending semester at Berkeley
2012–2014	£66,300 (PI) , NAIS Lecturer Grant, paying for a proportion of my time
2012–2014	£10,000 (PI) , NAIS Startup Grant
2012–2013	£49,518 (Co-I) , EPSRC grant EP/J020567/1, “Algorithms for Data Simplicity”, Joint with: Jared Tanner (Oxford, PI)
2011–2014	£646,264 (Co-I) , EPSRC and RCUK grant EP/I017127/1, “Mathematics for Vast Digital Resources”, Joint with: Burak Büke (Edinburgh, Co-I) and Jacek Gondzio (Edinburgh, PI)

7.2 GRANTS I HELPED TO PREPARE¹⁹

2014–2019	£42 million + £5 million, “The Alan Turing Institute”. I am one of a small number of people who helped to prepare Edinburgh’s bid.
2014–2023	£4.5 million, EPSRC grant, “Maxwell Institute Graduate School in Mathematical Analysis and Applications”, PI: Anthony Carbery (Edinburgh). I am one of the named PhD supervisors on the grant.
2014–2021	£5.03 million, EPSRC grant, “Centre for Doctoral Training in Data Science”, PI: Chris Williams (Edinburgh). I am one of 45 named potential PhD advisors at U of Edinburgh.

8. MY TEAM

8.1 MY TEAM @ KAUST

06/2024–now	Intern: Aadi Rane (from UC Berkeley)
05/2024–09/2024	Intern: Wojciech Anyszka (from U of Groningen, Netherlands)

¹⁷Unrestricted basic research funding offered each year to KAUST Associate Professors.

¹⁸CASE = Cooperative Awards in Science and Engineering

¹⁹Large grants which I helped to prepare but where I am not formally an investigator.

02/2024–now	Postdoc: Sarit Khirirat (from KTH, Sweden)
02/2024–05/2024	Intern: Simone Maria Giancola (from Bocconi, Italy)
01/2024–05/2024	Intern: Dymitr Lubczyk (from Amsterdam, Netherlands)
01/2024–04/2024	Intern: Kirill Acharya (from MIPT, Russia)
01/2024–05/2024	Intern: Robin Yadav (from UBC, Canada)
01/2024–now	PhD student: Kaja Gruntkowska (from U of Oxford, UK)
12/2023–03/2024	Intern: Anh-Duc Nguyen (from NUS, Singapore)
10/2023–03/2024	Intern: Timur Kharisov (from MIPT, Russia)
10/2023–04/2024	Intern: Georg Meinhardt (from University of Oxford, UK)
09/2023–01/2024	Intern: Marta Pozzi (from Pavia, Italy)
09/2023–02/2024	Intern: Ákos Zahorský (from Eötvös Loránd University, Hungary)
08/2023–now	MS student: Omar Shaikh Omar (from University of Washington, USA)
08/2023–now	MS student: Artem Riabinin (from Lomonosov Moscow State U, Russia)
08/2023–now	PhD student: Artavazd Maranjyan (from Yerevan State U, Armenia)
07/2023–09/2023	Intern: Andrei Panferov (from MIPT, Russia)
06/2023–08/2023	Intern: Babis Kostopoulos (from U of Athens, Greece)
04/2023–09/2023	Intern: Ahmad Rammal (from École Polytechnique, France)
01/2023–05/2023	Intern: Dinis Seward (from University of Oxford, UK)
01/2023–now	MS student: Ivan Ilin (from Novosibirsk State University, Russia)
01/2023–now	PhD student: Hanmin Li (from USTC, China)
09/2022–now	Postdoc: Yury Demidovich (from MIPT, Russia)
09/2022–now	PhD student: Abdurakhmon Sadiev (from MIPT, Russia)
08/2022–10/2023 ²⁰	MS student: Rafał Szlendak (from Warwick University, UK)
08/2022–02/2023	Intern: Wenzhi “Tom” Fang (from ShanghaiTech University)
07/2022–08/2022	Intern: Omar Shaikh Omar (from University of Washington, USA)
07/2022–10/2022	Intern: Michał Grudzień (from Oxford, UK)
06/2022–01/2023	Intern: Artavazd Maranjyan ²¹ (from Yerevan State University, Armenia)
06/2022–09/2022	Intern: Kaja Gruntkowska (from Warwick, UK)
06/2022–now	PhD student: Igor Sokolov (continuing after MS at KAUST)
01/2022–07/2022	Intern: Abdurakhmon Sadiev (from MIPT, Russia)
01/2022–now	PhD student: Kai Yi (from Xi’an Jiaotong University, China)
01/2022–now	PhD student: Grigory Malinovsky (from MIPT, Russia)
11/2021–06/2024	Postdoc: Avetik Karagulyan (from CREST, France)
11/2021–02/2022	Intern: Navish Kumar (from IIT Kharagpur, India)
09/2021–now	PhD student: Egor Shulgin (continuing after MS at KAUST)
07/2021–11/2021	Intern: Muhammad Harun Khan (from Imperial College, UK)
07/2021–10/2021	Intern: Rafał Szlendak (from Warwick University, UK)
06/2021–06/2024	Postdoc: Alexander Tyurin (from MIPT, Russia)
06/2021–08/2021	Intern: Bokun Wang (from UC Davis, USA)
03/2021–06/2024	PhD student: Lukang Sun (from Nanjing University, China)
03/2021–08/2021	Intern: Rustem Islamov ²² (from TU Munich, Germany)
03/2021–11/2021	Intern: Ilyas Fatkhullin ²³ (from TU Munich, Germany)
01/2021–11/2023	PhD student: Slavomír Hanzely (continuing after MS at KAUST)
09/2020–03/2022	Research Scientist: Zhize Li (from Tsinghua University, China)
10/2020–03/2021	Intern: Bokun Wang (from UC Davis, USA)
09/2020–02/2021	Intern: Eduard Gorbunov (from MIPT, Russia)
08/2020–now	PhD student: Konstantin Burlachenko (from Bauman Moscow State Technical University, Russia)

²⁰Dropped out of MS studies to join a Large Language Model startup in Germany.

²¹I am supervising Arto’s MS thesis at Yerevan State University.

²²I have supervised Rustem Islamov’s BS thesis at MIPT. Rustem is now an MS student at Institut Polytechnique de Paris, France.

²³I have supervised Ilyas Fatkhullin’s MS thesis at TU Munich. Ilyas is now a PhD student at ETH Zürich Switzerland.

08/2020–05/2022	MS student: Igor Sokolov (from MIPT, Russia)
08/2020–12/2021	MS student: Grigory Malinovsky (from MIPT, Russia)
08/2020–09/2020	Intern: Wenlin Chen (from University of Manchester, UK)
06/2020–11/2020	Intern: Rustem Islamov (from MIPT, Russia)
05/2020–06/2020	Intern: Othmane Sebbouh (from École Polytechnique, France)
05/2020–10/2020	Intern: Ahmed Khaled Ragab (from Cairo University, Egypt)
02/2020–12/2020	Research Scientist: El Houcine Bergou (from Toulouse, France)
02/2020–08/2021	MS student: Egor Shulgin (from MIPT, Russia)
02/2020–03/2020	Intern: Eduard Gorbunov (from MIPT, Russia)
01/2020–02/2020	Intern: Alexander Rogozin (from MIPT, Russia)
01/2020–02/2020	Intern: Aleksandr Beznosikov (from MIPT, Russia)
01/2020–02/2020	Intern: Grigory Malinovsky (from MIPT, Russia)
01/2020–now	PhD student: Elnur Gasanov (continuing after MS from KAUST)
01/2020–09/2022	PhD student: Dmitry Kovalev (continuing after MS from KAUST)
11/2019–now	Research Scientist: Laurent Condat (from Grenoble, France)
10/2019–11/2022	Postdoc: Mher Safaryan (from Yerevan State University, Armenia)
09/2019–08/2020	Postdoc: Zhize Li (from Tsinghua University, China)
08/2019–12/2020	MS student: Alyazeed Basyoni (from Carnegie Mellon University, USA)
08/2019–12/2020	MS student: Slavomír Hanzely (from Comenius University, Slovakia)
06/2019–09/2019	Intern: Ahmed Khaled Ragab (from Cairo University, Egypt)
03/2019–09/2019	Intern: Sélim Chraïbi (from Grenoble, France)
02/2019–10/2021	Postdoc: Adil Salim (from Télécom ParisTech, France)
02/2019–03/2019	Intern: Ľudovít Horváth (from Comenius University, Slovakia)
01/2019–02/2019	Intern: Dmitry Kamzolov (from MIPT, Russia)
01/2019–02/2019	Intern: Vladislav Elsukov (from MIPT, Russia)
01/2019–02/2019	Intern: Igor Sokolov (from MIPT, Russia)
01/2019–02/2019	Intern: Egor Shulgin (from MIPT, Russia)
01/2019–02/2019	Intern: Eduard Gorbunov (from MIPT, Russia)
01/2019–03/2022	PhD student: Alibek Sailanbayev (continuing after MS from KAUST) ²⁴
01/2019–07/2019	PhD student: Samuel Horváth (continuing after MS from KAUST)
11/2018–11/2021	Postdoc: Xun Qian (from Hong Kong Baptist University, Hong Kong)
09/2018–12/2019	MS student: Elnur Gasanov (from MIPT, Russia)
09/2018–12/2019	MS student: Dmitry Kovalev (from MIPT, Russia)
03/2018–08/2018	Intern: Sarah Sachs ²⁵ (from TU Munich, Germany)
01/2018–02/2018	Intern: Eduard Gorbunov (from MIPT, Russia)
01/2018–02/2018	Intern: Elnur Gasanov (from MIPT, Russia)
01/2018–02/2018	Intern: Dmitry Kovalev ²⁶ (from MIPT, Russia)
01/2018–02/2018	Intern: Slavomír Hanzely ²⁷ (from Comenius University, Slovakia)
01/2018–01/2019	Postdoc: El Houcine Bergou (from Institut National Polytechnique, Toulouse, France)
10/2017–11/2017	Intern: Nikita Doikov (from HSE Moscow, Russia)
08/2017–12/2017	PhD student: Viktor Lukáček ²⁸ (from Comenius University, Slovakia)
08/2017–12/2021	PhD student: Konstantin Mishchenko (from ENS, France)
08/2017–11/2020	PhD student: Filip Hanzely (now: Quant, Wincent)
08/2017–12/2018	MS student: Alibek Sailanbayev (from Nazarbayev University, Kazakhstan)
08/2017–12/2018	MS student: Samuel Horváth (from Comenius University, Slovakia)
05/2017–05/2019	Postdoc: Aritra Dutta (from University of Central Florida, USA)
05/2017–07/2017	Intern: Atal Sahu (from IIT Kanpur, India)
05/2017–07/2017	Intern: Aashutosh Tiwari (from IIT Kanpur, India)

²⁴Was forced to drop out of PhD due to serious personal/family reasons.

²⁵I have supervised Sarah Sachs' MS thesis at TU Munich.

²⁶I have supervised Dmitry Kovalev's BS thesis at MIPT.

²⁷I have supervised Slavomír Hanzely's BS thesis at Comenius University.

²⁸Viktor Lukáček left after spending 1 semester at KAUST as he realized PhD was not the right path for him.

8.2 MY TEAM @ Kempelen Institute for Intelligent Technologies (KIIT)

09/2022–10/2023 PhD student: Ivan Agarský (from Comenius University, Slovakia)

8.3 MY TEAM @ Mohammed bin Zayed University of Artificial Intelligence (MBZUAI)

09/2022–08/2023 Postdoc: Sarit Khirirat (from KTH, Sweden)

8.4 MY TEAM @ MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY

09/2018–10/2019 Dmitry Kamzolov
09/2018–10/2019 Vladislav Elsukov
09/2018–10/2019 Igor Sokolov (now: PhD student in my team at KAUST)
08/2018–10/2019 Egor Shulgin (now: PhD student in my team at KAUST)
10/2017–10/2019 Eduard Gorbunov (now: Postdoc at MBZUAI)
10/2017–08/2018 Dmitry Kovalev (now: Postdoc at Université catholique de Louvain)
10/2017–08/2018 Elnur Gasanov (now: PhD student in my team at KAUST)

8.5 MY TEAM @ UNIVERSITY OF EDINBURGH

09/2016–07/2017 PhD student: Filip Hanzely (transferred to KAUST after 1 year in Edinburgh to follow me, with an MS degree with distinction)
03/2016–07/2016 Postdoc: Robert M. Gower
10/2015–06/2019 PhD student: Nicolas Loizou (now: Postdoc, MILA, Montréal)
10/2015–02/2017 PhD student: Theo Pavlakou (now: Google; 2nd advisor; main advisor: Iain Murray)
03/2015–03/2016 PhD student: Robert M. Gower (now: Assistant Prof. at Télécom ParisTech)
03/2015–06/2015 Visiting PhD student: Luca Bravi (from University of Florence)
10/2014–03/2015 Postdoc: Ademir Ribeiro (now: Associate Prof. at University of Paraná)
09/2014–11/2017 PhD student: Dominik Csiba (now: Algo Lead at Nozdormu, Slovakia)
08/2013–07/2017 PhD student: Jakub Konečný (now: Research Scientist, Google)
12/2013–08/2015 Postdoc: Zheng Qu (now: Assistant Prof. at University of Hong Kong)
09/2012–02/2013 Visiting PhD student: Minnan Luo (now: Associate Prof. at Xi'an Jiaotong University)
10/2012–07/2014 Postdoc: Olivier Fercoq (now: Assistant Prof. at Télécom ParisTech)
02/2012–07/2014 Postdoc: Rachael Tappenden (now: Assistant Prof. at University of Canterbury)
01/2012–06/2012 Postdoc: Jakub Mareček (now: IBM Research, Dublin)
09/2010–03/2014 PhD student: Martin Takáč (now: Associate Prof. at Mohammed bin Zayed University of Artificial Intelligence, UAE)
2010–2015 Supervised 20 MSc Dissertations
2010–2015 Supervised 7 undergraduate students supported by research scholarships (EPSRC, Nuffield, College, ...)

8.6 MY TEAM: AWARDS, RECOGNITIONS & NOTABLE ACHIEVEMENTS²⁹

2024 (Tyurin) Joins Skotech as an **Assistant Professor** & AI Research Institute (AIRI) as a **Team Leader**
2024 (Yi) Oral at NeurIPS 2024
2024 (Ilin) Oral at NeurIPS 2024
2024 (Burlachenko) Oral at NeurIPS 2024
2024 (Tyurin) **4 papers accepted at NeurIPS 2024**

²⁹All travel grant awards are excluded.

2024 (Tyurin)	Spotlight at NeurIPS 2024
2024 (Gruntkowska)	Spotlight at NeurIPS 2024
2024 (Gruntkowska)	Nominated by KAUST for Apple Scholarship
2024 (Malinovsky)	ICML 2024 Best Reviewer
2024 (Gruntkowska)	Dean's List ³⁰ , Statistics, KAUST
2024 (Malinovsky)	Dean's List, Applied Mathematics and Computational Science, KAUST
2024 (Sadiev)	Dean's List, Computer Science, KAUST
2023 (Tyurin)	4 papers accepted at NeurIPS 2023
2023 (Sun)	Dean's List ³¹ , Computer Science, KAUST
2023 (Burlachenko)	Dean's List, Computer Science, KAUST
2023 (Sadiev)	Dean's List, Computer Science, KAUST
2023 (S. Hanzely)	Dean's List, Applied Mathematics and Computational Science, KAUST
2023 (Malinovsky)	Dean's List, Applied Mathematics and Computational Science, KAUST
2023 (Mishchenko ³²)	ICML 2023 Outstanding Paper Award (0.09% success rate)
2023 (Mishchenko)	Action Editor, Transactions on Machine Learning Research (TMLR)
2023 (Gruntkowska)	Dean's Award (Statistics) ³³ , KAUST
2023 (Maranjyan)	Dean's Award (Computer Science), KAUST
2023 (Mishchenko)	Joins Samsung AI, Cambridge, UK, as a Research Scientist
2022 (Kovalev)	6 papers accepted at NeurIPS 2022
2022 (Burlachenko)	Grant from AMD Inc (two GPUs)
2022 (Beznosikov ³⁴)	NeurIPS 2022 Top Reviewer³⁵
2022 (Tyurin)	NeurIPS 2022 Top Reviewer
2022 (Gorbunov)	NeurIPS 2022 Top Reviewer
2022 (Malinovsky)	NeurIPS 2022 Top Reviewer
2022 (Sokolov)	NeurIPS 2022 Top Reviewer
2022 (Safaryan)	NeurIPS 2022 Top Reviewer
2022 (Mútny ³⁶)	NeurIPS 2022 Top Reviewer
2022 (Gower ³⁷)	NeurIPS 2022 Top Reviewer
2022 (Kovalev)	Joins Université catholique de Louvain as a postdoc with Yurii Nesterov
2022 (Malinovsky)	2022 CEMSE Academic Excellence Award³⁸
2022 (Shulgin)	ICML 2022 Outstanding (Top 10%) Reviewer³⁹
2022 (Gasarov)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Gorbunov)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Khaled)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Condat)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Sadiev)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Tyurin)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Sokolov)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Horváth)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Szlendak)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Mishchenko)	ICML 2022 Outstanding (Top 10%) Reviewer
2022 (Sadiev)	Dean's Award, KAUST
2022 (Sadiev)	KAUST Doctoral Development Fellowship

³⁰In 2024, given to top 20% students at KAUST annually. Carries a 2,500 USD cash prize.

