

# Peter Richtárik: Curriculum Vitae

## 1. CONTACT DETAILS

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## 2. RESEARCHER IDs

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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**<sup>1</sup>, 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

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<sup>1</sup>This 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”.

2025	<b>Spotlight Paper at ICLR 2025</b> (for paper [244])
2024	<b>Top 8–14 Author at NeurIPS 2024</b> in terms of the number of papers accepted to the conference <sup>2</sup>
2024	<b>Charles Broyden Prize</b> (for paper [139])
2024	<b>Oral Paper at NeurIPS 2024</b> (0.4% acceptance rate <sup>3</sup> ; paper [249])
2024	<b>Spotlight Paper at NeurIPS 2024</b> (for paper [243])
2024	<b>Oral Paper at ICML 2024</b> (1.5% acceptance rate; paper [231])
2023	<b>#1 in Asia and #3 in Europe in Machine Learning according to CSRankings.org</b> <sup>4</sup>
2023	Research.com Computer Science in Saudi Arabia Leader Award
2023	Research.com Mathematics in Saudi Arabia Leader Award
2023	<b>Oral Paper at ICLR 2023</b> (for paper [184])
2022	<b>Top 10–14 Author at NeurIPS 2022</b> in terms of the number of papers accepted to the conference <sup>5</sup>
2022	Research.com Rising Star of Science <sup>6</sup> , global rank 214 among all fields of science
2022	<b>Spotlight Paper at ICLR 2022</b> (for paper [156])
2021	<b>Oral Paper at NeurIPS 2021</b> (less than 1% acceptance rate; paper [167])
2021	<b>2020 COAP Best Paper Award</b> <sup>7</sup> (for paper [65])
2021	<b>One of the 10 Most Cited Articles Published in SIMAX Since 2019</b> <sup>8</sup> for paper [56]
2020	<b>Best Paper Award at the NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning</b> for paper [135]
2020	<b>Top 30–50 author at ICML 2020</b> (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	<b>Interviewed by Robin.ly for their “Leaders in AI” platform at NeurIPS 2019</b> <sup>9</sup>

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<sup>2</sup><https://papercopilot.com/paper-list/neurips-paper-list/neurips-2024-paper-list/>

<sup>3</sup>61 papers out of more than 15,000.

<sup>4</sup>According 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 Oxford (8.9), 11) José Miguel Hernández-Lobato at Cambridge (8.8).

<sup>5</sup><https://papercopilot.com/paper-list/neurips-paper-list/neurips-2022-paper-list/> (my team had 12 papers accepted; I was a coauthor on 9)

<sup>6</sup><https://research.com/u/peter-richtarik>

<sup>7</sup>For the best paper published in Computational Optimization and Applications in 2020.

<sup>8</sup><https://sinews.siam.org/Details-Page/10-most-highly-cited-articles-from-simax-since-2019-1>

<sup>9</sup>From 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.”

2019	<b>Best NeurIPS Reviewer Award</b> <sup>10</sup>
2019	<b>Distinguished Speaker Award</b> , Int. Conf. on Continuous Optimization, Berlin, Germany
2018	<b>Best NeurIPS Reviewer Award</b> <sup>11</sup>
2018	2nd Most Downloaded Paper in “SIAM J. on Matrix Analysis and Applications” for paper [39]
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	<b>Announcement of “Federated Learning”</b> by Google (based on papers [51, 52])
2016–2017	2nd Most Downloaded Paper in “SIAM J. on Optimization” for paper [21]
2016	<b>SIAM SIGEST Outstanding Paper Award</b> for paper [21]
2016	<b>EUSA Best Research or Dissertation Supervisor Award</b> <sup>12</sup> (2nd Prize)
2016–now	<b>Turing Fellow, The Alan Turing Institute</b> , London
2016	<b>EPSRC Fellowship in Mathematical Sciences</b> <sup>13</sup>
2014	Nominated for the <b>Chancellor’s Rising Star Award</b> <sup>14</sup> , University of Edinburgh
2013	<b>Simons Institute Visiting Scientist Fellowship</b> , UC Berkeley
2013	Nominated for the <b>2014 Microsoft Research Faculty Fellowship</b> <sup>15</sup>
2011 & 2012	Nominated for the <b>Innovative Teaching Award</b> , University of Edinburgh
2011–2017	<b>Honorary Fellow</b> , Heriot-Watt University
2007	<b>CORE Fellowship</b> , Université catholique de Louvain
2002	<b>Cornell University Graduate Fellowship</b>
2001	<b>Dean’s Prize and Rector’s Prize</b> , Comenius University
1992–2001	Winner of Numerous Mathematical Olympiads and Competitions