³¹Given to top 25% students at KAUST annually. Carries a 2,500 USD cash prize.

³²Former PhD student

³³A financial add-on to the KAUST Fellowship, worth 6,000 USD annually, given to a few best incoming students by the Dean.

³⁴Former intern.

³⁵<https://neurips.cc/Conferences/2022/ProgramCommittee>

³⁶Former intern.

³⁷Former PhD student.

³⁸Carries a \$2,500 cash prize.

³⁹<https://icml.cc/Conferences/2022/Reviewers>

2022 (Szlendak)	Dean’s Award (Applied Mathematics), KAUST
2022 (Szlendak)	KAUST Doctoral Development Fellowship
2022 (Shulgin)	Research Internship at Apple, Cambridge, UK
2022 (S. Hanzely)	Research Internship at the Flatiron Institute, New York, USA
2022 (S. Hanzely)	Research Internship at the MBZUAI, Abu Dhabi, KSA
2022 (Malinovsky)	Research Internship at the CISPA Helmholtz Center for Information Security, Saarbrücken, Germany
2022 (Gorbunov)	Joins Mohamed bin Zayed University of Artificial Intelligence , Abu Dhabi, UAE, as a Postdoc
2022 (Horváth)	Joins Mohamed bin Zayed University of Artificial Intelligence , Abu Dhabi, UAE, as an Assistant Professor
2022 (Safaryan)	AISTATS 2022 Top Reviewer
2022 (Loizou)	Joins The Johns Hopkins University as an Assistant Professor in the Department of Applied Mathematics & Statistics, and the Mathematical Institute for Data Science (MINDS), with a secondary appointment in Computer Science
2022 (Khaled)	Joins Princeton University as a PhD Student in the ECE Department ⁴⁰
2022 (Gower ⁴¹)	Action Editor, Transactions of Machine Learning Research (TMLR)
2021 (Malinovsky)	2021 CEMSE Student Research Excellence Award ⁴²
2021 (Kovalev)	2021 CEMSE Student Research Excellence Award ⁴³
2021 (Horváth)	2021 Al-Kindi Statistics Research Student Award ⁴⁴
2021 (Mishchenko)	Rising Stars in Data Science ; invited talk to a workshop at the University of Chicago ⁴⁵
2021 (Gorbunov)	NeurIPS 2021 Outstanding (Top 8%) Reviewer Award
2021 (Mishchenko)	NeurIPS 2021 Outstanding (Top 8%) Reviewer Award
2021 (Shulgin)	Research Internship at Samsung AI Research Center, Cambridge, UK
2021 (Horváth)	Research Internship at Facebook AI Research, Canada
2021 (Mishchenko)	ICML 2021 Top 10% Reviewer
2021 (Gorbunov)	ICML 2021 Top 10% Reviewer
2021 (Mishchenko)	ICML 2021 Expert Reviewer
2021 (F. Hanzely)	ICML 2021 Expert Reviewer
2021 (Gorbunov)	ICML 2021 Expert Reviewer
2021 (Condat)	ICML 2021 Expert Reviewer
2021 (Kovalev & Gasanov)	Best Student Paper Award at the International Workshop on Federated Learning for User Privacy and Data Confidentiality in Conjunction with ICML 2021 (for joint paper [166])
2021 (Kovalev)	Ilya Segalovich Prize for Young Researchers ⁴⁶
2021 (Mishchenko)	Most Popular Spotlight Talk (2nd place) at KAUST Conference on AI
2021 (Mishchenko)	ICLR 2021 Outstanding Reviewer Award
2021 (Gorbunov)	ICLR 2021 Outstanding Reviewer Award
2020 (F. Hanzely)	Joined Toyota Tech. Institute at Chicago as a Research Assistant Professor

⁴⁰<https://rka97.github.io>

⁴¹Former PhD student.

⁴²Given annually to a handful of the best Applied Mathematics students at KAUST. “The recipients exemplify the highest of academic standards and represent our confidence in your future contributions to the KAUST community, academia, and science.” Carries a \$1,000 cash prize.

⁴³Given annually to a handful of the best Computer Science students. “The recipients exemplify the highest of academic standards and represent our confidence in your future contributions to the KAUST community, academia, and science.”

⁴⁴Given annually to a handful of the best Statistics students at KAUST. “The recipients exemplify the highest of academic standards and represent our confidence in your future contributions to the KAUST community, academia, and science.”

⁴⁵The Rising Stars in Data Science workshop at the University of Chicago focuses on celebrating and fast tracking the careers of exceptional data scientists at a critical inflection point in their career: the transition to postdoctoral scholar, research scientist, industry research position, or tenure track position. An event associated with the The Center for Data and Computing (CDAC) at the University of Chicago.

⁴⁶Four awards were given; each award carries a cash prize of 1,000,000 RUB (\approx 14,000 USD).

2020 (Mishchenko)	2020 CEMSE Student Research Excellence Award ⁴⁷
2020 (Horváth)	Best Paper Award at the NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning (for joint paper [135])
2020 (Loizou)	Runner Up for OR Society Best Doctoral Dissertation Prize ⁴⁸ (for year 2019)
2020 (Horváth)	NeurIPS 2020 Best Reviewer Award ⁴⁹
2020 (Gorbunov)	NeurIPS 2020 Best Reviewer Award
2020 (F. Hanzely)	NeurIPS 2020 Best Reviewer Award
2020 (Condat)	NeurIPS 2020 Best Reviewer Award
2020 (Khaled)	NeurIPS 2020 Best Reviewer Award
2020 (Horváth)	Research Internship at Samsung AI Research Center, Cambridge, UK
2020 (Mishchenko)	Research Internship at Google, USA (performed remotely due to Covid-19)
2020 (Kovalev)	Ilya Segalovich Prize for Young Researchers ⁵⁰
2020 (Burlachenko)	Dean’s Award, KAUST
2020 (Malinovsky)	Dean’s Award, KAUST
2020 (Mishchenko)	AAAI 2020 Outstanding Program Committee Member Award (awarded to top 12 out of over 6,000 reviewers)
2019 (Mishchenko)	NeurIPS 2019 Best Reviewer Award
2019 (S. Hanzely)	Dean’s Award, KAUST
2019 (F. Hanzely)	Research Internship at Google, New York
2019 (Horváth)	Research Internship at Amazon, Berlin
2019 (Sailanbayev)	Research Internship at Intel, Germany
2018 (Kovalev)	Dean’s Award, KAUST
2018 (Loizou)	Research Internship at Facebook AI Research (FAIR), Montréal
2018 (Mishchenko)	Research Internship at Amazon, Seattle
2018 (F. Hanzely)	Research Internship at Microsoft Research (with Lin Xiao)
2018 (F. Hanzely)	Research Internship at Amazon, Berlin, Scalable Machine Learning Group
2018 (Horváth)	Best DS³ Poster Award ⁵¹ , Paris (1st Prize; for joint paper [81])
2018 (Doikov)	Best Talk Award ⁵² , Voronovo, Russia (1st Prize; for joint paper [69])
2018 (F. Hanzely)	WEP Best Poster Award (3rd Place), KAUST
2017 (Mishchenko)	Dean’s Award, KAUST
2017 (Lukáček)	Dean’s Award, KAUST
2017 (F. Hanzely)	Dean’s Award, KAUST
2017 (Gower)	18th IMA Leslie Fox Prize ⁵³ (2nd Prize; for joint paper [39])
2016 (Csiba)	Postgraduate Essay Prize, School of Mathematics, University of Edinburgh
2016 (F. Hanzely)	CASE PhD Studentship (£93,333 award; 3/4 from EPSRC, 1/4 from Amazon)
2016 (Loizou)	A. G. Leventis Foundation Grant for PhD studies
2015 (Takáč)	OR Society Best Doctoral Dissertation Prize (for year 2014)
2015 (Loizou)	A. G. Leventis Foundation Grant for PhD studies
2015 (Loizou)	Principal’s Career Development Scholarship ⁵⁴ (in Data Science)

⁴⁷One of 5 awards given to KAUST Computer Science students.

⁴⁸The OR Society was created in April 1948 as the Operational Research Club, becoming the OR Society in 1953. It is the world’s oldest-established learned society catering to the OR profession and one of the largest in the world, with members in 53 countries https://en.wikipedia.org/wiki/Operational_Research_Society.

⁴⁹<https://icml.cc/Conferences/2020/Reviewers>

⁵⁰Nine awards were given in the area of Computer Science; each award carries a cash prize of 350,000 RUB (\approx 5,000 USD).

⁵¹DS³ stands for Data Science Summer School, held at École Polytechnique, Paris, during June 25–29, 2018. There were 170 posters in the competition, from MS and PhD students, and postdocs. Samuel’s poster, based on joint work [81], won the main prize, which also attracted a 500 EUR check.

⁵²Event: “Traditional Youth School in Control, Information and Optimization”, organized by Boris Polyak.

⁵³“The Leslie Fox Prize is a biennial prize established in 1985 by the IMA in honour of mathematician Leslie Fox (1918-1992). The prize honours young numerical analysts worldwide (any person less than 31 years old), and applicants submit papers for review. A committee [...] awards First Prize and Second Prizes based on mathematical and algorithmic brilliance in tandem with presentational skill”

⁵⁴Principal’s Career Development Scholarship: A highly competitive scholarship offered to 3 incoming PhD students in mathematics at the University of Edinburgh each year.

2015 (Kisiala)	Best Student Prize ⁵⁵ , OR MSc Programme, School of Mathematics, Edinburgh
2015 (Fercoq)	17th IMA Leslie Fox Prize (2nd Prize; for joint paper [21])
2015 (Csiba)	Best Contribution Award (2nd Prize; for joint paper [35]), Workshop: Optimization and Big Data, Edinburgh. Committee: Arkadi Nemirovskii (Georgia Tech) and Rodolphe Jenatton (Amazon)
2015 (Konečný)	BASP Frontiers Best Contribution Award (1st prize in the field of signal processing; for joint paper [20]), Villars-sur-Ollon, Switzerland
2014 (Konečný)	Google European Doctoral Fellowship ⁵⁶ (\$180,000 unrestricted gift funding Jakub’s PhD for 3 years)
2014 (Csiba)	Principal’s Career Development Scholarship (in Data Science)
2013 (Konečný)	Principal’s Career Development Scholarship (in Data Science)
2013 (Takáč)	16th IMA Leslie Fox Prize (2nd Prize; for joint paper [10])
2013 (Takáč)	SIAM Certificate in Recognition of Outstanding Efforts and Accomplishments, on behalf of the SIAM Chapter at the University of Edinburgh for academic year 2012–2013
2012 (Takáč)	INFORMS Computing Society Best Student Paper Prize (sole runner up; for joint paper [8]), Phoenix, Arizona
2012 (Banks-Watson)	Best Student Prize, OR MSc Programme, School of Mathematics, Edinburgh
2012 (Takáč)	Best Talk Award , SIAM National Student Chapter Conference, Manchester, UK
2012 (Takáč)	Best Talk Award, Edinburgh Postgraduate Colloquium, University of Edinburgh
2012 (Takáč)	Alice Margaret Campbell Bequest Fund Award for success in 1st year of PhD
2011 (Takáč)	Certificate of Appreciation, 24th Biennial Conf. on Numerical Analysis, Glasgow, UK
2011 (Takáč)	Best Poster Award, SIAM Student Chapter Conference, Edinburgh, UK

8.7 MY TEAM: SELECTED PRIOR/INDEPENDENT ACHIEVEMENTS⁵⁷

2023 (Záhorský)	Member, Slovak Committee of Mathematical Olympiad
2022 (Záhorský)	Coordinator, European Girls’ Mathematical Olympiad, Hungary
2022 (Condat)	World’s Top 2% Scientist by Stanford ⁵⁸
2022 (Condat)	Meritorious Service Award from the journal <i>Mathematical Programming</i> ⁵⁹
2022 (Burlachenko)	Second Place, KAUST Chess Tournament
2021 (Maranjyan)	Outstanding Final Project Award ⁶⁰ , Yerevan State University, Armenia
2021 (Condat)	World’s Top 2% Scientist by Stanford
2021 (Condat)	Associate Editor, <i>IEEE Transactions on Signal Processing</i>
2020 (Záhorský)	Deputy Leader, 14th Middle European Mathematical Olympiad, virtual
2020 (Condat)	World’s Top 2% Scientist by Stanford
2020 (Basyoni)	National Deputy Leader and Head Coach at the International Olympiad of Informatics, Saudi Arabia
2019 (Záhorský)	Deputy Leader, 13th Middle European Mathematical Olympiad, Pardubice, Czech Republic
2019 (Panferov)	Gold Medal, International Physics Olympiad, Tel Aviv, Israel
2019 (Riabinin)	Winner, Phystech Olympiad in Physics, Dolgoprudny, Russia

⁵⁵For best performance in courses and MSc Dissertation, which I supervised.

⁵⁶Google quote: “Nurturing and maintaining strong relations with the academic community is a top priority at Google. Today, we’re announcing the 2014 Google PhD Fellowship recipients. These students, recognized for their incredible creativity, knowledge and skills, represent some of the most outstanding graduate researchers in computer science across the globe. We’re excited to support them, and we extend our warmest congratulations.”

⁵⁷These awards are independent of my input, and were in most cases obtained before joining my team.

⁵⁸https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4?fbclid=IwAR0u4xhKMUGIisi_prZLx0IOaMPzV-LNCmoILDYua90eybIViYE6S170vyc

⁵⁹Mathematical Programming is the leading optimization journal. “The Meritorious Service Award was created to acknowledge these continued efforts. In 2022 our Editorial Board assessed the referees who have demonstrated exceptional diligence in their service to the journal.”

⁶⁰Awarded to 6 students from more than 250 students for best undergraduate thesis.

2019 (Basyoni)	National Deputy Leader and Head Coach at the International Olympiad of Informatics, Saudi Arabia
2019 (Li)	Tsinghua Outstanding Doctoral Dissertation Award
2017 (Záhorský)	Silver Medal, 59th International Mathematical Olympiad, Cluj-Napoca, Romania (representing Slovakia)
2018 (Riabinin)	Prizewinner, Regional Stage of the All Russian Olympiad in Physics, Russia
2018 (Riabinin)	2nd Place, City Physics Olympiad, Nizhny Novgorod, Russia
2018 (Riabinin)	Prizewinner, Phystech Olympiad in Mathematics, Dolgoprudny, Russia
2018 (Mishchenko & Sailanbayev)	80th Place, 2018 IEEEExtreme programming competition ⁶¹
2017 (Záhorský)	Honorable Mention, 58th International Mathematical Olympiad, Rio de Janeiro, Brazil (representing Slovakia)
2017 (Ilin)	Captain of the Russian team @ International Young Physicists Tournament, Singapore/Russia
2017 (Karagulyan)	Second Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2017 (S. Hanzely)	8–10th Place, Vojtech Jarník International Mathematical Competition (1st place among Czech and Slovak contestants)
2017 (Horváth)	37th Place, Vojtech Jarník International Mathematical Competition, Ostrava, Czech Republic
2016 (Záhorský)	Silver Medal, 10th Middle European Mathematical Olympiad, Vöcklabruck, Austria (representing Slovakia)
2016 (Karagulyan)	2nd Prize, Mirror of William Lowell Putnam Mathematical Competition
2016 (Malinovsky)	Abramov's Scholarship for students with the best grades at MIPT
2016 (S. Hanzely)	Participation, 57th International Mathematical Olympiad, Hong Kong
2016 (S. Hanzely)	3rd Place, Slovak National Mathematical Olympiad
2016 (S. Hanzely)	1st Place, Slovak Mathematical Olympiad, Regional Round
2016 (S. Hanzely)	1st Place, Slovak Informatics Olympiad, Regional Round
2016 (Horváth)	36th Place, Vojtech Jarník International Mathematical Competition, Ostrava, Czech Republic
2015 (Karagulyan)	Third Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2016 (Horváth)	3rd Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2016 (Sailanbayev)	Semifinalist, ACM ICPC Programming Contest, NEERC region, Almaty, Kazakhstan
2015 (Karagulyan)	Second Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2015 (Karagulyan)	Semifinalist, ACM-ICPC Programming Contest, NEERC region, Tbilisi, Georgia
2015 (S. Hanzely)	Bronze Medal, Middle European Mathematical Olympiad
2015 (S. Hanzely)	2nd Place, Slovak Informatics Olympiad, Regional Round
2015 (Sailanbayev)	2nd Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2015 (Mishchenko)	1st Prize, HSE Olympiad in Applied Mathematics and Informatics, Moscow, Russia
2014 (Karagulyan)	Semifinalist, ACM-ICPC Programming Contest, NEERC region, Tbilisi, Georgia
2014 (Malinovsky)	Bronze Medal, International Zhautykov Olympiad in Physics
2014 (Malinovsky)	Participant, All-Russian Physics Olympiad
2014 (S. Hanzely)	1st Place, Slovak Mathematical Olympiad, Regional Round
2014 (Kovalev)	Honorable Mention, 15th Asian Physics Olympiad, Singapore
2014 (Kovalev)	Winner, All Russian Mathematics Olympiad (Moscow Region)
2014 (Kovalev)	Winner, All Russian Computer Science Olympiad (Moscow Region)
2014 (Kovalev)	Prizewinner, All Russian Physics Olympiad

⁶¹4,000 teams (of size 3) from all over the world competed in a 24-hour time span against each other to solve a set of programming problems. Konstantin and Alibek scored high despite being just 2 on the team!

2014 (Mishchenko)	3rd Prize, MIPT Student Mathematical Olympiad, Moscow, Russia
2014 (Horváth)	18th Place, National Mathematical Olympiad, Bratislava, Slovakia
2014 (Horváth)	1st Place, Nitra Region Mathematical Olympiad, Category A, Slovakia
2014 (Sailanbayev)	2nd Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2014 (Loizou)	Top 1% in Mathematics at National and Kapodestrian University of Athens, Greece
2014 (Csiba)	Best Student Work in Applied Informatics in Czech and Slovak Republic, Annual Student Scientific Conference, Ústí nad Labem, Czech Republic
2014 (F. Hanzely)	2nd Prize (101st place), International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2014 (F. Hanzely)	9th Place, V. Jarník International Mathematical Competition, Ostrava, Czech Republic
2014 (Lukáček)	26th Place, Vojtech Jarník International Mathematical Competition, Ostrava, Czech Republic
2013 (Karagulyan)	Semifinalist, ACM-ICPC Programming Contest, NEERC region, Tbilisi, Georgia
2013 (Karagulyan)	2nd Prize, Mirror of William Lowell Putnam Mathematical Competition
2013 (Malinovsky)	Prizewinner, All-Russian Physics Olympiad
2013 (S. Hanzely)	1st Place, Slovak Mathematical Olympiad, Regional Round
2013 (Kovalev)	Winner, All Russian Physics Olympiad
2013 (Sailanbayev)	Silver Medal, International Mathematical Olympiad, Santa Marta, Colombia
2013 (F. Hanzely)	Bronze Medal, International Mathematical Olympiad, Santa Marta, Colombia
2013 (Karagulyan)	Honourable Mention, International Mathematical Olympiad, Santa Marta, Colombia
2013 (Sailanbayev)	1st Place, National Mathematical Olympiad, Kazakhstan
2013 (F. Hanzely)	1st Place, Slovak National Round of Mathematical Olympiad, Košice, Slovakia
2013 (Sailanbayev)	Gold Medal, International Zhautykov Olympiad, Almaty, Kazakhstan
2013 (Lukáček)	20th Place, Vojtech Jarník International Mathematical Competition, Ostrava, Czech Republic
2012 (Karagulyan)	Honourable Mention, International Mathematical Olympiad, Mar del Plata, Argentina
2012 (Kovalev)	Prizewinner, All Russian Physics Olympiad
2012 (Lukáček)	3rd Prize, International Mathematical Competition for University Students, Blagoevgrad, Bulgaria
2012 (Mishchenko)	1st Prize, Moscow Mathematical Olympiad, Moscow, Russia
2012 (Mishchenko)	1st Prize, PhysTech International Olympiad in Mathematics
2012 (Basyoni)	Silver Medal ⁶² , International Mathematical Olympiad, Mar del Plata, Argentina
2012 (Sailanbayev)	Bronze Medal, International Mathematical Olympiad, Mar del Plata, Argentina
2012 (Sailanbayev)	Silver Medal, Balkan Mathematical Olympiad, Antalya, Turkey
2012 (F. Hanzely)	Bronze Medal, Middle European Mathematical Olympiad, Solothurn, Switzerland
2012 (Csiba)	FIDE International Master in Chess
2012 (Csiba)	3rd Prize, International Mathematical Competition, Blagoevgrad, Bulgaria
2012 (Konečný)	2nd Prize, International ChaLearn Competition, One shot learning of gestures from Microsoft Kinect videos
2012 (Fercoq)	Gaspard Monge Prize “for best PhD thesis defended in France 2012 in mathematics or computer science, with significant contributions to Optimization and Operations Research”
2012 (Luo)	Google Anita Borg Scholarship, China
2012 (Lukáček)	2nd Place, International Correspondence Seminar in Mathematics (iKS)
2011 (Lukáček)	Bronze Medal (26th Place), Middle European Mathematical Olympiad, Varaždin, Croatia
2010 (Konečný)	Honourable Mention, International Mathematical Olympiad, Astana, Kazakhstan
2010 (Csiba)	Honourable Mention, Middle European Mathematical Olympiad, Žilina, Slovakia
2008 (Konečný)	Honourable Mention, Middle European Mathematical Olympiad, Olomouc, Czech Republic

⁶²Historically the first silver medal at IMO by Saudi Arabia.

2007–2009 (Takáč) Winner, 3rd Place and Honourable Mention (twice), International Student Scientific Conference, Czech and Slovak Republic

9. TALKS

9.1 TALKS: SUMMARY

I have given **more than 230 research talks**⁶³ at conferences, workshops and seminars worldwide (Australia, Austria, Belgium, Brazil, Canada, Chile, China, Cuba, France, Germany, Greece, Hong Kong, Hungary, India, Japan, Mongolia, Morocco, Netherlands, Portugal, Russia, Saudi Arabia, Slovakia, Slovenia, Spain, Switzerland, UAE, United Kingdom, Uruguay, USA). Out of these, **50+ are plenary talks** at conferences and workshops, **10+ are invited PhD courses and tutorials**, **60+ are seminar talks**, and the rest are invited and contributed conference talks. I regularly give talks at the premier international optimization conferences (each taking place once in 3 years): Int. Symposium on Mathematical Programming (Rio'06, Chicago'09, Berlin'12, Pittsburgh'15, Bordeaux'18), SIAM Conf. on Optimization (Darmstadt'11, San Diego'14, Vancouver'17, Hong Kong'20), Int. Conf. on Continuous Optimization (Ontario'07, Santiago'10, Lisbon'13, Tokyo'16, Berlin'19).

9.2 PLENARY TALKS⁶⁴

10/2024 **International Conference on Computational Optimization (ICOMP-2024)**, Innopolis, Russian Federation
09/2024 **2nd IEEE International Conference on Federated Learning Technologies and Applications (FLTA 2024)**, Valencia, Spain
08/2024 **ALGOPT2024 workshop on Algorithmic Optimization: Tools for AI and Data Science**, Louvain-la-Neuve, Belgium. Celebration of Yurii Nesterov's 50 years long research career in optimization.
06/2024 **Federated Learning for Computer Vision (FedVision) Workshop**, CVPR, Seattle, USA
06/2024 **Applied Algorithms for Machine Learning – a Workshop on the Future of Computation**, Paris, France
06/2024 **One World Optimization Seminar in Vienna**, Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria
04/2024 **Workshop on Nonsmooth Optimization and Applications (NOPTA 2024)**, In Honor of the 75th Birthday of Boris Mordukhovich, University of Antwerp, Belgium
02/2024 **Apple Workshop on Privacy Preserving Machine Learning**, Cupertino, California, USA
12/2023 **NeurIPS 2023 Workshop on Federated Learning in the Age of Foundation Models**, New Orleans, Louisiana, USA
07/2023 **ICML 2023 Workshop. Federated Learning and Analytics in Practice: Algorithms, Systems, Applications, and Opportunities**, Honolulu, Hawaii
07/2023 **Federated and Collaborative Learning Workshop**, Simons Institute, Berkeley, USA
07/2023 **Mathematics in Armenia: Advances and Perspectives** (80th anniversary of the foundation of the Armenian National Academy of Sciences), Yerevan, Armenia
12/2022 **Optimization in the Big Data Era**, Institute of Mathematical Sciences, National University of Singapore, Singapore, Optimization in the Big Data Era, Institute for Mathematical Sciences, National University of Singapore, Singapore
11/2022 **KAUST Workshop on Scientific Computing and Machine Learning**, KAUST
11/2022 **Google's 2022 Workshop on Federated Learning and Analytics**, virtual

⁶³All my talks are listed on https://www.maths.ed.ac.uk/~prichter/i_talks.html

⁶⁴For the purpose of this CV, a plenary talk is any talk not given to a sub-audience; or a talk explicitly labeled as a plenary/keynote talk by the organizers of the workshop/conference. I am excluding here talks at events I organized or co-organized and declined invites to deliver a plenary talk. I am including past talks, and accepted invites to give a talk.

10/2022 **MBZUAI Workshop on Collaborative Learning: From Theory to Practice**, Abu Dhabi (invited by Michael I. Jordan)

09/2022 **CrossFL: Cross-Community Federated Learning: Algorithms, Systems and Co-designs**, workshop associated with the MLSys conference, Santa Clara, USA

06/2022 **Mathematics of Complex Data**, KTH Royal Institute of Technology, Stockholm, Sweden

05/2022 **Workshop on Stochastic Numerics, Statistical Learning, Optimization, Approximations, with Applications**, KAUST, Saudi Arabia

04/2022 **Lagrange Workshop on Federated Learning**, Lagrange Mathematics and Computing Research Center, virtual

04/2022 **Apple’s Workshop on Privacy Preserving Machine Learning**, virtual

02/2022 **Dagstuhl Seminar**, Theory of Randomized Optimization Heuristics, 3 talks, Germany

12/2021 **NeurIPS 2021 Workshop. New Frontiers in Federated Learning: Privacy, Fairness, Robustness, Personalization and Data Ownership**, Virtual

11/2021 **KAUST-GSAI Joint Workshop on Advances in AI**, Virtual

11/2021 **Google Federated Learning and Analytics Workshop**, Virtual

07/2021 **Optimization Without Borders** (celebration of the 65th Birthday of Yurii Nesterov), Sirius University, Sochi, Russia

04/2021 **KAUST Conference on Artificial Intelligence**, 2 keynote talks, Thuwal, Saudi Arabia

08/2020 **Workshop on Privacy Preserving Machine Learning**, Apple, Virtual Workshop

07/2020 **ICML 2020 Workshop: Beyond First Order Methods in ML Systems**, Virtual

06/2020 **Mathematics of Data Science**, Virtual Conference, United Kingdom

10/2019 **School-Conference “Approximation and Data Analysis”**, Nizhny Novgorod, Russia

09/2019 **Workshop on Optimization, Statistics and Numerical Methods**, Moscow Institute of Physics and Technology, Dolgoprudny, Russia (workshop organized around my visit to MIPT)

09/2019 **50 Years of Mathematics in Bielefeld - the (new) Unity of Mathematics**, Bielefeld, Germany

09/2019 **DIMACS Workshop on Randomized Numerical Linear Algebra, Statistics, and Optimization**, Rutgers University, USA

06/2019 **Approximation, Sampling, and Compression in High Dimensional Problems**, Isaac Newton Institute for Mathematical Sciences Program on “Approximation, Sampling and Compression in Data Science”, Cambridge University, UK

02/2019 **Numerical Algorithms in Nonsmooth Optimization**, Thematic Program: “Modern Maximal Monotone Operator Theory: From Nonsmooth Optimization to Differential Inclusions”, Erwin Schrödinger International Institute for Mathematics and Physics (ESI), Vienna, Austria

11/2018 **Statistics and Data Science Workshop**, KAUST, Thuwal, KSA

09/2018 **Randomized Numerical Linear Algebra and Applications**, Program: Data Science, Simons Institute, Berkeley, USA

08/2018 **DIMACS/TRIPODS Workshop: Optimization in Machine Learning**, Lehigh University, Bethlehem, USA

07/2018 **XII Brazilian Workshop on Continuous Optimization**, Foz do Iguaçu, Brazil

10/2017 **Optimization at Work**⁶⁵, Moscow Institute of Physics and Technology, Moscow, Russia

09/2017 **Workshop on Decentralized Machine Learning, Optimization and Privacy**, Lille, France

07/2017 **Workshop on Convex Optimization and Applications**, Fields Institute, Toronto, Canada (in honour of 70th birthday of Arkadi Nemirovski)

04/2017 **Visual Computing - Modeling and Reconstruction**, KAUST, Thuwal, KSA

01/2017 **2017 BASP Frontiers Workshop**, Villars-sur-Ollon, Switzerland

11/2016 **Workshop on Distributed Machine Learning**, Telecom ParisTech, Paris, France

11/2016 **SIAM Warwick Student Chapter Conference on Machine Learning and Statistics**, Coventry, UK

⁶⁵This event was organized in my honour.

- 10/2016 **41st Woudschoten Conference**, Zeist, Netherlands. Two keynote lectures in the stream “Numerical methods for big data analytics”
- 09/2016 **Linear Algebra and Parallel Computing at the Heart of Scientific Computing**, a joint event of the Royal Society of Edinburgh and the French Embassy in London, Edinburgh, UK
- 09/2016 **“OR58”: The 58th Annual Conference of the Operational Research Society**, Portsmouth, UK (closing plenary)
- 06/2016 **2016 Int. Workshop on Modern Optimization and Applications (MOA 2016)**, Beijing, China
- 04/2016 **Einstein Center Mathematical Colloquium “Sparsity: Statistics, Optimization, and Applications”**, Berlin, Germany. “The purpose of this biannual scientific colloquium is bringing together mathematicians, scientists, and engineers to enjoy a series of talks on one topical issue of current or emerging interest to several fields within mathematics.”
- 03/2016 **Computationally and Statistically Efficient Inference for Complex Large-scale Data**, Oberwolfach, Germany
- 09/2015 **Statistical and Computational Challenges in Large-Scale Data Analysis**, Alan Turing Institute Workshop, Cambridge, UK
- 09/2015 **LMS Inverse Day: Large-Scale and Nonlinear Inverse Problems**, Edinburgh, UK
- 04/2015 **Maxwell Institute Probability Day**, Edinburgh, UK
- 01/2015 **Optimization and Statistical Learning**, Les Houches, France
- 01/2015 **Theory of Big Data Science**, University College London, UK
- 12/2014 **Optimization Workshop, Foundations of Computational Mathematics**, Montevideo, Uruguay
- 11/2014 **46th Conference of Slovak Mathematicians**, Jasná, Slovakia
- 09/2014 **Mathematical Methods in Economics and Engineering**, Smolenice, Slovakia
- 07/2014 **Understanding Complex and Large Industrial Data**, Lancaster, UK
- 05/2014 **9th Int. Conf. on Intelligent Systems: Theories and Applications**, Rabat, Morocco
- 02/2014 **Stochastic Gradient Methods**, Inst. for Pure and Applied Mathematics, Los Angeles, USA
- 12/2013 **NeurIPS Workshop on Optimization in Machine Learning**, Lake Tahoe, USA. Past plenary speakers: D. Bertsekas, L. Bottou, S. Wright (2008), N. Srebro, L. Vandenberghe, A. Nemirovski (2009), M. Schmidt, Yu. Nesterov (2010), B. Recht, S. Boyd (2011), P. Parillo, F. Bach (2012)
- 11/2013 **International Conference on Information Technologies and Society**, Slovenia
- 10/2013 **Parallel and Distributed Algorithms for Inference and Optimization**, Simons Institute for the Theory of Computing, University of California, Berkeley, USA
- 05/2013 **Big Data Mining**, Imperial College London, UK
- 03/2013 **Fête Parisienne in Computation, Inference and Optimization**, IHES, Paris, France
- 03/2013 **Edinburgh SIAM Student Chapter Conference**, Edinburgh, UK
- 02/2013 **Big Data and Social Media**, Glasgow, UK
- 01/2013 **Optimization and Statistical Learning**, Les Houches, France
- 07/2012 **Optimization in Machine Learning**, ICML workshop, Edinburgh, UK
- 07/2011 **Optimization Workshop, Foundations of Comp. Mathematics**, Budapest, Hungary
- 05/2011 **Computational Complexity Challenges in Optimization**, Edinburgh, UK