## 7. GRANTS

### 7.1 MY GRANTS<sup>16</sup>

2025–2028	<b>\$675,000 (PI)</b> , Competitive Research Grant (CRG)
2025–2028	<b>1,600,000 SAR (PI)</b> , RDIA Baseload Applied Grant (BAG)
2024–2029	<b>\$11,000,000 (Co-PI)</b> , KAUST Center of Excellence for Generative AI
2024–2025	<b>\$650,000 (PI)</b> , KAUST Baseline Research <sup>17</sup>
2024	<b>1,000,000 SAR (PI)</b> , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2023–2024	<b>\$60,000 (PI)</b> , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2023–2024	<b>\$650,000 (PI)</b> , KAUST Baseline Research Grant
2022–2023	<b>\$60,000 (PI)</b> , SDAIA-KAUST Center of Excellence in Data Science and Artificial Intelligence
2022–2023	<b>\$40,000 (PI)</b> , Top-up to KAUST Baseline Research Grant
2022–2023	<b>\$540,000 (PI)</b> , KAUST Baseline Research Grant
2021–2022	<b>\$540,000 (PI)</b> , KAUST Baseline Research Grant
2021–2022	<b>\$100,000 (PI)</b> , AI Initiative Funding

<sup>10</sup>“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. ”

<sup>11</sup>“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.”

<sup>12</sup>EUSA = 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.

<sup>13</sup>In total, 5 fellowships in mathematics were awarded in the UK in this round at all levels of seniority.

<sup>14</sup>One of two nominated from the School of Mathematics.

<sup>15</sup>Selected universities can nominate a single candidate. No European scientists got the award in 2014.

<sup>16</sup>All 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.

<sup>17</sup>Unrestricted basic research funding offered each year to KAUST Professors.

2020–2021	<b>\$540,000 (PI)</b> , KAUST Baseline Research Grant
2020	<b>\$100,000 (PI)</b> , 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	<b>\$200,000 (PI)</b> , Extreme Computing Research Center (ECRC) funding, KAUST, “Optimization for Machine Learning”, Joint with: Tong Zhang (HKUST, PI)
2019–2020	<b>\$540,000 (PI)</b> , KAUST Baseline Research Grant
2018–2019	<b>£216,843 (Co-I)</b> , Innovate UK Grant, “Renewable Energy Performance Score (REPScore)”, Joint with: Enian (PI), Daniel Friedrich (Edinburgh, PI)
2018–2021	<b>\$974,789 (Co-I)</b> , CRG2017 Grant, “Analyzing Large Scale 3D Shape Collections”, Joint with: Peter Wonka (KAUST, PI), Maks Ovsjanikov (École Polytechnique, Co-I)
2017–2019	<b>RUB 7,960,000 (PI)</b> , Visiting Professor Grant, Moscow Institute of Physics and Technology
2018	<b>\$10,000 (PI)</b> , KICP grant in support of KAUST Research Workshop on Optimization and Big Data, 2018
2018–2019	<b>\$400,000 (PI)</b> , KAUST Baseline Research Grant <sup>18</sup>
2017–2018	<b>\$79,281 (PI)</b> , KAUST Office of Sponsored Research Conference Support Grant URF/1/3347-01, “Optimization and Big Data”, Joint with: Marco Canini (KAUST, PI)
2016–2020	<b>£70,000 EPSRC CASE<sup>19</sup></b> PhD Studentship for Filip Hanzely
2017–2018	<b>\$400,000 (PI)</b> , KAUST Baseline Research Grant
2016–2017	<b>\$133,333 (PI)</b> , KAUST Baseline Research Grant (4 months of cover: March-June 2017)
2016–2020	<b>£45,000 (PI)</b> , Amazon Research Grant
2016–2020	<b>£823,211 (PI)</b> , EPSRC Early Career Fellowship in Mathematical Sciences EP/N005538/1, “Randomized Algorithms for Extreme Convex Optimization”
2016–2020	<b>\$20,000 (PI)</b> , Amazon EC2 Grant (partner funding associated with the EPSRC Fellowship)
2015	<b>£20,000 (PI)</b> , Alan Turing Institute Scoping Workshop Grant, “Distributed Machine Learning and Optimization”, Joint with: Artur Czuma (Warwick, PI), Ilias Diakonikolas (Edinburgh, PI), Mark Girolami (Warwick, PI), Raphael Hauser (Oxford, PI), John Shawe-Taylor (UCL, PI)
2015	<b>£12,000 (PI)</b> , 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	<b>\$180,000</b> , Google Europe Doctoral Fellowship for Jakub Konečný
2013–2015	<b>£125,849 (PI)</b> , EPSRC First Grant EP/K02325X/1, “Accelerated Coordinate Descent Methods for Big Data Optimization”
2014–2015	<b>£40,000 (PI)</b> , School of Mathematics Grant, “Accelerated Coordinate Descent Methods for Big Data Optimization”, matching funding for my postdoc Z. Qu
2013	<b>£18,785 (PI)</b> , NAIS Travel Grant, my 2 students spending semester at Berkeley
2012–2014	<b>£66,300 (PI)</b> , NAIS Lecturer Grant, paying for a proportion of my time
2012–2014	<b>£10,000 (PI)</b> , NAIS Startup Grant
2012–2013	<b>£49,518 (Co-I)</b> , EPSRC grant EP/J020567/1, “Algorithms for Data Simplicity”, Joint with: Jared Tanner (Oxford, PI)
2011–2014	<b>£646,264 (Co-I)</b> , 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 PREPARE<sup>20</sup>

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.
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<sup>18</sup>Unrestricted basic research funding offered each year to KAUST Associate Professors.