9.3 INVITED LECTURE SERIES, TUTORIALS & SUMMER SCHOOL COURSES

- 02/2024 **Optimization for Machine Learning** (three 50 min lectures), AMCS-STAT School, KAUST, Saudi Arabia
- 03/2024 Machine Learning Summer School, Okinawa, Japan (declined due to a clash with annual leave)
- 07/2023 Eastern European Machine Learning Summer School (EEML 2023), Košice, Slovakia
- 06/2023 **Introduction to Machine Learning 2** (MS course, 28 hours), Dhahran, Saudi Aramco, Saudi Arabia

- 06/2023 **Introduction to Machine Learning 1** (MS course, 28 hours), Dhahran, Saudi Aramco, Saudi Arabia
- 07/2023 **Eastern European Machine Learning Summer School**, Košice, Slovakia
- 11/2022 **Introduction to Optimization 2** (MS course, 28 hours), Dhahran, Saudi Aramco, Saudi Arabia
- 11/2022 **Introduction to Optimization 1** (MS course, 28 hours), Dhahran, Saudi Aramco, Saudi Arabia
- 06/2022 **Introduction to Stochastic Gradient Descent Methods** (PhD course, 22.5 hours), School of Mathematics, Physics and Informatics, Bratislava, Slovakia
- 06/2022 **Introduction to Stochastic Gradient Descent Methods** (PhD course, 18 hours), Vienna Graduate School for Computational Optimization (VGSCO), Vienna, Austria
- 10/2019 **A Guided Walk Through the ZOO of Stochastic Gradient Descent Methods** (Mini-course, 2.5 hours), School-Conference “Approximation and Data Analysis”, Nizhny Novgorod, Russia
- 09/2019 **A Guided Walk Through the ZOO of Stochastic Gradient Descent Methods** (Mini-course, 5 hours), Moscow Institute of Physics and Technology, Dolgoprudny, Russia
- 08/2019 **A Guided Walk Through the ZOO of Stochastic Gradient Descent Methods** (Summer School Lectures, 6 hours), International Conference on Continuous Optimization (ICCOPT 2019), Berlin, Germany
- 02/2019 **Randomized Optimization Methods** (PhD Course, 4.5 hours), Erwin Schrödinger International Institute for Mathematics and Physics (ESI), Vienna, Austria
- 06/2018 **Stochastic Reformulations in Linear Algebra and Optimization** (Summer School, 2 hours), Control, Information and Optimization, Voronovo, Moscow Region, Russia
- 04/2018 **Introduction to Optimization for Machine Learning** (short outreach course for selected Saudi university students who previously participated in the Saudi National Mathematical Olympiad or IMO, 4.5 hours), KAUST, Thuwal, KSA
- 08/2017 **Randomized Optimization Methods** (Summer School, 5 hours), Data Science Summer School (DS³), École Polytechnique, France. Other courses: Joshua Bengio (Montreal), Deep Learning; Pradeep Ravikumar (CMU), Graphical Models; Csaba Szepesvári (Alberta/Google DeepMind), Bandits
- 10/2015 **Randomized Methods for Big Data: From Linear Systems to Optimization** (Tutorial), IEEE International Conference on Data Science and Advanced Analytics, Paris, France
- 2015 **Randomized Algorithms for Big Data Optimization** (PhD Course, 18 hours), Graduate School in Systems, Optimization, Control and Networks – Université catholique de Louvain, Belgium
- 09/2015 **Optimization in Machine Learning** (PhD Course, 8 hours), Machine Learning Thematic Trimester, Toulouse, France
- 07/2015 **Modern Convex Optimization Methods for Large-Scale Empirical Risk Minimization** (Tutorial, 2 hours, joint with M. Schmidt), ICML 2015, Lille, France
- 06/2014 **Randomized Coordinate Descent Methods** (PhD Course, 6 hours), Khronos-Persyval Days “High-Dimensional Learning and Optimization”, Grenoble, France
- 06/2014 **Coordinate Descent Methods** (Lecture, 2 hours), NATCOR PhD Course on Convex Optimization, Edinburgh, UK
- 02/2014 **Gradient Methods for Big Data** (Tutorial, 3 hours), Big Data: Challenges and Applications, Imperial College London, UK

9.4 TALKS @ RESEARCH SEMINARS

- 2023 CMOR Special Lecture @ Rice University, Qualcomm AI Seminar, Apple, Kempelen Institute of Intelligent Technologies, Slovak Academy of Sciences (2)

2022	Machine Learning NeEDS Mathematical Optimization (virtual), Federated Learning One World Seminar (virtual), KAUST (3), Better AI Meetup Bratislava, Hong Kong Baptist University, One World Seminar Series on the Mathematics of Machine Learning (virtual)
2021	University of Tartu (virtual), Portsmouth (virtual), Kempelen Institute for Intelligent Technologies, Comenius University, MBZUAI (virtual), All Russian Seminar on Optimization (virtual), Federated Learning One World Seminar (virtual; 2), KAUST (3)
2020	ESET, Optimization One World Seminar, Montréal MLOpt Seminar
2019	Huawei
2018	Bratislava, KAUST (2), Warwick, Edinburgh (2)
2017	Imperial College London, KAUST, Plymouth, Cardiff
2016	Cambridge, Edinburgh (3), Stanford (2), KAUST, The Alan Turing Institute, LSE, Southampton, Skoltech, Yandex
2015	Louvain, Oxford, IST Austria, UC Davis, UC Berkeley, Edinburgh
2014	Moscow, Paris, Hong Kong, Edinburgh (3)
2013	UC Berkeley, Google, SAS Inc, Louvain, Edinburgh
2012	Wisconsin, Cambridge, Glasgow, Cardiff, Bratislava
2011	Edinburgh, Oxford, London, Heriot-Watt, Louvain
2010	Birmingham, Nottingham, Southampton
2009	ETH Zürich, Linz, Louvain, Edinburgh (2)
2008	Liège, Bratislava
2007	Cornell (2), Louvain (2)

10. TEACHING⁶⁶

KAUST	Spring 2024	Stochastic Gradient Descent Methods* (CS 331)	
	Spring 2023	Federated Learning* (CS 332)	
	Fall 2022	Stochastic Gradient Descent Methods* (CS 331)	
	Spring 2022	Federated Learning* (CS 332)	
	Fall 2021	Stochastic Gradient Descent Methods* (CS 331)	
	Spring 2021	Federated Learning* (CS 332)	
	Fall 2020	Stochastic Gradient Descent Methods* (CS 331)	
	Spring 2020	Federated Learning* (CS 390T)	
	Spring 2019	Contemporary Topics in Machine Learning* (CS 394D)	
	Spring 2018	Contemporary Topics in Machine Learning* (CS 394D)	
	Fall 2019	Big Data Optimization* (CS 390FF)	
	Fall 2018	Big Data Optimization* (CS 390FF)	
	Fall 2017	Big Data Optimization* (CS 390FF)	
	Edinburgh	Spring 2017	Modern Optimization Methods for Big Data Problems*
		Spring 2016	Modern Optimization Methods for Big Data Problems*
		Fall 2012	Discrete Programming and Game Theory*
		Fall 2011	Discrete Programming and Game Theory*
Fall 2011		Discrete Programming and Game Theory*	
Spring 2015		Optimization Methods in Finance*	
Spring 2014		Optimization Methods in Finance*	
Spring 2013		Optimization Methods in Finance*	
Spring 2012	Optimization Methods in Finance*		
Spring 2011	Optimization Methods in Finance*		
Fall 2012	Game Theory*		
Fall 2011	Game Theory*		
Fall 2010	Game Theory*		

⁶⁶I have proposed and developed from scratch courses marked with an asterisk. I was the instructor for all courses marked in bold. I was a TA (teaching assistant / tutor) for all other courses.

	Spring 2013	Computing and Numerics
	Fall 2010	Dynamic & Integer Programming
	Fall 2010	Mathematics for Chemical Engineers
Louvain	Spring 2009	Nonlinear Optimization (with Yu. Nesterov)
Cornell	Spring 2006	Optimization II/Nonlinear Optimization
	Summer 2005	Engineering Probability and Statistics*
	Fall 2003	Engineering Probability and Statistics
	Summer 2003	Engineering Probability and Statistics
	Spring 2004	Optimization II
	Spring 2005	Application of Game Theory and OR to IT
	Spring 2005	Topics in Linear Optimization
	Fall 2006	Combinatorial Optimization (PhD course taught by David Williamson)
Comenius	Fall 1998	Complex Analysis

11. CONFERENCE, STREAM, WORKSHOP & SEMINAR ORGANIZATION⁶⁷

07/2024	International Symposium on Mathematical Programming (ISMP) (stream co-organizer with Lin Xiao and Simon Lacoste-Julien)
02/2023	Rising Stars in AI Symposium, KAUST, Thuwal, Saudi Arabia
12/2022	Federated Learning Workshop, NeurIPS
03/2022	Rising Stars in AI Symposium, KAUST, Thuwal, Saudi Arabia
05/2021	SIAM Conference on Optimization, Virtual (member of the organizing committee)
06/2020–now	Federated Learning One World Seminar (FLOW) ⁶⁸ (founder and chair of the organizing committee)
11/2019	KAUST-Tsinghua-Industry Workshop on Advances in Artificial Intelligence, KAUST, Thuwal, Saudi Arabia
06/2019	Sparse Approximation and Sampling, The Alan Turing Institute, London
04/2019	A Short Course on Deep Learning and the Latest AI Algorithms, KAUST, Saudi Arabia. A 2-day course delivered by Xavier Bresson, NTU, Singapore
07/2018	International Symposium on Mathematical Programming, Bordeaux, France. Scientific Committee Member for stream 4a: “Machine Learning, Big Data, Cloud Computing, and Huge-Scale Optimization” (with A. d’Aspremont, O. Beaumont and S. Sra)
02/2018	Optimization and Big Data 2018, KAUST (co-organizer with M. Canini)
2017–now	All Hands Meetings on Big Data Optimization, KAUST (a weekly group research seminar)
09/2016	IMA Numerical Linear Algebra and Optimization, Birmingham, UK (co-organizing 2 minisymposia)
12/2015	Mathematical Perspectives on Big Data, a joint meeting of the London and Edinburgh mathematical societies, celebrating 150th anniversary of the former, Edinburgh
12/2015	Theoretical and Computational Approaches to Large-Scale Inverse Problems, Edinburgh (Alan Turing Institute Scoping Workshop)
11/2015	Distributed Machine Learning and Optimization, Edinburgh (Alan Turing Institute Scoping Workshop)
05/2015	Optimization and Big Data 2015, Edinburgh (founder and co-organizer; with Z. Qu)
01/2015	International BASP Frontiers Workshop 2015, Villars-sur-Ollon, Switzerland
12/2014	Workshop: Numerical Algorithms and Intelligent Software, Edinburgh
09/2014	2 minisymposia at 4th IMA Conf. on Numerical Lin. Alg. and Optimisation, Birmingham
05/2014	Coordinate Descent Methods Symposium at the SIAM Conference on Optimization, San Diego (24 speakers)

⁶⁷I am excluding organized conference sessions.

⁶⁸<https://sites.google.com/view/one-world-seminar-series-flow/home>

2014–2017	All Hands Meetings on Big Data Optimization, University of Edinburgh (a weekly interdisciplinary research seminar attended by faculty, postdocs and PhD students from the Schools of Mathematics, Engineering and Informatics and Heriot-Watt University)
07/2013	Cluster Co-Chair, “Convex and Nonsmooth Optimization” at the International Conference on Continuous Optimization (ICCOPT), Lisbon, Portugal (with F. Glineur). We organized 23 invited sessions in the cluster (=70 speakers). ICCOPT is the premiere conference in continuous optimization, taking place once in 3 years. Our cluster was twice as large as the second largest cluster.
05/2013	Optimization and Big Data 2013, Edinburgh, 64 participants (founder and organizer)
05/2012	Optimization and Big Data 2012, Edinburgh, 62 participants (founder and organizer)
07/2011	2 minisymposia at 3rd IMA Conf. on Numerical Linear Algebra and Optimisation, Birmingham
07/2011	2 minisymposia at 24th Biennial Conf. on Numerical Analysis, Glasgow

12. COMMISSIONS OF TRUST

12.1 EXTERNAL ACTIVITIES

2025	Area Chair , ICLR
2024–2025	Scientific Committee Member , 2nd International Olympiad in Artificial Intelligence (IOAI)
2024	Distinguished Jury Member , the AGBA GenAI Innovation Series for evaluating the innovations for 15th Edition of annual Aegis Graham Bell Awards, supported by Ministry of Electronics and Information Technology, Ministry of Education, Government of India, New Delhi and Department of Science & Technology, Government of India, Country Partner Australian Trade and Investment Commission (Austrade)
2024–now	Action Editor , Journal of Machine Learning Research (JMLR)
2024	Area Chair , NeurIPS
2024	Area Chair , ICML
2024	Area Chair , ICLR
2023–now	Associate Editor , Numerische Mathematik
2023	External PhD Examiner for Lie He, EPFL (advisor: Martin Jaggi)
2023	External PhD Examiner for Othmane Marfoq, Inria Sophia Antipolis (advisor: Giovanni Neglia)
2023	Invited to serve as Area Chair for COLT 2023 (declined)
2023	Area Chair , NeurIPS
2023	Area Chair , ICML
2023	Area Chair , ICLR
2022–2024	Action Editor , Transactions on Machine Learning Research (TMLR)
2022	Area Chair , NeurIPS
2022	Area Chair , ICML
2022	Area Chair , ICLR
2021	Habilitation ⁶⁹ Committee Member for Dr. Aurélien Bellet, Inria Lille - Nord Europe, France (other committee members: Francis Bach, Kamalika Chaudhuri and Catuscia Palamidessi)
2021	Area Chair , NeurIPS, virtual
2021	Area Chair , ICML, virtual
2021–2022	Area Editor ⁷⁰ , Journal of Optimization Theory and Applications
2021	Reviewer of Hi!Paris Fellowship applications in machine learning ⁷¹
2021	Associate Editor (declined invite), Journal of Artificial Intelligence and Machine Learning
2021–now	Research Mentor, Kempelen Institute of Intelligent Technologies, Bratislava, Slovakia
2021	Senior Program Committee Member , IJCAI, Montréal, Canada

⁶⁹Habilitation á diriger des recherches

⁷⁰area: Optimization for Machine Learning

⁷¹Hi!Paris is a new interdisciplinary center for research and education on AI and Data Analytics for Science, Business and Society launched by HEC Paris and Institut polytechnique de Paris (IP Paris). See www.hi-paris.fr

2021 **Area Chair**, ICLR, Vienna, Austria

2020 External PhD Examiner for Axel Böhm, University of Vienna (advisor: Radu Ioan Bot)

2020 External PhD Examiner for Dmitry Grishchenko, Université Grenoble Alpes (advisors: Franck Iutzeler, Jérôme Malick, and Massih-Reza Amini)

2020 **Area Chair**, NeurIPS, Vancouver, Canada

2020 **Expert Reviewer**, ICML, Vienna, Austria

2020 Program Committee Member, ICML International Workshop on Federated Learning for User Privacy and Data Confidentiality

2020 Evaluator & Reviewer, European Commission H2020 grants

2020 Evaluator & Reviewer, European Commission ICT grants totaling 40+ million EUR

2020 Program Committee Member, International Workshop on Federated Learning for User Privacy and Data Confidentiality (IJCAI-PRICAI⁷²), Yokohama, Japan