<sup>19</sup>CASE = Cooperative Awards in Science and Engineering

<sup>20</sup>Large grants which I helped to prepare but where I am not formally an investigator.

- 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

- 01/2025–now** PhD student: Ivan Ilin (from Novosibirsk State University, Russia)
- 01/2025–now** PhD student: Artem Riabinin (from Lomonosov Moscow State U, Russia)
- 10/2024–now** Intern: Philip Zmushko (from MIPT, Russia)
- 09/2024–now** Intern: Zhirayr Tovmasyan (from Yerevan State University, Armenia)
- 06/2024–11/2024 Intern: Aadi Rane (from UC Berkeley)
- 05/2024–09/2024 Intern: Wojciech Anyszka (from U of Groningen, Netherlands)
- 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)
- 08/2023–12/2024 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)
- 01/2023–12/2024 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<sup>21</sup> 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<sup>22</sup> (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)

<sup>21</sup>Dropped out of MS studies to join a Large Language Model startup in Germany.

<sup>22</sup>I am supervising Arto’s MS thesis at Yerevan State University.

<b>09/2021–now</b>	<b>PhD student: Egor Shulgin (continuing after MS at KAUST)</b>
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 <sup>23</sup> (from TU Munich, Germany)
03/2021–11/2021	Intern: Ilyas Fatkhullin <sup>24</sup> (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)
<b>08/2020–now</b>	<b>PhD student: Konstantin Burlachenko (from Bauman Moscow State Technical University, Russia)</b>
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)
<b>01/2020–now</b>	<b>PhD student: Elnur Gasanov (continuing after MS from KAUST)</b>
01/2020–09/2022	PhD student: Dmitry Kovalev (continuing after MS from KAUST)
<b>11/2019–now</b>	<b>Research Scientist: Laurent Condat (from Grenoble, France)</b>
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) <sup>25</sup>
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 <sup>26</sup> (from TU Munich, Germany)

<sup>23</sup>I have supervised Rustem Islamov’s BS thesis at MIPT. Rustem is now an MS student at Institut Polytechnique de Paris, France.

<sup>24</sup>I have supervised Ilyas Fatkhullin’s MS thesis at TU Munich. Ilyas is now a PhD student at ETH Zürich Switzerland.

<sup>25</sup>Was forced to drop out of PhD due to serious personal/family reasons.

<sup>26</sup>I have supervised Sarah Sachs’ MS thesis at TU Munich.

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 <sup>27</sup> (from MIPT, Russia)
01/2018–02/2018	Intern: Slavomír Hanzely <sup>28</sup> (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 <sup>29</sup> (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)

## 8.2 MY TEAM @ Kempelen Institute for Intelligent Technologies (KInIT)

09/2022–10/2023	PhD student: Ivan Agarský (from Comenius University, Slovakia)
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## 8.3 MY TEAM @ Mohammed bin Zayed University of Artificial Intelligence (MBZUAI)

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

<sup>27</sup>I have supervised Dmitry Kovalev's BS thesis at MIPT.

<sup>28</sup>I have supervised Slavomír Hanzely's BS thesis at Comenius University.

<sup>29</sup>Viktor Lukáček left after spending 1 semester at KAUST as he realized PhD was not the right path for him.

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 ACHIEVEMENTS<sup>30</sup>

2025 (Yi)	Accepts a Research Scientist position at META, California, USA
2024 (Tyurin)	Joins Skoltech as an <b>Assistant Professor</b> & AI Research Institute (AIRI) as a <b>Team Leader</b>
2024 (Yi)	Oral at NeurIPS 2024
2024 (Ilin)	Oral at NeurIPS 2024
2024 (Burlachenko)	Oral at NeurIPS 2024
2024 (Tyurin)	<b>4 papers accepted at NeurIPS 2024</b>
2024 (Tyurin)	Spotlight at NeurIPS 2024
2024 (Gruntkowska)	Spotlight at NeurIPS 2024
2024 (Gruntkowska)	Nominated by KAUST for Apple Scholarship
2024 (Malinovsky)	<b>ICML 2024 Best Reviewer</b>
2024 (Gruntkowska)	Dean’s List <sup>31</sup> , Statistics, KAUST
2024 (Malinovsky)	Dean’s List, Applied Mathematics and Computational Science, KAUST
2024 (Sadiev)	Dean’s List, Computer Science, KAUST
2023 (Tyurin)	<b>4 papers accepted at NeurIPS 2023</b>
2023 (Sun)	Dean’s List <sup>32</sup> , 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 <sup>33</sup> )	<b>ICML 2023 Outstanding Paper Award (0.09% success rate)</b>
2023 (Mishchenko)	<b>Action Editor, Transactions on Machine Learning Research (TMLR)</b>
2023 (Gruntkowska)	Dean’s Award (Statistics) <sup>34</sup> , KAUST
2023 (Maranjyan)	Dean’s Award (Computer Science), KAUST
2023 (Mishchenko)	Joins Samsung AI, Cambridge, UK, as a <b>Research Scientist</b>
2022 (Kovalev)	<b>6 papers accepted at NeurIPS 2022</b>
2022 (Burlachenko)	Grant from AMD Inc (two GPUs)
2022 (Beznosikov <sup>35</sup> )	<b>NeurIPS 2022 Top Reviewer<sup>36</sup></b>
2022 (Tyurin)	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Gorbunov)	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Malinovsky)	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Sokolov)	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Safaryan)	<b>NeurIPS 2022 Top Reviewer</b>

<sup>30</sup>All travel grant awards are excluded.

<sup>31</sup>In 2024, given to top 20% students at KAUST annually. Carries a 2,500 USD cash prize.

<sup>32</sup>Given to top 25% students at KAUST annually. Carries a 2,500 USD cash prize.

<sup>33</sup>Former PhD student

<sup>34</sup>A financial add-on to the KAUST Fellowship, worth 6,000 USD annually, given to a few best incoming students by the Dean.

<sup>35</sup>Former intern.

<sup>36</sup><https://neurips.cc/Conferences/2022/ProgramCommittee>



2022 (Mútny <sup>37</sup> )	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Gower <sup>38</sup> )	<b>NeurIPS 2022 Top Reviewer</b>
2022 (Kovalev)	Joins Université catholique de Louvain as a <b>postdoc</b> with Yurii Nesterov
2022 (Malinovsky)	<b>2022 CEMSE Academic Excellence Award</b> <sup>39</sup>
2022 (Shulgin)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b> <sup>40</sup>
2022 (Gasarov)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Gorbunov)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Khaled)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Condat)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Sadiev)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Tyurin)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Sokolov)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Horváth)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Szlendak)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Mishchenko)	<b>ICML 2022 Outstanding (Top 10%) Reviewer</b>
2022 (Sadiev)	Dean’s Award, KAUST
2022 (Sadiev)	KAUST Doctoral Development Fellowship
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 <b>Mohamed bin Zayed University of Artificial Intelligence</b> , Abu Dhabi, UAE, as a <b>Postdoc</b>
2022 (Horváth)	Joins <b>Mohamed bin Zayed University of Artificial Intelligence</b> , Abu Dhabi, UAE, as an <b>Assistant Professor</b>
2022 (Safaryan)	<b>AISTATS 2022 Top Reviewer</b>
2022 (Loizou)	Joins <b>The Johns Hopkins University</b> as an <b>Assistant Professor</b> 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 <b>Princeton University</b> as a <b>PhD Student in the ECE Department</b> <sup>41</sup>
2022 (Gower <sup>42</sup> )	<b>Action Editor, Transactions of Machine Learning Research (TMLR)</b>
2021 (Malinovsky)	<b>2021 CEMSE Student Research Excellence Award</b> <sup>43</sup>
2021 (Kovalev)	<b>2021 CEMSE Student Research Excellence Award</b> <sup>44</sup>
2021 (Horváth)	<b>2021 Al-Kindi Statistics Research Student Award</b> <sup>45</sup>
2021 (Mishchenko)	<b>Rising Stars in Data Science</b> ; invited talk to a workshop at the University of Chicago <sup>46</sup>
2021 (Gorbunov)	<b>NeurIPS 2021 Outstanding (Top 8%) Reviewer Award</b>

<sup>37</sup>Former intern.

<sup>38</sup>Former PhD student.

<sup>39</sup>Carries a \$2,500 cash prize.

<sup>40</sup><https://icml.cc/Conferences/2022/Reviewers>

<sup>41</sup><https://rka97.github.io>

<sup>42</sup>Former PhD student.

<sup>43</sup>Given 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.

<sup>44</sup>Given 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.”

<sup>45</sup>Given 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.”