2020 **Senior Program Committee Member**, IJCAI-PRICAI, Yokohama, Japan

2019 Program Committee Member, NeurIPS, Vancouver, Canada

2019 Program Committee Member, AISTATS, Naha, Okinawa, Japan

2019 External PhD Examiner for Benjamin Dubois, École des Ponts, France (advisor: G. Obozinski)

2019–now **Handling Editor**, Journal of Nonsmooth Analysis and Optimization

2019 **Senior Program Committee Member**, IJCAI, Macao, China

2019 **Area Chair**, ICML, Long Beach, California

2018–now **Associate Editor**, Optimization Methods and Software

2018 Reviewer, Carnegie Trust, UK

2018 Program Committee Member, NeurIPS, Montreal, Canada

2018 Program Committee Member, ICML, Stockholm, Sweden

2018 Program Committee Member, ICLR, Vancouver, Canada

2017 Program Committee Member, NeurIPS, Long Beach, USA

2017 Program Committee Member, AAI, New Orleans, USA

2017 Reviewer, ERC (European Research Council) Consolidator Grants

2016 Habilitation Examiner for Nicolas Couellan, Institut de Mathématiques de Toulouse, Université Paul Sabatier, France (other examiners: Jean-Baptiste Hiriart-Urruty (Toulouse))

2016 External PhD Examiner for Igor Colin, Télécom ParisTech, France (other examiners: Alexandre D’Aspremont (ENS) and Mikael Johansson (KTH))

2016 **Guest Editor**, Journal of Computational Mathematics (co-editors: Xiaojun Chen, Yuhong Dai, and Yinyu Ye)

2016 Reviewer, EPSRC Programme Grant Scheme

2016 External PhD Examiner for Hamid Reza Feyzmahdavian, Automatic Control Department, KTH Royal Institute of Technology, Sweden

2016 Program Committee Member, Symposium on Distributed Information Processing, Optimization, and Resource Management over Networks, IEEE Global Conference on Signal and Information Processing, Greater Washington, D.C., USA

2016 Program Committee Member, NeurIPS, Barcelona, Spain

2016 Program Committee Member, ICML, New York, USA

2016 Program Committee Member, International Conference on Internet of Things and Big Data, Rome, Italy

2015 Program Committee Member, AISTATS, San Diego, California

2015 Program Committee Member, 13th EUROPT Workshop on Advances in Continuous Optimization, Edinburgh

2015 Program Committee Member, ICML, Lille, France

2015 External DPhil Examiner for Sheng Fang, Mathematical Institute, University of Oxford, UK (internal examiner: Jared Tanner)

2015 Lead, Alan Turing Institute PhD Programme in Data Science (responsible, on behalf of the University of Edinburgh, for the development of the PhD programme, starting in 2017)

⁷²International Joint Conference on Artificial Intelligence – Pacific Rim International Conference on Artificial Intelligence

2015	Evaluator & Reviewer, EU Horizon 2020 grants totaling 36.2 million EUR
2015	Reviewer for Leverhulme Trust (2×)
2015	Reviewer for Isaac Newton Trust
2014–2020	Associate Editor , Optimization (Frontiers in Applied Mathematics and Statistics)
2014–2017	Steering Committee (representing School of Mathematics), Centre for Doctoral Training in Data Science, University of Edinburgh (£5.03m grant from EPSRC)
2013–2017	Member, EPSRC Peer Review College
2013	Evaluator & Reviewer, EU FP7 grants totaling 42.5 million EUR.
2013	Chief Editor (declined invite), Statistics, Optimization and Computing (SOIC)
2012–2014	Steering Committee (representing University of Edinburgh), Numerical Algorithms and Intelligent Software (£5m grant from EPSRC)
2011–2017	Reviewer, EPSRC
2011–2016	Faculty Advisor, SIAM Edinburgh Student Chapter

12.2 JOURNAL REVIEWING

Mathematical Programming, SIAM Journal on Optimization, SIAM Review, Foundations of Computational Mathematics, Journal of Machine Learning Research, Machine Learning, IEEE Signal Processing, Symposium on Theory of Computing, Computational Optimization and Applications, Optimization Methods and Software, SIAM Journal on Computing, European Journal of Operational Research, Central European Journal of Operational Research, Journal of Global Optimization.

12.4 SERVICE @ KAUST

2022–now	Member, SDAIA-KAUST Center of Excellence in Data Science and AI
2022–now	Founding Member, KAUST AI Initiative
2022–now	Member, AI Initiative Faculty Search Committee
2022	PhD Proposal Examiner for Fatimah Zohra, Computer Science
2022	MS Thesis Examiner for Fernando Zhapa Camacho, Computer Science
2021–2022	Member, AI Initiative Advisory Board
2021	PhD Proposal Examiner for Han Shao, Computer Science
2020–2021	Chair, Machine Learning Faculty Search Committee
2020	PhD Thesis Examiner for Adel Bibi, Computer Science (other examiners: Yi Ma (Berkeley), Wolfgang Heidrich (KAUST), Bernard Ghanem (KAUST))
2019–2021	Member, AI Initiative Committee
2019–2021	Faculty Sponsor, KAUST ACM Student Chapter
2019–2020	Chair, Machine Learning Faculty Search Committee
2019	PhD Proposal Examiner for Adel Bibi, Computer Science
2019	Member, Research Strategic Plan Working Group (representing CEMSE)
2018–2019	Chair, Artificial Intelligence Committee ⁷³
2018–now	Co-Founder, The Machine Learning Hub (with M. Canini, B. Ghanem and P. Kalnis)
2018–2019	CS Program Curriculum Committee Member
2018	CS Faculty Search Committee Member, Machine Learning
2017	PhD Proposal Examiner for Khalil Elkhail, Electrical Engineering
2017–2019	Elected Member of the Academic Council
2017–2018	Faculty Search Committee, Statistics and Computer Science
2017	Directed Research Project Evaluation Panel

⁷³I led a university-wide committee tasked by the President of KAUST to prepare a document mapping current AI activity at KAUST and suggesting a plan for building the AI initiative at KAUST in the next 5 years; we have written a 100+ page report.

12.5 SERVICE @ EDINBURGH

2016	Recruitment Panel, Chancellor’s Fellowships in “Mathematics of Data Science” and “Industrial Mathematics”
2016	Internal PhD Examiner for Zhanxing Zhu, School of Informatics, University of Edinburgh (external examiner: Manfred Opper (TU Berlin))
2015	PhD Admissions, Data Science
2015	Recruitment Panel, Lectureship in “Mathematics of Data Science”
2014–2015	Part of a small team at Edinburgh assisting with a bid for The Alan Turing Institute (UK National Data Science and AI Institute) and subsequently with organizational planning. The bid was successful and University of Edinburgh became one of 5 founding institutions of the Alan Turing Institute (with Oxford, Cambridge, UCL and Warwick).
2013–2016	PhD Admissions, OR & Optimization
2009–2015	Director of Studies and Personal Tutor
2009–2015	MSc Projects Coordinator, OR and Optimization Programme

13. PROFESSIONAL AFFILIATIONS

Association for Computing Machinery (ACM)
Society for Industrial and Applied Mathematics (SIAM)
Mathematical Optimization Society (MOS)
Edinburgh Mathematical Society (EMS)
Isaac Newton Institute for Mathematical Sciences (INIMS)
Institute for Operations Research and Management Science (INFORMS)
Foundations of Computational Mathematics (FoCM)
Slovak Mathematical Society (SMS)

14. INDUSTRY INVOLVEMENT

14.1 INDUSTRY INVOLVEMENT: SUMMARY

company	paper(s)	comment
Sony AI	[240]	
Shanghai AI Lab	[214]	+ ongoing collaboration
JD Explore Academy	[196]	
Intel	[95]	
Microsoft Research	[79, 95, 193]	+ ongoing collaboration
IBM Research	[22, 78, 158]	+ ongoing collaboration
Samsung AI		ongoing collaboration
Facebook	[83, 187]	+ ongoing collaboration
Amazon	[49, 151]	
Google	[51, 52, 168]	co-development of Federated Learning
Barefoot Networks	[95]	
Baidu	[29]	
Western General Hospital	[11]	

In the past I have had research discussions with SAS, Twitter, Arup, British Geological Survey, Confbuzz and Scottish Financial Risk Academy.

14.2 INDUSTRY INVOLVEMENT: FEDERATED LEARNING (with Google)

Standard machine learning approaches require centralizing the training data on one machine or in a data-center. For models trained from user interaction with mobile devices, a new approach was just released by Google, a result of collaboration between Google, Jakub Konečný and myself. The new approach is called “Federated Learning”; it is described in my papers [51, 52] and two additional papers by Google.

Federated Learning enables mobile phones to collaboratively learn a shared prediction model while keeping all the training data on device, decoupling the ability to do machine learning from the need to store the data in the cloud. This goes beyond the use of local models that make predictions on mobile devices by bringing model training to the device as well. **The technology is now in use by around 1 billion Android devices.**

The CEO of Google, Sundar Pichai, [said](#):

“... we continue to set the pace in machine learning and AI research. We introduced a new technique for training deep neural networks on mobile devices called Federated Learning. This technique enables people to run a shared machine learning model, while keeping the underlying data stored locally on mobile phones.”

The new technology is described in a Google Research Blog, dated April 2017, to a lay audience. Selected media coverage: [Forbes](#), [The Verge](#), [Quartz](#), [TechRepublic](#), [ZDNet](#), [Computer Business Review](#), [Motherboard Vice](#), [Infoworld](#), [Venturebeat](#), [Engadget](#), [Tech Narratives](#), [GadgetHacks](#), [BGR](#), [AndroidAuthority](#), [AndroidHeadlines](#), [Tom’s Guide](#), [Digital Trends](#), [The Exponential View](#), [9to5google](#).

14.3. INDUSTRY INVOLVEMENT: YOUTUBE (with Google)

An excerpt from a support letter written to me by David J Harper, the Head of EMEA University Relations, Google Switzerland, for the purpose of a (successful) grant application:

“Google recognizes the contributions of Dr Richtárik’s research to the field of big data optimization. We have invited him to deliver a talk on his research on parallel and distributed coordinate descent methods in our internal Machine Learning seminar. The talk took place in Mountain View, California, in September 2013 and was televised via our teleconference facilities to Google offices around the globe. A variant of the algorithm⁷⁴ developed by Dr. Richtárik is in operation at Google in the YouTube recommendation engine.”

15. PUBLICATIONS

15.1 CITATION METRICS⁷⁵

According to [Google Scholar](#), my works attracted more than 24,000 citations, and my **h-index** is 69.

15.2 CONFERENCE/JOURNAL ABBREVIATIONS

NeurIPS	Annual Conference on Neural Information Processing Systems (a leading conference in machine learning and artificial intelligence research)
ICML	International Conference on Machine Learning (a leading conference in machine learning and artificial intelligence research)
ICLR	International Conference on Learning Representations (a leading conference in machine learning and artificial intelligence research)
AISTATS	International Conference on Artificial Intelligence and Statistics
ALT	International Conference on Algorithmic Learning Theory
AAAI	Conference on Artificial Intelligence

⁷⁴A variant of the method developed in [18, 24].

⁷⁵These citations metric were extracted via Google Scholar in October 2024.

UAI	Uncertainty in Artificial Intelligence
MSML	Mathematical and Scientific Machine Learning
JMLR	Journal of Machine Learning Research
TMLR	Transactions on Machine Learning Research
ECML PKDD	European Conf. on Machine Learning and Principles & Practice of Knowledge Discovery in Databases
DistributedML	International Workshop on Distributed Machine Learning
ICCV	IEEE International Conference on Computer Vision
VMV	Vision, Modeling and Visualization
MLSP	IEEE International Workshop on Machine Learning for Signal Processing
PROMS	Springer Proceedings in Mathematics & Statistics
ICASSP	International Conference on Acoustics, Speech, and Signal Processing (world's largest and most comprehensive technical conference focused on signal processing and its applications)
GlobalSIP	IEEE Global Conference on Signal and Information Processing
Allerton	Annual Allerton Conference on Communication, Control, and Computing
SPARS	Proceedings of Signal Processing with Adaptive Sparse Structured Representations
WACV	IEEE Winter Conference on Applications in Computer Vision
SPIE	Proceedings of the Society of Photo-Optical Instrumentation Engineers
OR	Operations Research Proceedings
SIGCOMM	ACM's Special Interest Group on Data Communications, specializing in the field of communication and computer networks
SOSP	Workshop on AI Systems at Symposium on Operating Systems Principles
NSDI	USENIX Symposium on Networked Systems Design and Implementation

15.3 LIST OF PUBLICATIONS, PREPRINTS & TECHNICAL REPORTS

The papers are listed in reverse chronological order in terms of their appearance online. The `arXiv` identifier is mentioned for papers which are not yet published. Coauthors marked with (r) , (p) , (d) , (m) and (i) were my (r) esearch scientists, (p) ostdocs, (d) octoral students, (m) aster students and (i) nterns at the time of writing, respectively.

- (260) H. Li^(d), P. Richtárik
On the convergence of FedProx with extrapolation and inexact prox
 arXiv:2410.01410
- (259) E. Gorbunov, N. Tupitsa, S. Choudhury, A. Aliev, P. Richtárik, S. Horváth, M. Takáč
Methods for convex (L_0, L_1) -smooth optimization: clipping, acceleration, and adaptivity
 arXiv:2409.14989
- (258) K. Yi^(d), T. Kharisov⁽ⁱ⁾, I. Sokolov^(d), P. Richtárik
Cohort squeeze: Beyond a single communication round per cohort in cross-device federated learning
NeurIPS 2024 FL Workshop
 Oral at the NeurIPS 2024 FL Workshop
- (257) G. Meinhardt⁽ⁱ⁾, K. Yi^(d), L. Condat^(r), P. Richtárik
Prune at the clients, not the server: Accelerated sparse training in federated learning
 arXiv:2405.20623
- (256) A. Karagulyan^(p), E. Shulgin^(d), A. Sadiev^(d), P. Richtárik
SPAM: Stochastic proximal point method with momentum variance reduction for non-convex cross-device federated learning

arXiv:2405.20127

- (255) L. Condat^(r), P. Richtárik
A simple linear convergence analysis of the Point-SAGA algorithm
arXiv:2405.19951
- (254) P. Richtárik, S. M. Giancola⁽ⁱ⁾, D. Lubczyk⁽ⁱ⁾, R. Yadav⁽ⁱ⁾
Local curvature descent: squeezing more curvature out of standard and Polyak gradient descent
arXiv:2405.16574
- (253) A. Tyurin^(p), P. Richtárik
On the optimal time complexities in decentralized stochastic asynchronous optimization
NeurIPS 2024
- (252) P. Richtárik, A. Sadiev^(d), Y. Demidovich^(p)
A unified theory of stochastic proximal point methods without smoothness
arXiv:2405.15941
- (251) I.-V. Modoranu, M. Safaryan, G. Malinovsky^(d), E. Kurtic, T. Robert, P. Richtárik, D. Alistarh
MicroAdam: Accurate adaptive optimization with low space overhead and provable convergence
NeurIPS 2024
- (250) A. Tyurin^(p), K. Grunkowska^(d), P. Richtárik
Freya PAGE: First optimal time complexity for large-scale nonconvex finite-sum optimization with heterogeneous asynchronous computations
NeurIPS 2024
- (249) V. Malinovskii, D. Mazur, I. Ilin^(d), D. Kuznedelev, K. Burlachenko^(d), K. Yi^(d), D. Alistarh, P. Richtárik
PV-Tuning: Beyond straight-through estimation for extreme LLM compression
NeurIPS 2024
Oral at NeurIPS 2024 (0.4% acceptance rate)
- (248) A. Sadiev^(d), L. Condat^(r), P. Richtárik
Stochastic proximal point methods for monotone inclusions under expected similarity
arXiv:2405.14255
- (247) H. Li^(d), K. Acharya⁽ⁱ⁾, P. Richtárik
The power of extrapolation in federated learning
NeurIPS 2024
- (246) Kai Yi^(d), G. Meinhardt⁽ⁱ⁾, P. Richtárik
FedComLoc: Communication-efficient distributed training of sparse and quantized models
arXiv:2403.09904
- (245) Y. Demidovich^(p), G. Malinovsky^(d), P. Richtárik
Streamlining in the Riemannian realm: Efficient Riemannian optimization with loopless variance reduction
arXiv:2403.06677

- (244) L. Condat^(r), A. Maranjyan^(d), P. Richtárik
LoCoDL: Communication-efficient distributed learning with local training and compression
 arXiv:2403.04348
- (243) K. Gruntkowska^(d), A. Tyurin^(p), P. Richtárik
Improving the worst-case bidirectional communication complexity for nonconvex distributed optimization under function similarity
NeurIPS 2024
 Spotlight at NeurIPS 2024
- (242) A. Tyurin^(p), M. Pozzi⁽ⁱ⁾, I. Ilin^(d), P. Richtárik
Shadowheart SGD: distributed asynchronous SGD with optimal time complexity under arbitrary computation and communication heterogeneity
NeurIPS 2024
- (241) A. Panferov⁽ⁱ⁾, Y. Demidovich^(p), A. Rammal⁽ⁱ⁾, P. Richtárik
Correlated quantization for faster nonconvex distributed optimization
 arXiv:2401.05518

Prepared in 2023

- (240) K. Yi^(d), N. Gazagnadou, P. Richtárik, and L. Lyu
FedP3: Personalized and privacy-friendly federated network pruning under model heterogeneity
ICLR 2024
- (239) P. Richtárik, E. Gasanov^(d), and K. Burlachenko^(d)
Error feedback reloaded: From quadratic to arithmetic mean of smoothness constants
ICLR 2024
- (238) J. Xin, I. Ilin^(d), S. Zhang, M. Canini, and P. Richtárik
Kimad: Adaptive gradient compression with bandwidth awareness
DistributedML 2023
- (237) K. Burlachenko^(d), A. Alrowithi, F. A. Albalawi, and P. Richtárik
Federated learning is better with non-homomorphic encryption
DistributedML 2023
- (236) Y. Demidovich^(p), G. Malinovsky^(d), E. Shulgin^(d), and P. Richtárik
MAST: Model-agnostic sparsified training
 arXiv:2311.16086
- (235) G. Malinovsky^(d), P. Richtárik, S. Horváth, and E. Gorbunov
Byzantine robustness and partial participation can be achieved simultaneously: just clip gradient differences
 arXiv:2311.14127
- (234) M. Fornasier, K. Riedl, P. Richtárik, and L. Sun^(d)
Consensus-based optimization with truncated noise
 To appear in: *European Journal of Applied Mathematics, 2024*

arXiv:2310.16610

- (233) A. Rammal⁽ⁱ⁾, K. Grunkowska⁽ⁱ⁾, N. Fedin, E. Gorbunov, and P. Richtárik
Communication compression for Byzantine robust learning: New efficient algorithms and improved rates
AISTATS 2024
- (232) H. Li^(d), A. Karagulyan^(p), and P. Richtárik
MARINA meets matrix stepsizes: Variance reduced distributed non-convex optimization
arXiv:2310.04614
- (231) E. Gorbunov, A. Sadiev^(d), M. Danilova, S. Horváth, G. Gidel, P. Dvurechensky, A. Gasnikov, and P. Richtárik
High-probability convergence for composite and distributed stochastic minimization and variational inequalities with heavy-tailed noise
ICML 2024
- (230) E. Shulgin^(d) and P. Richtárik
Towards a better theoretical understanding of independent subnetwork training
ICML 2024
- (229) R. Szlendak^(m), E. Gasanov^(d), and P. Richtárik
Understanding progressive training through the framework of randomized coordinate descent
AISTATS 2024
- (228) M. Grudzień, G. Malinovsky^(d), and P. Richtárik
Improving accelerated federated learning with compression and importance sampling
arXiv:2306.03240
- (227) S. Khirirat^(p), E. Gorbunov, S. Horváth, R. Islamov, F. Karray, and P. Richtárik
Clip21: Error feedback for gradient clipping
- (226) J. Xin, M. Canini, P. Richtárik, and S. Horváth
Global QSGD: Practical floatless quantization for distributed learning with theoretical guarantees
arXiv:2305.18627
- (225) Y. Demidovich^(p), G. Malinovsky^(d), I. Sokolov^(d) and P. Richtárik
A guide through the zoo of biased SGD
NeurIPS 2023
- (224) P. Richtárik, E. Gasanov^(d) and K. Burlachenko^(d)
Error feedback shines when features are rare
arXiv:2305.15264
- (223) I. Fatkhullin, A. Tyurin^(p), and P. Richtárik
Momentum provably improves error feedback!
NeurIPS 2023

- (222) K. Yi^(d), L. Condat^(r), and P. Richtárik
Explicit personalization and local training: double communication acceleration in federated learning
arXiv:2305.13170
- (221) A. Tyurin^(p) and P. Richtárik
Optimal time complexities of parallel stochastic optimization methods under a fixed computation model
NeurIPS 2023
- (220) A. Tyurin^(p) and P. Richtárik
2Direction: Theoretically faster distributed training with bidirectional communication compression
NeurIPS 2023
- (219) H. Li^(d), A. Karagulyan^(p) and P. Richtárik
Det-CGD: Compressed gradient descent with matrix stepsizes for non-convex optimization
ICLR 2024
- (218) A. Karagulyan^(p) and P. Richtárik
ELF: Federated Langevin algorithms with primal, dual and bidirectional compression
arXiv:2303.04622
- (217) L. Condat^(r), G. Malinovsky^(d), and P. Richtárik
TAMUNA: Accelerated federated learning with local training and partial participation
arXiv:2302.09832
- (216) G. Malinovsky^(d), S. Horváth, K. Burlachenko^(d) and P. Richtárik
Federated learning with regularized client participation
arXiv:2302.03662
- (215) A. Sadiev^(d), M. Danilova, E. Gorbunov, S. Horváth, G. Gidel, P. Dvurechensky, A. Gasnikov and P. Richtárik
High-probability bounds for stochastic optimization and variational inequalities: the case of unbounded variance
ICML 2023
- (214) X. Qian^(p), H. Dong, T. Zhang and P. Richtárik
Catalyst acceleration of error compensated methods leads to better communication complexity
AISTATS 2023
- (213) S. Hanzely^(d), K. Mishchenko^(d) and P. Richtárik
Convergence of first-order algorithms for meta-learning with Moreau envelopes
arXiv:2301.06806

Prepared in 2022

- (212) M. Grudzień⁽ⁱ⁾, G. Malinovsky^(d) and P. Richtárik
Can 5th generation local training methods support client sampling? Yes!

- (211) M. Makarenko, E. Gasanov^(d), R. Islamov⁽ⁱ⁾, A. Sadiev^(d) and P. Richtárik
Adaptive compression for communication-efficient distributed training
TMLR 2023
- (210) S. Hanzely^(d), D. Kamzolov, D. Pasechnyuk, A. Gasnikov, P. Richtárik and M. Takáč
A damped Newton method achieves global $O(1/k^2)$ and local quadratic convergence rate
NeurIPS 2022
- (209) A. Maranjyan⁽ⁱ⁾, M. Safaryan^(p) and P. Richtárik
GradSkip: Communication-accelerated local gradient methods with better computational complexity
arXiv:2210.16402
- (208) L. Condat^(r), I. Agarský^(d) and P. Richtárik
Provably doubly accelerated federated learning: the first theoretically successful combination of local training and compressed communication
arXiv:2210.13277
- (207) L. Sun^(d) and P. Richtárik
Improved Stein variational gradient descent with importance weights
arXiv:2210.00462
- (206) K. Gruntkowska⁽ⁱ⁾, A. Tyurin^(p) and P. Richtárik
EF21-P and friends: Improved theoretical communication complexity for distributed optimization with bidirectional compression
ICML 2023
- (205) S. Boucherouite, G. Malinovsky^(d), P. Richtárik and E. H. Bergou
Minibatch stochastic three points method for unconstrained smooth minimization
AAAI 2024
- (204) E. H. Bergou^(r), K. Burlachenko^(d), A. Dutta and P. Richtárik
Personalized federated learning with communication compression
TMLR 2023
- (203) S. Horváth^(d), K. Mishchenko^(d) and P. Richtárik
Adaptive learning rates for faster stochastic gradient methods
arXiv:2208.05287
- (202) L. Condat^(r) and P. Richtárik
RandProx: Primal-dual optimization algorithms with randomized proximal updates
ICLR 2023
OPT2022: 14th Annual Workshop on Opt. for Machine Learning (NeurIPS 2022 Workshop)
- (201) G. Malinovsky^(d), K. Yi^(d) and P. Richtárik
Variance reduced ProxSkip: Algorithm, theory and application to federated learning
NeurIPS 2022
- (200) A. Sadiev⁽ⁱ⁾, D. Kovalev^(d) and P. Richtárik
Communication acceleration of local gradient methods via an accelerated primal-dual algorithm with inexact prox

- (199) E. Shulgin^(d) and P. Richtárik
Shifted compression framework: generalizations and improvements
UAI 2022
- (198) L. Sun^(d) and P. Richtárik
A note on the convergence of mirrored Stein variational gradient descent under (L_0, L_1) smoothness condition
arXiv:2206.09709
- (197) A. Sadiev⁽ⁱ⁾, G. Malinovsky^(d), E. Gorbunov, I. Sokolov^(d), A. Khaled, K. Burlachenko^(d) and P. Richtárik
Don't compress gradients in random reshuffling: compress gradient differences
NeurIPS 2024
- (196) R. Islamov⁽ⁱ⁾, X. Qian^(p), S. Hanzely^(d), M. Safaryan^(p) and P. Richtárik
Distributed Newton-type methods with communication compression and Bernoulli aggregation
TMLR 2023
NeurIPS Workshop 2022 (Order up! The Benefits of Higher-Order Optimization in Machine Learning)
- (195) M. Alfara, J. C. Pérez, E. Shulgin^(d), P. Richtárik and B. Ghanem
Certified robustness in federated learning
NeurIPS Workshop 2022 (Federated Learning)
- (194) A. Tyurin^(p), L. Sun^(d), K. Burlachenko^(d) and P. Richtárik
Sharper rates and flexible framework for nonconvex SGD with client and data sampling
TMLR 2023
- (193) L. Sun^(d), A. Salim and P. Richtárik
Federated sampling with Langevin algorithm under isoperimetry
TMLR 2024
- (192) E. Gorbunov, S. Horváth^(d), P. Richtárik and G. Gidel
Variance reduction is an antidote to Byzantines: better rates, weaker assumptions and communication compression as a cherry on the top
ICLR 2023
- (191) L. Sun^(d), A. Karagulyan^(p) and P. Richtárik
Convergence of Stein variational gradient descent under a weaker smoothness condition
AISTATS 2023
- (190) A. Tyurin^(p) and P. Richtárik
A computation and communication efficient method for distributed nonconvex problems in the partial participation setting
NeurIPS 2023
- (189) L. Condat^(r), K. Yi^(d) and P. Richtárik
EF-BV: A unified theory of error feedback and variance reduction mechanisms for biased and unbiased compression in distributed optimization

NeurIPS 2022

- (188) G. Malinovsky^(d) and P. Richtárik
Federated random reshuffling with compression and variance reduction
arXiv:2205.03914
- (187) S. Horváth^(d), M. Sanjabi, L. Xiao, P. Richtárik and M. Rabbat
FedShuffle: Recipes for better use of local work in federated learning
TMLR 2022
- (186) K. Mishchenko^(d), G. Malinovsky^(d), S. Stich and P. Richtárik
ProxSkip: Yes! Local gradient steps provably lead to communication acceleration! Finally!
ICML 2022
- (185) D. Kovalev^(d), A. Beznosikov, A. Sadiev, M. Pershiyanov, P. Richtárik and A. Gasnikov
Optimal algorithms for decentralized stochastic variational inequalities
NeurIPS 2022
- (184) A. Tyurin^(p) and P. Richtárik
DASHA: Distributed nonconvex optimization with communication compression and optimal oracle complexity
ICLR 2023
- (183) P. Richtárik, I. Sokolov^(m), I. Fatkhullin⁽ⁱ⁾, E. Gasanov^(d), Z. Li^(r) and E. Gorbunov
3PC: Three point compressors for communication-efficient distributed training and a better theory for lazy aggregation
ICML 2022
- (182) H. Zhao, B. Li, Z. Li^(r), P. Richtárik and Y. Chi
BEER: Fast $O(1/T)$ rate for decentralized nonconvex optimization with communication compression
NeurIPS 2022
- (181) G. Malinovsky^(d), K. Mishchenko^(d) and P. Richtárik
Server-side stepsizes and sampling without replacement provably help in federated optimization
DistributedML 2023

Prepared in 2021

- (180) D. Kovalev^(d), A. Gasnikov and P. Richtárik
Accelerated primal-dual gradient method for smooth and convex-concave saddle-point problems with bilinear coupling
NeurIPS 2022
- (179) H. Zhao, K. Burlachenko^(d), Z. Li^(r) and Peter Richtárik
Faster rates for compressed federated learning with client-variance reduction
To appear in: *SIAM Journal on Mathematics of Data Science, 2023*
arXiv:2112.13097

- (178) K. Burlachenko^(d), S. Horváth^(d) and P. Richtárik
FL-PyTorch: Optimization research simulator for federated learning
DistributedML 2021
- (177) E. Gasanov^(d), A. Khaled, S. Horváth and P. Richtárik
FLIX: A simple and communication-efficient alternative to local methods in federated learning
AISTATS 2022
- (176) X. Qian^(p), R. Islamov⁽ⁱ⁾, M. Safaryan^(p) and P. Richtárik
Basis matters: better communication-efficient second order methods for federated learning
AISTATS 2022
- (175) A. Beznosikov, P. Richtárik, M. Diskin, M. Ryabinin and A. Gasnikov
Distributed methods with compressed communication for solving variational inequalities, with theoretical guarantees
NeurIPS 2022
- (174) Rafał Szlendak^(d), A. Tyurin^(p) and P. Richtárik
Permutation compressors for provably faster distributed nonconvex optimization
ICLR 2022
- (173) I. Fatkhullin⁽ⁱ⁾, I. Sokolov^(d), E. Gorbunov^(d), Z. Li^(p) and P. Richtárik
EF21 with bells & whistles: practical algorithmic extensions of modern error feedback
 arXiv:2110.03294
- (172) X. Qian^(p), H. Dong, P. Richtárik and T. Zhang
Error compensated loopless SVRG, Quartz, and SDCA for distributed optimization
 arXiv:2109.10049
- (171) M. Jahani, S. Rusakov, Z. Shi, P. Richtárik, M. W. Mahoney and M. Takáč
Doubly adaptive scaled algorithm for machine learning using second-order information
ICLR 2022
- (170) H. Zhao, Z. Li^(r) and P. Richtárik
FedPAGE: A fast local method for federated learning
 arXiv:2108.04755
- (169) Z. Li^(r) and P. Richtárik
CANITA: Faster rates for distributed convex optimization with communication compression
NeurIPS 2021
- (168) 50+ authors
A field guide to federated optimization
 arXiv:2107.06917
- (167) P. Richtárik, I. Sokolov^(m), and I. Fatkhullin⁽ⁱ⁾
EF21: A new, simpler, theoretically better, and practically faster error feedback
NeurIPS 2021
 NeurIPS 2021 oral paper (less than 1% acceptance rate)

- (166) D. Kovalev^(d), E. Gasanov^(d), P. Richtárik, and A. Gasnikov
Lower bounds and optimal algorithms for smooth and strongly convex decentralized optimization over time-varying networks
NeurIPS 2021
- (165) B. Wang⁽ⁱ⁾, M. Safaryan^(p), and P. Richtárik
Theoretically better and numerically faster distributed optimization with smoothness-aware quantization techniques
NeurIPS 2022
- (164) A. Salim^(p), L. Sun^(d), and P. Richtárik
A convergence theory for SVGD in the population limit under Talagrand’s inequality T1
ICML 2022
- (163) L. Condat^(r) and P. Richtárik
MURANA: A generic framework for stochastic variance-reduced optimization
MSML 2022
- (162) M. Safaryan^(p), R. Islamov⁽ⁱ⁾, X. Qian^(p), and P. Richtárik
FedNL: Making Newton-type methods applicable to federated learning
ICML 2022
- (161) G. Malinovsky^(m), A. Sailanbayev^(d), and P. Richtárik
Random reshuffling with variance reduction: new analysis and better rates
 arXiv:2104.09342
- (160) Z. Li^(r) and P. Richtárik
ZeroSARAH: Efficient nonconvex finite-sum optimization with zero full gradient computations
 arXiv:2103.01447
- (159) A. Salim^(p), L. Condat^(r), D. Kovalev^(d), and P. Richtárik
An optimal algorithm for strongly convex minimization under affine constraints
AISTATS 2022
- (158) Z. Shi, N. Loizou, P. Richtárik, and M. Takáč
AI-SARAH: Adaptive and implicit stochastic recursive gradient methods
TMLR 2023
- (157) D. Kovalev^(d), E. Shulgin^(m), P. Richtárik, A. Rogozin⁽ⁱ⁾, and A. Gasnikov
ADOM: Accelerated decentralized optimization method for time-varying networks
ICML 2021
- (156) K. Mishchenko^(d), B. Wang⁽ⁱ⁾, D. Kovalev^(d), and P. Richtárik
IntSGD: Floatless compression of stochastic gradients
ICLR 2022
[ICLR 2022 Spotlight paper](#)
- (155) M. Gorbunov⁽ⁱ⁾, K. Burlachenko^(d), Z. Li^(r), and P. Richtárik
MARINA: faster non-convex distributed learning with compression
ICML 2021