<sup>46</sup>The 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

2021 (Mishchenko)	<b>NeurIPS 2021 Outstanding (Top 8%) Reviewer Award</b>
2021 (Shulgin)	Research Internship at Samsung AI Research Center, Cambridge, UK
2021 (Horváth)	Research Internship at Facebook AI Research, Canada
2021 (Mishchenko)	<b>ICML 2021 Top 10% Reviewer</b>
2021 (Gorbunov)	<b>ICML 2021 Top 10% Reviewer</b>
2021 (Mishchenko)	<b>ICML 2021 Expert Reviewer</b>
2021 (F. Hanzely)	<b>ICML 2021 Expert Reviewer</b>
2021 (Gorbunov)	<b>ICML 2021 Expert Reviewer</b>
2021 (Condat)	<b>ICML 2021 Expert Reviewer</b>
2021 (Kovalev & Gasanov)	<b>Best Student Paper Award</b> at the International Workshop on Federated Learning for User Privacy and Data Confidentiality in Conjunction with ICML 2021 (for joint paper [166])
2021 (Kovalev)	<b>Ilya Segalovich Prize for Young Researchers</b> <sup>47</sup>
2021 (Mishchenko)	<b>Most Popular Spotlight Talk</b> (2nd place) at KAUST Conference on AI
2021 (Mishchenko)	<b>ICLR 2021 Outstanding Reviewer Award</b>
2021 (Gorbunov)	<b>ICLR 2021 Outstanding Reviewer Award</b>
2020 (F. Hanzely)	Joined <b>Toyota Tech. Institute at Chicago</b> as a <b>Research Assistant Professor</b>
2020 (Mishchenko)	<b>2020 CEMSE Student Research Excellence Award</b> <sup>48</sup>
2020 (Horváth)	<b>Best Paper Award at the NeurIPS 2020 Workshop on Scalability, Privacy, and Security in Federated Learning</b> (for joint paper [135])
2020 (Loizou)	<b>Runner Up for OR Society Best Doctoral Dissertation Prize</b> <sup>49</sup> (for year 2019)
2020 (Horváth)	<b>NeurIPS 2020 Best Reviewer Award</b> <sup>50</sup>
2020 (Gorbunov)	<b>NeurIPS 2020 Best Reviewer Award</b>
2020 (F. Hanzely)	<b>NeurIPS 2020 Best Reviewer Award</b>
2020 (Condat)	<b>NeurIPS 2020 Best Reviewer Award</b>
2020 (Khaled)	<b>NeurIPS 2020 Best Reviewer Award</b>
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)	<b>Ilya Segalovich Prize for Young Researchers</b> <sup>51</sup>
2020 (Burlachenko)	Dean's Award, KAUST
2020 (Malinovsky)	Dean's Award, KAUST
2020 (Mishchenko)	<b>AAAI 2020 Outstanding Program Committee Member Award</b> (awarded to top 12 out of over 6,000 reviewers)
2019 (Mishchenko)	<b>NeurIPS 2019 Best Reviewer Award</b>
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

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.

<sup>47</sup>Four awards were given; each award carries a cash prize of 1,000,000 RUB ( $\approx$  14,000 USD).

<sup>48</sup>One of 5 awards given to KAUST Computer Science students.

<sup>49</sup>The 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](https://en.wikipedia.org/wiki/Operational_Research_Society).

<sup>50</sup><https://icml.cc/Conferences/2020/Reviewers>

<sup>51</sup>Nine awards were given in the area of Computer Science; each award carries a cash prize of 350,000 RUB ( $\approx$  5,000 USD).

2018 (Horváth)	<b>Best DS<sup>3</sup> Poster Award</b> <sup>52</sup> , Paris (1st Prize; for joint paper [81])
2018 (Doikov)	<b>Best Talk Award</b> <sup>53</sup> , 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)	<b>18th IMA Leslie Fox Prize</b> <sup>54</sup> (2nd Prize; for joint paper [39])
2016 (Csiba)	Postgraduate Essay Prize, School of Mathematics, University of Edinburgh
2016 (F. Hanzely)	<b>CASE PhD Studentship</b> (£93,333 award; 3/4 from EPSRC, 1/4 from Amazon)
2016 (Loizou)	A. G. Leventis Foundation Grant for PhD studies
2015 (Takáč)	<b>OR Society Best Doctoral Dissertation Prize</b> (for year 2014)
2015 (Loizou)	A. G. Leventis Foundation Grant for PhD studies
2015 (Loizou)	Principal’s Career Development Scholarship <sup>55</sup> (in Data Science)
2015 (Kisiala)	Best Student Prize <sup>56</sup> , OR MSc Programme, School of Mathematics, Edinburgh
2015 (Fercoq)	<b>17th IMA Leslie Fox Prize</b> (2nd Prize; for joint paper [21])
2015 (Csiba)	<b>Best Contribution Award</b> (2nd Prize; for joint paper [35]), Workshop: Optimization and Big Data, Edinburgh. Committee: Arkadi Nemirovskii (Georgia Tech) and Rodolphe Jenatton (Amazon)
2015 (Konečný)	<b>BASP Frontiers Best Contribution Award</b> (1st prize in the field of signal processing; for joint paper [20]), Villars-sur-Ollon, Switzerland
2014 (Konečný)	<b>Google European Doctoral Fellowship</b> <sup>57</sup> (\$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)	<b>16th IMA Leslie Fox Prize</b> (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)	<b>INFORMS Computing Society Best Student Paper Prize</b> (sole runner up; for joint paper [8]), Phoenix, Arizona
2012 (Banks-Watson)	Best Student Prize, OR MSc Programme, School of Mathematics, Edinburgh
2012 (Takáč)	<b>Best Talk Award</b> , 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

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<sup>52</sup>DS<sup>3</sup> 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.

<sup>53</sup>Event: “Traditional Youth School in Control, Information and Optimization”, organized by Boris Polyak.

<sup>54</sup>“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”

<sup>55</sup>Principal’s Career Development Scholarship: A highly competitive scholarship offered to 3 incoming PhD students in mathematics at the University of Edinburgh each year.