- (154) M. Safaryan^(p), F. Hanzely^(d), and P. Richtárik
Smoothness matrices beat smoothness constants: better communication compression techniques for distributed optimization
NeurIPS 2021
- (153) K. Islamov⁽ⁱ⁾, X. Qian^(p), and P. Richtárik
Distributed second order methods with fast rates and compressed communication
ICML 2021
- (152) K. Mishchenko^(d), A. Khaled⁽ⁱ⁾, and P. Richtárik
Proximal and federated random reshuffling
ICML 2022

Prepared in 2020

- (151) S. Horváth^(d), A. Klein, P. Richtárik, and C. Archambeau
Hyperparameter transfer learning with adaptive complexity
AISTATS 2021
- (150) X. Qian^(p), H. Dong, P. Richtárik, and T. Zhang
Error compensated loopless SVRG for distributed optimization
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (149) X. Qian^(p), H. Dong, P. Richtárik, and T. Zhang
Error compensated proximal SGD and RDA
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (148) E. Gorbunov⁽ⁱ⁾, F. Hanzely^(d), and P. Richtárik
Local SGD: unified theory and new efficient methods
AISTATS 2021
- (147) D. Kovalev^(d), A. Koloskova, M. Jaggi, P. Richtárik, and S. U. Stich
A linearly convergent algorithm for decentralized optimization: sending less bits for free!
AISTATS 2021
- (146) W. Chen⁽ⁱ⁾, S. Horváth^(d), and P. Richtárik
Optimal client sampling for federated learning
TMLR 2022
Privacy Preserving Machine Learning (NeurIPS 2020 Workshop)
- (145) E. Gorbunov⁽ⁱ⁾, D. Kovalev^(d), D. Makarenko, and P. Richtárik
Linearly converging error compensated SGD
NeurIPS 2020
- (144) A. Albasyoni^(m), M. Safaryan^(p), L. Condat^(r), and P. Richtárik
Optimal gradient compression for distributed and federated learning
SpicyFL 2020: NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning
- (143) F. Hanzely^(d), S. Hanzely^(m), S. Horváth^(d), and P. Richtárik
Lower bounds and optimal algorithms for personalized federated learning

- (142) L. Condat^(r), G. Malinovsky^(m), and P. Richtárik
Distributed proximal splitting algorithms with rates and acceleration
Frontiers in Signal Processing, section Signal Processing for Communications, 2022
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (141) R. M. Gower, M. Schmidt, F. Bach, and P. Richtárik
Variance-reduced methods for machine learning
Proceedings of the IEEE 108(11):1968–1983, 2020
- (140) X. Qian^(p), P. Richtárik, and T. Zhang
Error compensated distributed SGD can be accelerated
NeurIPS 2021
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (139) A. S. Berahas, M. Jahani, P. Richtárik, and M. Takáč
Quasi-Newton methods for deep learning: forget the past, just sample
Optimization Methods and Software 23(5):1668–1704, 2022
[Charles Broyden Prize](#)
- (138) Z. Li^(p), H. Bao, X. Zhang, and P. Richtárik
PAGE: A simple and optimal probabilistic gradient estimator for nonconvex optimization
ICML 2021
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
[Spotlight talk](#)
- (137) D. Kovalev^(d), A. Salim^(p), and P. Richtárik
Optimal and practical algorithms for smooth and strongly convex decentralized optimization
NeurIPS 2020
- (136) Ahmed Khaled⁽ⁱ⁾, Othmane Sebbouh⁽ⁱ⁾, Nicolas Loizou, Robert M. Gower, and P. Richtárik
Unified analysis of stochastic gradient methods for composite convex and smooth optimization
[arXiv:2006.11573](#)
- (135) S. Horváth^(d) and P. Richtárik
A better alternative to error feedback for communication-efficient distributed learning
ICLR 2021
SpicyFL 2020: NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning
[The Best Paper Award at the NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning](#)
- (134) A. Salim^(p) and P. Richtárik
Primal dual interpretation of the proximal stochastic gradient Langevin algorithm
NeurIPS 2020
- (133) Z. Li^(p) and P. Richtárik
A unified analysis of stochastic gradient methods for nonconvex federated optimization

- (132) K. Mishchenko^(d), A. Khaled⁽ⁱ⁾, and P. Richtárik
Random reshuffling: simple analysis with vast improvements
NeurIPS 2020
- (131) M. Alfarrar^(m), S. Hanzely^(m), A. Albasyoni^(m), B. Ghanem, and P. Richtárik
Adaptive learning of the optimal mini-batch size of SGD
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (130) A. Salim^(p), L. Condat^(r), K. Mishchenko^(d), and P. Richtárik
Dualize, split, randomize: fast nonsmooth optimization algorithms
Journal of Optimization Theory and Applications 195:102–130, 2022
OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)
- (129) A. N. Sahu⁽ⁱ⁾, A. Dutta^(p), A. Tiwari⁽ⁱ⁾, and P. Richtárik
On the convergence analysis of asynchronous SGD for solving consistent linear systems
Linear Algebra and its Applications 663:1–31, 2023
- (128) G. Malinovsky⁽ⁱ⁾, D. Kovalev^(d), E. Gasanov^(d), L. Condat^(r), and P. Richtárik
From local SGD to local fixed point methods for federated learning
ICML 2020
- (127) A. Beznosikov⁽ⁱ⁾, S. Horváth^(d), P. Richtárik and M. Safaryan^(p)
On biased compression for distributed learning
Journal of Machine Learning Research, 2022
SpicyFL 2020: NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning
- (126) Z. Li^(p), D. Kovalev^(d), X. Qian^(p) and P. Richtárik
Acceleration for compressed gradient descent in distributed and federated optimization
ICML 2020
- (125) D. Kovalev^(d), R. M. Gower, P. Richtárik and A. Rogozin⁽ⁱ⁾
Fast linear convergence of randomized BFGS
arXiv:2002.11337
- (124) F. Hanzely^(d), N. Doikov, P. Richtárik and Yu. Nesterov
Stochastic subspace cubic Newton method
ICML 2020
- (123) Mher Safaryan^(p), Egor Shulgin^(m) and P. Richtárik
Uncertainty principle for communication compression in distributed and federated learning and the search for an optimal compressor
Information and Inference: A Journal of the IMA, 2021
- (122) F. Hanzely^(d) and P. Richtárik
Federated learning of a mixture of global and local models
SpicyFL 2020: NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning
- (121) S. Horváth^(d), L. Lei, P. Richtárik and M. I. Jordan
Adaptivity of stochastic gradient methods for nonconvex optimization
SIAM Journal on Mathematics of Data Science 4(2):634–648, 2022

(120) F. Hanzely^(d), D. Kovalev^(d) and P. Richtárik
Variance reduced coordinate descent with acceleration: new method with a surprising application to finite-sum problems
ICML 2020

(119) A. Khaled⁽ⁱ⁾ and P. Richtárik
Better theory for SGD in the nonconvex world
TMLR 2022

Prepared in 2019

(118) A. Khaled⁽ⁱ⁾, K. Mishchenko^(d) and P. Richtárik
Tighter theory for local SGD on identical and heterogeneous data
AISTATS 2020

(117) S. Chraïbi⁽ⁱ⁾, A. Khaled⁽ⁱ⁾, D. Kovalev⁽ⁱ⁾, A. Salim^(p), P. Richtárik and M. Takáč
Distributed fixed point methods with compressed iterates
arXiv:1912.09925

(116) S. Horváth^(d), C.-Y. Ho, Ľ. Horváth⁽ⁱ⁾, A. Narayan Sahu, M. Canini and P. Richtárik
IntML: Natural compression for distributed deep learning
Workshop on AI Systems at Symposium on Operating Systems Principles 2019 (SOSP'19)

(115) D. Kovalev^(m), K. Mishchenko^(d) and P. Richtárik
Stochastic Newton and cubic Newton methods with simple local linear-quadratic rates
NeurIPS 2019 Workshop: Beyond First Order Methods in ML

(114) A. Khaled⁽ⁱ⁾, K. Mishchenko^(d) and P. Richtárik
Better communication complexity for local SGD
NeurIPS 2019 Workshop: Federated Learning for Data Privacy and Confidentiality

(113) A. Khaled⁽ⁱ⁾ and P. Richtárik
Gradient descent with compressed iterates
NeurIPS 2019 Workshop: Federated Learning for Data Privacy and Confidentiality

(112) A. Khaled⁽ⁱ⁾, K. Mishchenko^(d) and P. Richtárik
First analysis of local GD on heterogeneous data
NeurIPS 2019 Workshop: Federated Learning for Data Privacy and Confidentiality

(111) J. Xiong, P. Richtárik and W. Heidrich
Stochastic convolutional sparse coding
International Symposium on Vision, Modeling and Visualization, 2019
VMV 2019 Best Paper Award

(110) X. Qian^(p), Z. Qu and P. Richtárik
L-SVRG and L-Katyusha with arbitrary sampling
Journal of Machine Learning Research 22(112):1–47, 2021

(109) X. Qian^(p), A. Sailanbayev^(d), K. Mishchenko^(d) and P. Richtárik
MISO is making a comeback with better proofs and rates

arXiv:1906.01474

- (108) E. Gorbunov⁽ⁱ⁾, A. Bibi, O. Sezer, E. H. Bergou^(p) and P. Richtárik
A stochastic derivative free optimization method with momentum
NeurIPS 2019 Workshop: Optimization Foundations for Reinforcement Learning
ICLR 2020
- (107) M. Safaryan and P. Richtárik
Stochastic sign descent methods: New algorithms and better theory
ICML 2021
- (106) A. Salim^(p), D. Kovalev^(m) and P. Richtárik
Stochastic proximal Langevin algorithm: potential splitting and nonasymptotic rates
NeurIPS 2019
- (105) E. H. Bergou^(p), M. Canini, A. Dutta^(p), P. Richtárik and Y. Xiao⁽ⁱ⁾
Direct nonlinear acceleration
EURO Journal on Computational Optimization, 2022
- (104) K. Mishchenko^(d) and P. Richtárik
A stochastic decoupling method for minimizing the sum of smooth and non-smooth functions
arXiv:1905.11535
- (103) K. Mishchenko^(d), D. Kovalev^(m), E. Shulgin⁽ⁱ⁾, P. Richtárik and Y. Malitsky
Revisiting stochastic extragradient
AISTATS 2020
NeurIPS 2019 Workshop: Optimization Foundations for Reinforcement Learning
- (102) F. Hanzely^(d) and P. Richtárik
One method to rule them all: variance reduction for data, parameters and many new methods
arXiv:1905.11266
- (101) E. Gorbunov⁽ⁱ⁾, F. Hanzely^(d) and P. Richtárik
A unified theory of SGD: variance reduction, sampling, quantization and coordinate descent
AISTATS 2020
- (100) S. Horváth^(d), C.Y. Ho, L. Horváth⁽ⁱ⁾, A. N. Sahu, M. Canini and P. Richtárik
Natural compression for distributed deep learning
MSML 2022
- (99) R. M. Gower, D. Kovalev^(m), F. Lieder and P. Richtárik
RSN: Randomized Subspace Newton
NeurIPS 2019
- (98) A. Dutta^(p), F. Hanzely^(d), J. Liang and P. Richtárik
Best pair formulation & accelerated scheme for non-convex principal component pursuit
IEEE Transactions on Signal Processing 26:6128–6141, 2020

- (97) N. Loizou^(d) and P. Richtárik
Revisiting randomized gossip algorithms: general framework, convergence rates and novel block and accelerated protocols
IEEE Transactions on Information Theory 67(12):8300–8324, 2021
- (96) N. Loizou^(d) and P. Richtárik
Convergence analysis of inexact randomized iterative methods
SIAM Journal on Scientific Computing 42(6), A3979–A4016, 2020
- (95) A. Sapio, M. Canini, C.-Y. Ho, J. Nelson, P. Kalnis, C. Kim, A. Krishnamurthy, M. Moshref, D. Ports and P. Richtárik
Scaling distributed machine learning with in-network aggregation
NSDI 2021
- (94) S. Horváth^(d), D. Kovalev^(d), K. Mishchenko^(d), P. Richtárik and S. Stich
Stochastic distributed learning with gradient quantization and double variance reduction
Optimization Methods and Software 38(1):91–106, 2023
- (93) E. H. Bergou^(p), E. Gorbunov⁽ⁱ⁾ and P. Richtárik
Stochastic three points method for unconstrained smooth minimization
SIAM Journal on Optimization 30(4):2726–2749, 2020
- (92) E. H. Bergou^(p), A. Bibi, B. Ghanem, O. Sener and P. Richtárik
A stochastic derivative-free optimization method with importance sampling
AAAI 2020
- (91) K. Mishchenko^(d), F. Hanzely^(d) and P. Richtárik
99% of distributed optimization is a waste of time: the issue and how to fix it
UAI 2020
- (90) K. Mishchenko^(d), E. Gorbunov⁽ⁱ⁾, M. Takáč and P. Richtárik
Distributed learning with compressed gradient differences
 arXiv:1901.09269
 To appear in: *Optimization Methods and Software*
- (89) R. M. Gower, N. Loizou^(d), X. Qian^(p), A. Sailanbayev^(d), E. Shulgin⁽ⁱ⁾ and P. Richtárik
SGD: general analysis and improved rates
ICML 2019
- (88) D. Kovalev^(d), S. Horváth^(d) and P. Richtárik
Don't jump through hoops and remove those loops: SVRG and Katyusha are better without the outer loop
ALT 2020
- (87) X. Qian^(p), Z. Qu and P. Richtárik
SAGA with arbitrary sampling
ICML 2019

Prepared in 2018

- (86) L. M. Nguyen, P. H. Nguyen, P. Richtárik, K. Scheinberg and M. Takáč and M. van Dijk
New convergence aspects of stochastic gradient algorithms
Journal of Machine Learning Research 20(176):1–49, 2019
- (85) F. Hanzely^(d), J. Konečný^(d), N. Loizou^(d), P. Richtárik and D. Grishchenko⁽ⁱ⁾
A privacy preserving randomized gossip algorithm via controlled noise insertion⁷⁶
NeurIPS 2018 Workshop: Privacy Preserving Machine Learning
- (84) K. Mishchenko^(d) and P. Richtárik
A stochastic penalty model for convex and nonconvex optimization with big constraints
 arXiv:1810.13387
- (83) N. Loizou^(d), M. Rabbat and P. Richtárik
Provably accelerated randomized gossip algorithms
ICASSP 2019
- (82) F. Hanzely^(d) and P. Richtárik
Accelerated coordinate descent with arbitrary sampling and best rates for minibatches
AISTATS 2019
- (81) S. Horváth^(d) and P. Richtárik
Nonconvex variance reduced optimization with arbitrary sampling
ICML 2019
 Horváth: Best DS³ (Data Science Summer School) Poster Award⁷⁷, 2018
- (80) F. Hanzely^(d), K. Mishchenko^(d) and P. Richtárik
SEGA: Variance reduction via gradient sketching
NeurIPS 2018
- (79) F. Hanzely^(d), P. Richtárik and L. Xiao
Accelerated Bregman proximal gradient methods for relatively smooth convex optimization
Computational Optimization and Applications 79:405–440, 2021
- (78) J. Mareček, P. Richtárik and M. Takáč
Matrix completion under interval uncertainty: highlights
ECML-PKDD 2018
- (77) N. Loizou^(d) and P. Richtárik
Accelerated gossip via stochastic heavy ball method
Allerton 2018 (The 56th Annual Allerton Conf. on Communication, Control, and Computing, 2018)
- (76) A. Bibi, A. Sailanbayev^(d), B. Ghanem, R. M. Gower and P. Richtárik
Improving SAGA via a probabilistic interpolation with gradient descent
 arXiv:1806.05633
- (75) A. Dutta^(p), F. Hanzely^(d) and P. Richtárik
A nonconvex projection method for robust PCA
AAAI 2019

⁷⁶Short version of [58]

⁷⁷The first prize out of 170 competing posters presented by MS students, PhD students and postdocs. SH is an MS student. Cash award 500 EUR.