<sup>56</sup>For best performance in courses and MSc Dissertation, which I supervised.

<sup>57</sup>Google 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.”

## 8.7 MY TEAM: SELECTED PRIOR/INDEPENDENT ACHIEVEMENTS<sup>58</sup>

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 <sup>59</sup>
2022 (Condat)	Meritorious Service Award from the journal Mathematical Programming <sup>60</sup>
2022 (Burlachenko)	Second Place, KAUST Chess Tournament
2021 (Maranjyan)	Outstanding Final Project Award <sup>61</sup> , Yerevan State University, Armenia
2021 (Condat)	World's Top 2% Scientist by Stanford
2021 (Condat)	Associate Editor, IEEE Transactions on Signal Processing
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
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 <sup>62</sup>
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

<sup>58</sup>These awards are independent of my input, and were in most cases obtained before joining my team.

<sup>59</sup>[https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4?fbclid=IwAR0u4xhKMUKGIsi\\_prZLx0IOaMPzV-LNCmoILDYua90eybIVlyE6S170vyc](https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4?fbclid=IwAR0u4xhKMUKGIsi_prZLx0IOaMPzV-LNCmoILDYua90eybIVlyE6S170vyc)

<sup>60</sup>Mathematical 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."

<sup>61</sup>Awarded to 6 students from more than 250 students for best undergraduate thesis.

<sup>62</sup>4,000 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!

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  
 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 <sup>63</sup> , 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
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 200 research talks**<sup>64</sup> 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 TALKS<sup>65</sup>

10/2024	<b>International Conference on Computational Optimization (ICOMP-2024)</b> , Innopolis, Russian Federation
09/2024	<b>2nd IEEE International Conference on Federated Learning Technologies and Applications (FLTA 2024)</b> , Valencia, Spain

<sup>63</sup>Historically the first silver medal at IMO by Saudi Arabia.

<sup>64</sup>All my talks are listed on [https://www.maths.ed.ac.uk/~prichter/i\\_talks.html](https://www.maths.ed.ac.uk/~prichter/i_talks.html)

<sup>65</sup>For 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.

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

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**<sup>66</sup>, 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
- 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

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<sup>66</sup>This event was organized in my honour.



- 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

- 12/2024 **Optimization for Machine Learning** (three lectures), Applied Mathematics School, KAUST, Saudi Arabia
- 11/2024 **Optimization for Machine Learning** (five lectures), Beijing Institute for Mathematical Sciences and Applications (BIMSA), Beijing, China
- 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	<b>Introduction to Optimization for Machine Learning</b> (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	<b>Randomized Optimization Methods</b> (Summer School, 5 hours), Data Science Summer School (DS <sup>3</sup> ), École Polytechnique, France. Other courses: Joshua Bengio (Montreal), Deep Learning; Pradeep Ravikumar (CMU), Graphical Models; Csaba Szepesvári (Alberta/Google DeepMind), Bandits
10/2015	<b>Randomized Methods for Big Data: From Linear Systems to Optimization</b> (Tutorial), IEEE International Conference on Data Science and Advanced Analytics, Paris, France
2015	<b>Randomized Algorithms for Big Data Optimization</b> (PhD Course, 18 hours), Graduate School in Systems, Optimization, Control and Networks – Université catholique de Louvain, Belgium
09/2015	<b>Optimization in Machine Learning</b> (PhD Course, 8 hours), Machine Learning Thematic Trimester, Toulouse, France
07/2015	<b>Modern Convex Optimization Methods for Large-Scale Empirical Risk Minimization</b> (Tutorial, 2 hours, joint with M. Schmidt), ICML 2015, Lille, France
06/2014	<b>Randomized Coordinate Descent Methods</b> (PhD Course, 6 hours), Khronos-Persyval Days “High-Dimensional Learning and Optimization”, Grenoble, France
06/2014	<b>Coordinate Descent Methods</b> (Lecture, 2 hours), NATCOR PhD Course on Convex Optimization, Edinburgh, UK
02/2014	<b>Gradient Methods for Big Data</b> (Tutorial, 3 hours), Big Data: Challenges and Applications, Imperial College London, UK

## 9.4 TALKS @ RESEARCH SEMINARS

2025	Kempelen Institute of Intelligent Technologies, The Hong Kong Polytechnic University
2024	Beijing Institute for Mathematical Sciences and Applications (BIMSA), Tsinghua University, Shanghai Institute for Mathematics and Interdisciplinary Sciences (SIMIS), Peking University, KAUST (2)
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. TEACHING<sup>67</sup>

KAUST	Spring 2025	Stochastic Gradient Descent Methods* (CS 331)
	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
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*
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 ORGANIZATION<sup>68</sup>

06/2025	The 4th Workshop on Federated Learning for Computer Vision, CVPR 2025 (co-organizer)
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

<sup>67</sup>I 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.

<sup>68</sup>I am excluding organized conference sessions.