- (74) R. M. Gower, P. Richtárik and F. Bach
Stochastic quasi-gradient methods: variance reduction via Jacobian sketching
Mathematical Programming 188:135–192, 2021
- (73) A. Dutta^(p), X. Li and P. Richtárik
Weighted low-rank approximation of matrices and background modeling
 arXiv:1804.06252
- (72) F. Hanzely^(d) and P. Richtárik
Fastest rates for stochastic mirror descent methods
Computational Optimization and Applications 79:717–766, 2021
 arXiv:1803.07374
- (71) L. M. Nguyen, P. H. Nguyen, M. van Dijk, P. Richtárik, K. Scheinberg and M. Takáč
SGD and Hogwild! convergence without the bounded gradients assumption
ICML 2018 (Proceedings of the 35th Int. Conf. on Machine Learning, PMLR 80:3750-3758, 2018)
- (70) R. M. Gower, F. Hanzely^(d), P. Richtárik and S. Stich
Accelerated stochastic matrix inversion: general theory and speeding up BFGS rules for faster second-order optimization
NeurIPS 2018
- (69) N. Doikov⁽ⁱ⁾ and P. Richtárik
Randomized block cubic Newton method
ICML 2018 (Proceedings of the 35th Int. Conf. on Machine Learning, PMLR 80:1290-1298, 2018)
 Doikov: Best Talk Award at “Traditional Youth School in Control, Information and Optimization”, Voronovo, Russia, 2018
- (68) D. Kovalev⁽ⁱ⁾, E. Gorbunov⁽ⁱ⁾, E. Gasanov⁽ⁱ⁾ and P. Richtárik
Stochastic spectral and conjugate descent methods
NeurIPS 2018
- (67) R. Harman, L. Filová and P. Richtárik
A randomized exchange algorithm for computing optimal approximate designs of experiments
Journal of the American Statistical Association, 1–30, 2019
- (66) I. Necoara, A. Patrascu and P. Richtárik
Randomized projection methods for convex feasibility problems: conditioning and convergence rates
SIAM Journal on Optimization 29(4):2814–2852, 2019

Prepared in 2017

- (65) N. Loizou^(d) and P. Richtárik
Momentum and stochastic momentum for stochastic gradient, Newton, proximal point and subspace descent methods
Computational Optimization and Applications 77:653–710, 2020
- (64) A. Dutta^(p) and P. Richtárik
Online and batch supervised background estimation via L1 regression

- (63) N. Loizou^(d) and P. Richtárik
Linearly convergent stochastic heavy ball method for minimizing generalization error
NeurIPS 2017 Workshop: Optimization for Machine Learning
- (62) D. Csiba^(d) and P. Richtárik
Global convergence of arbitrary-block gradient methods for generalized Polyak-Łojasiewicz functions
Submitted to: *Mathematical Programming (under 1st minor revision)*
arXiv:1709.03014
- (61) A. A. Ribeiro^(p) and P. Richtárik
The complexity of primal-dual fixed point methods for ridge regression
Linear Algebra and its Applications 556, 342-372, 2018
- (60) M. J. Ehrhardt, P. Markiewicz, A. Chambolle, P. Richtárik, J. Schott and C. B. Schönlieb
Faster PET reconstruction with a stochastic primal-dual hybrid gradient method
Proceedings of SPIE, Wavelets and Sparsity XVII, Volume 10394, pages 1039410-1 to 1039410-11, 2017
- (59) A. Dutta^(p), X. Li and P. Richtárik
A batch-incremental video background estimation model using weighted low-rank approximation of matrices
IEEE International Conference on Computer Vision (ICCV) Workshops, 2017
- (58) F. Hanzely^(d), J. Konečný^(d), N. Loizou^(d), P. Richtárik and D. Grishchenko⁽ⁱ⁾
Privacy preserving randomized gossip algorithms
arXiv:1706.07636
- (57) A. Chambolle, M.J. Ehrhardt, P. Richtárik and C.B. Schönlieb
Stochastic primal-dual hybrid gradient algorithm with arbitrary sampling and imaging applications
SIAM Journal on Optimization 28(4):2783-2808, 2018
- (56) P. Richtárik and M. Takáč
Stochastic reformulations of linear systems: algorithms and convergence theory
SIAM Journal on Matrix Analysis and Applications 41(2):487-524, 2020
- (55) M. Mutný⁽ⁱ⁾ and P. Richtárik
Parallel stochastic Newton method
Journal of Computational Mathematics 36(3):405-427, 2018

Prepared in 2016

- (54) R. M. Gower^(d) and P. Richtárik
Linearly convergent randomized iterative methods for computing the pseudoinverse
arXiv:1612.06255
- (53) J. Konečný^(d) and P. Richtárik
Randomized distributed mean estimation: accuracy vs communication

- (52) J. Konečný^(d), H. B. McMahan, F. Yu, P. Richtárik, A.T. Suresh and D. Bacon
Federated learning: strategies for improving communication efficiency
NeurIPS 2016 Workshop: Private Multi-Party Machine Learning
- (51) J. Konečný^(d), H. B. McMahan, D. Ramage and P. Richtárik
Federated optimization: distributed machine learning for on-device intelligence
arXiv:1610.02527
- (50) N. Loizou^(d) and P. Richtárik
A new perspective on randomized gossip algorithms
GlobalSIP 2016 (The 4th IEEE Global Conference on Signal and Information Processing, 440–444, 2016)
- (49) S. J. Reddi, J. Konečný^(d), P. Richtárik, B. Póczos and A. Smola
AIDE: Fast and communication efficient distributed optimization
arXiv:1608.06879
- (48) D. Csiba^(d) and P. Richtárik
Coordinate descent face-off: primal or dual?
ALT 2018 (Proceedings of Algorithmic Learning Theory, PMLR 83:246–267, 2018)
- (47) O. Fercoq^(p) and P. Richtárik
Optimization in high dimensions via accelerated, parallel and proximal coordinate descent⁷⁸
SIAM Review 58(4), 2016
SIAM SIGEST Outstanding Paper Award, 2017
- (46) R. M. Gower^(d), D. Goldfarb and P. Richtárik
Stochastic block BFGS: squeezing more curvature out of data
ICML 2016
- (45) D. Csiba^(d) and P. Richtárik
Importance sampling for minibatches
Journal of Machine Learning Research 19(27):1–21, 2018
- (44) R. M. Gower^(d) and P. Richtárik
Randomized quasi-Newton updates are linearly convergent matrix inversion algorithms
SIAM Journal on Matrix Analysis and Applications 38(4): 1380–1409, 2017
6th Most Downloaded Paper from the SIMAX Website, 2018

Prepared in 2015

- (43) Z. Allen-Zhu, Z. Qu^(p), P. Richtárik and Y. Yuan
Even faster accelerated coordinate descent using non-uniform sampling
ICML 2016
- (42) R. M. Gower^(d) and P. Richtárik
Stochastic dual ascent for solving linear systems

⁷⁸A (refreshed) reprint of [21] originally published in SIAM Journal on Optimization

arXiv:1512.06890

- (41) C. Ma, J. Konečný^(d), M. Jaggi, V. Smith, M. I. Jordan, P. Richtárik and M. Takáč
Distributed optimization with arbitrary local solvers
Optimization Methods and Software 32(4):813-848, 2017
1st Most-Read Paper in Optimization Methods and Software, 2017
- (40) M. Takáč, P. Richtárik and N. Srebro
Distributed minibatch SDCA
To appear in: *Journal of Machine Learning Research*⁷⁹
- (39) R. M. Gower^(d) and P. Richtárik
Randomized iterative methods for linear systems
SIAM Journal on Matrix Analysis and Applications 36(4):1660-1690, 2015
Gower: 18th Leslie Fox Prize (2nd Prize), Institute for Mathematics and its Applications, 2017
1st Most Downloaded Paper from the SIMAX Website, 2017
2nd Most Downloaded Paper from the SIMAX Website, 2018
2nd Most Downloaded Paper from the SIMAX Website, 2019
1st Most Downloaded Paper from the SIMAX Website, 2020
- (38) D. Csiba^(d) and P. Richtárik
Primal method for ERM with flexible mini-batching schemes and non-convex losses
arXiv:1506:02227
- (37) J. Konečný^(d), J. Liu, P. Richtárik and M. Takáč
Mini-batch semi-stochastic gradient descent in the proximal setting
IEEE Journal of Selected Topics in Signal Processing 10(2):242-255, 2016
Konečný: BASP Frontiers Best Contribution Award, 2015
- (36) R. Tappenden^(p), M. Takáč^(d) and P. Richtárik
On the complexity of parallel coordinate descent
Optimization Methods and Software 33(2), 372-395, 2018
- (35) D. Csiba^(d), Z. Qu^(p) and P. Richtárik
Stochastic dual coordinate ascent with adaptive probabilities
ICML 2015
Csiba: Best Contribution Award (2nd Prize), Optimization and Big Data 2015
Implemented in Tensor Flow
- (34) C. Ma, V. Smith, M. Jaggi, M. I. Jordan, P. Richtárik and M. Takáč
Adding vs. averaging in distributed primal-dual optimization
ICML 2015
Smith: MLconf Industry Impact Student Research Award, 2015
CoCoA+ is now the default linear optimizer in Tensor Flow
- (33) Z. Qu^(p), P. Richtárik, M. Takáč^(d) and O. Fercoq^(p)
SDNA: Stochastic dual Newton ascent for empirical risk minimization
ICML 2016

Prepared in 2014

⁷⁹We did not receive any reviews after 2.5 years since submission. The paper was recently accepted after a change in JMLR leadership.

- (32) Z. Qu^(p) and P. Richtárik
Coordinate descent with arbitrary sampling II: expected separable overapproximation
Optimization Methods and Software 31(5):858-884, 2016
 7th Most-Read Paper in Optimization Methods and Software, 2017
- (31) Z. Qu^(p) and P. Richtárik
Coordinate descent with arbitrary sampling I: algorithms and complexity
Optimization Methods and Software 31(5):829-857, 2016
 4th Most-Read Paper in Optimization Methods and Software, 2017
- (30) J. Konečný^(d), Z. Qu^(p) and P. Richtárik
Semi-stochastic coordinate descent
Optimization Methods and Software 32(5):993-1005, 2017
 3rd Most-Read Paper in Optimization Methods and Software, 2017
- (29) Z. Qu^(p), P. Richtárik and T. Zhang
Quartz: Randomized dual coordinate ascent with arbitrary sampling
NeurIPS 2015
- (28) J. Konečný^(d), J. Liu, P. Richtárik and M. Takáč^(d)
mS2GD: Mini-batch semi-stochastic gradient descent in the proximal setting⁸⁰
NeurIPS 2014 Workshop: Optimization for Machine Learning
- (27) J. Konečný^(d), Z. Qu^(p) and P. Richtárik
S2CD: Semi-stochastic coordinate descent⁸¹
NeurIPS 2014 Workshop: Optimization for Machine Learning
- (26) J. Konečný^(d) and P. Richtárik
Simple complexity analysis of simplified direct search
 arXiv:1410.0390
- (25) J. Mareček^(p), P. Richtárik and M. Takáč^(d)
Distributed block coordinate descent for minimizing partially separable functions
PROMS 2015 (In: Al-Baali M., Grandinetti L., Purnama A. (eds) Numerical Analysis and Optimization. Springer Proceedings in Math. & Statistics, vol 134. Springer, Cham, 261–288, 2015)
- (24) O. Fercoq^(p), Z. Qu^(p), P. Richtárik and M. Takáč^(d)
Fast distributed coordinate descent for minimizing non-strongly convex losses
MLSP 2014 (2014 IEEE Int. Workshop on Machine Learning for Signal Processing, 1–6, 2014)
- (23) D. Forgan and P. Richtárik
On optimal solutions to planetesimal growth models
Technical Report ERGO 14-002, 2014
- (22) J. Mareček^(p), P. Richtárik and M. Takáč^(d)
Matrix completion under interval uncertainty
European Journal of Operational Research 256(1):35–43, 2017

Prepared in 2013

⁸⁰A short version of the journal paper [37]

⁸¹A short version of the journal paper [30]

- (21) O. Fercoq^(p) and P. Richtárik
Accelerated, parallel and proximal coordinate descent
SIAM Journal on Optimization 25(4):1997–2023, 2015
 Fercoq: 17th Leslie Fox Prize (2nd Prize), Institute for Mathematics and its Applications, 2015
 2nd Most Downloaded Paper from the SIOPT Website, 2016 & 2017
- (20) J. Konečný^(d) and P. Richtárik
Semi-stochastic gradient descent
Frontiers in Applied Mathematics and Statistics 3:9, 2017
- (19) P. Richtárik and M. Takáč^(d)
On optimal probabilities in stochastic coordinate descent methods
Optimization Letters 10(6):1233–1243, 2016
- (18) P. Richtárik and M. Takáč^(d)
Distributed coordinate descent method for learning with big data
Journal of Machine Learning Research 17 (75):1–25, 2016
- (17) O. Fercoq^(p) and P. Richtárik
Smooth minimization of nonsmooth functions with parallel coordinate descent methods
PROMS 2017 (Modelling and Optimization: Theory and Applications, Springer Proceedings in Math. and Statistics)
- (16) R. Tappenden^(p), P. Richtárik and B. Büke
Separable approximations and decomposition methods for the augmented Lagrangian
Optimization Methods and Software 30(3):643–668, 2015
- (15) R. Tappenden^(p), P. Richtárik and J. Gondzio
Inexact coordinate descent: complexity and preconditioning
Journal of Optimization Theory and Applications 171 (1):144–176, 2016
- (14) M. Takáč^(d), S. D. Ahipasaoglu, N. M. Cheung and P. Richtárik
TOP-SPIN: TOPic discovery via Sparse Principal component INterference
PROMS 2017 (Modelling and Optimization: Theory and Applications, Springer Proceedings in Math. and Statistics)
- (13) M. Takáč^(d), A. Bijral, P. Richtárik and N. Srebro
Mini-batch primal and dual methods for SVMs
ICML 2013

Prepared in 2012 or Before

- (12) P. Richtárik, M. Takáč^(d), S. D. Ahipasaoglu and M. Jahani
Alternating maximization: unifying framework for 8 sparse PCA formulations and efficient parallel codes
Optimization and Engineering, 2020
- (11) W. Hulme^(m), P. Richtárik, L. McGuire and A. Green
Optimal diagnostic tests for sporadic Creutzfeldt-Jakob disease based on SVM classification of RT-QuIC data
Technical Report ERGO 12-014, 2012

arXiv:1212.2617

- (10) P. Richtárik and M. Takáč^(d)
Parallel coordinate descent methods for big data optimization
Mathematical Programming 156(1):433–484, 2016
Takáč: 16th Leslie Fox Prize (2nd Prize), Institute for Mathematics and its Applications, 2013
- (9) P. Richtárik and M. Takáč^(d)
Efficient serial and parallel coordinate descent methods for huge-scale truss topology design
In: Klatt D., Lüthi HJ., Schmedders K. (eds) Operations Research Proceedings 2011 (Gesellschaft für Operations Research e.V.). Springer, Berlin, Heidelberg, 2012
- (8) P. Richtárik and M. Takáč^(d)
Iteration complexity of randomized block-coordinate descent methods for minimizing a composite function
Mathematical Programming 144(2):1–38, 2014
Takáč: Best Student Paper Award (sole runner-up), INFORMS Computing Society, 2012
- (7) P. Richtárik and M. Takáč^(d)
Efficiency of randomized coordinate descent methods on minimization problems with a composite objective function
SPARS 2011 (Signal Processing with Adaptive Sparse Structured Representations)
- (6) P. Richtárik
Finding sparse approximations to extreme eigenvectors: generalized power method for sparse PCA and extensions
SPARS 2011 (Signal Processing with Adaptive Sparse Structured Representations)
- (5) P. Richtárik
Approximate level method for nonsmooth convex optimization
Journal of Optimization Theory and Applications 152(2):334–350, 2012
- (4) M. Journée, Yu. Nesterov, P. Richtárik and R. Sepulchre
Generalized power method for sparse principal component analysis
Journal of Machine Learning Research 11:517–553, 2010
- (3) P. Richtárik
Improved algorithms for convex minimization in relative scale
SIAM Journal on Optimization 21(3):1141–1167, 2011
- (2) P. Richtárik
Simultaneously solving seven optimization problems in relative scale
Technical Report, Optimization Online, 2008
- (1) P. Richtárik
Some algorithms for large-scale linear and convex minimization in relative scale
PhD thesis, School of ORIE, Cornell University, 2007

15.5 PATENTS

2015 M. Takáč, S. D. Ahipasaoglu, P. Richtárik and N. M. Cheung

Method and system for classifying images
Patent# WO/2015/011470