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	<b>Federated Learning One World Seminar (FLOW)</b> <sup>69</sup> (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)
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	<b>Area Chair</b> , NeurIPS
2025	<b>Area Chair</b> , ICML
2025	<b>Area Chair</b> , ICLR
2024–2025	<b>Scientific Committee Member</b> , 2nd International Olympiad in Artificial Intelligence (IOAI)

<sup>69</sup><https://sites.google.com/view/one-world-seminar-series-flow/home>

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<sup>70</sup> 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**<sup>71</sup>, Journal of Optimization Theory and Applications

2021 Reviewer of Hi!Paris Fellowship applications in machine learning<sup>72</sup>

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

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-PRICAI<sup>73</sup>), 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

<sup>70</sup>Habilitation á diriger des recherches

<sup>71</sup>area: Optimization for Machine Learning

<sup>72</sup>Hi!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](http://www.hi-paris.fr)

<sup>73</sup>International Joint Conference on Artificial Intelligence – Pacific Rim International Conference on Artificial Intelligence

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, AAAI, 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)  
 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

2024	PhD Proposal Examiner for Eslam Abdelrahman, Computer Science
2022–2025	<b>Member, SDAIA-KAUST Center of Excellence in Data Science and AI</b>
2022–2024	<b>Founding Member, KAUST AI Initiative</b>
2022–2024	<b>Member, AI Initiative Faculty Search Committee</b>
2022	PhD Proposal Examiner for Fatimah Zohra, Computer Science
2022	MS Thesis Examiner for Fernando Zhapa Camacho, Computer Science
2021–2022	<b>Member, AI Initiative Advisory Board</b>
2021	PhD Proposal Examiner for Han Shao, Computer Science
2020–2021	<b>Chair, Machine Learning Faculty Search Committee</b>
2020	PhD Thesis Examiner for Adel Bibi, Computer Science (other examiners: Yi Ma (Berkeley), Wolfgang Heidrich (KAUST), Bernard Ghanem (KAUST))
2019–2021	<b>Member, AI Initiative Committee</b>
2019–2021	Faculty Sponsor, KAUST ACM Student Chapter
2019–2020	<b>Chair, Machine Learning Faculty Search Committee</b>
2019	PhD Proposal Examiner for Adel Bibi, Computer Science
2019	Member, Research Strategic Plan Working Group (representing CEMSE)
2018–2019	<b>Chair, Artificial Intelligence Committee</b> <sup>74</sup>
2018–now	<b>Co-Founder, The Machine Learning Hub</b> (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 Elkhilil, 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

## 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 <b>The Alan Turing Institute (UK National Data Science and AI Institute)</b> 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

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<sup>74</sup>I 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.

### 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 algorithm<sup>75</sup> developed by Dr. Richtárik is in operation at Google in the YouTube recommendation engine.”

## 15. PUBLICATIONS

### 15.1 CITATION METRICS<sup>76</sup>

According to [Google Scholar](#), my works attracted more than 27,000 citations, and my h-index is 70.

### 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
UAI	Uncertainty in Artificial Intelligence
NAACL	Annual Conference of the Nations of the Americas Chapter of the ACL
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

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<sup>75</sup>A variant of the method developed in [18, 24].

<sup>76</sup>These citations metric were extracted via Google Scholar in February 2025.

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.

- (279) E. Shulgin<sup>(d)</sup>, S. Khirirat<sup>(p)</sup>, P. Richtárik  
**Smoothed normalization for efficient distributed private optimization**  
`arXiv:2502.13482`
- (278) A. Riabinin<sup>(d)</sup>, A. Khaled, P. Richtárik  
**A novel unified parametric assumption for nonconvex optimization**  
`arXiv:2502.12329`
- (277) R. Islamov, S. Horváth, A. Lucchi, P. Richtárik, E. Gorbunov  
**Double momentum and error feedback for clipping with fast rates and differential privacy**  
`arXiv:2502.11682`
- (276) Z. Tovmasyan<sup>(i)</sup>, G. Malinovsky<sup>(d)</sup>, L. Condat<sup>(r)</sup>, P. Richtárik  
**Revisiting stochastic proximal point methods: generalized smoothness and similarity**  
`arXiv:2502.03401`
- (275) K. Gruntkowska<sup>(d)</sup>, H. Li<sup>(d)</sup>, A. Rane<sup>(i)</sup>, P. Richtárik  
**The ball-proximal (=”broximal”) point method: a new algorithm, convergence theory, and applications**  
`arXiv:2502.02002`
- (274) A. Maranjyan<sup>(d)</sup>, E.M. Saad, P. Richtárik, F. Orabona  
**ATA: Adaptive task allocation for efficient resource management in distributed machine learning**  
`arXiv:2502.00775`
- (273) K. Yi<sup>(d)</sup>, P. Richtárik  
**Symmetric pruning of large language models**  
`arXiv:2501.18980`

- (272) A. Maranjyan<sup>(d)</sup>, A. Tyurin, P. Richtárik  
**Ringmaster ASGD: The first asynchronous SGD with optimal time complexity**  
arXiv:2501.16168

## Prepared in 2024

- (271) E. Shulgin<sup>(d)</sup>, P. Richtárik  
**On the convergence of DP-SGD with adaptive clipping**  
arXiv:2412.19916
- (270) I. Sokolov<sup>(d)</sup>, P. Richtárik  
**MARINA-P: Superior performance in non-smooth federated optimization with adaptive stepsizes**  
arXiv:2412.17082
- (269) A. Maranjyan<sup>(d)</sup>, A. Sadiev<sup>(d)</sup>, P. Richtárik  
**Differentially private random block coordinate descent**  
arXiv:2412.17054
- (268) E. Gasanov<sup>(d)</sup>, P. Richtárik  
**Speeding up stochastic proximal optimization in the high Hessian dissimilarity setting**  
arXiv:2412.13619
- (267) Y. Demidovich<sup>(p)</sup>, P. Ostroukhov, G. Malinovsky<sup>(d)</sup>, S. Horváth, M. Takáč, P. Richtárik, E. Gorbunov  
**Methods with local steps and random reshuffling for generally smooth non-convex federated optimization**  
*ICLR 2025*
- (266) V. Malinovskii, A. Panferov, I. Ilin<sup>(m)</sup>, H. Guo, P. Richtárik, D. Alistarh  
**Pushing the limits of large language model quantization via the linearity theorem**  
*NAACL 2025*
- (265) S. Khirirat<sup>(p)</sup>, A. Sadiev<sup>(d)</sup>, A. Riabinin<sup>(d)</sup>, E. Gorbunov, P. Richtárik  
**Error feedback under  $(L_0, L_1)$ -smoothness: normalization and momentum**  
arXiv:2410.16871
- (264) W. Anyszka<sup>(i)</sup>, K. Gruntkowska<sup>(d)</sup>, A. Tyurin<sup>(p)</sup>, P. Richtárik  
**Tighter performance theory of FedExProx**  
arXiv:2410.15368
- (263) K. Burlachenko<sup>(d)</sup>, P. Richtárik  
**Unlocking FedNL: Self-contained compute-optimized implementation**  
arXiv:2410.08760
- (262) Grigory Malinovsky<sup>(d)</sup>, Umberto Michieli, Hasan Abed Al Kader Hammoud, Taha Ceritli, Hayder Elesedy, Mete Ozay, P. Richtárik  
**Randomized asymmetric chain of LoRA: The first meaningful theoretical framework for low-rank adaptation**  
arXiv:2410.08305

- (261) A. Maranjyan<sup>(d)</sup>, O. S. Omar<sup>(m)</sup>, P. Richtárik  
**MindFlayer: Efficient asynchronous parallel SGD in the presence of heterogeneous and random worker compute times**  
arXiv:2410.04285
- (260) H. Li<sup>(d)</sup>, 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**  
*ICLR 2025*
- (258) K. Yi<sup>(d)</sup>, T. Kharisov<sup>(i)</sup>, I. Sokolov<sup>(d)</sup>, 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<sup>(i)</sup>, K. Yi<sup>(d)</sup>, L. Condat<sup>(r)</sup>, P. Richtárik  
**Prune at the clients, not the server: Accelerated sparse training in federated learning**  
arXiv:2405.20623
- (256) A. Karagulyan<sup>(p)</sup>, E. Shulgin<sup>(d)</sup>, A. Sadiev<sup>(d)</sup>, P. Richtárik  
**SPAM: Stochastic proximal point method with momentum variance reduction for non-convex cross-device federated learning**  
arXiv:2405.20127
- (255) L. Condat<sup>(r)</sup>, P. Richtárik  
**A simple linear convergence analysis of the Point-SAGA algorithm**  
arXiv:2405.19951
- (254) P. Richtárik, S. M. Giancola<sup>(i)</sup>, D. Lubczyk<sup>(i)</sup>, R. Yadav<sup>(i)</sup>  
**Local curvature descent: squeezing more curvature out of standard and Polyak gradient descent**  
arXiv:2405.16574
- (253) A. Tyurin<sup>(p)</sup>, P. Richtárik  
**On the optimal time complexities in decentralized stochastic asynchronous optimization**  
*NeurIPS 2024*
- (252) P. Richtárik, A. Sadiev<sup>(d)</sup>, Y. Demidovich<sup>(p)</sup>  
**A unified theory of stochastic proximal point methods without smoothness**  
arXiv:2405.15941
- (251) I.-V. Modoranu, M. Safaryan, G. Malinovsky<sup>(d)</sup>, E. Kurtic, T. Robert, P. Richtárik, D. Alistarh  
**MicroAdam: Accurate adaptive optimization with low space overhead and provable convergence**  
*NeurIPS 2024*
- (250) A. Tyurin<sup>(p)</sup>, K. Grunkowska<sup>(d)</sup>, 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<sup>(d)</sup>, D. Kuznedev, K. Burlachenko<sup>(d)</sup>, K. Yi<sup>(d)</sup>, 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<sup>(d)</sup>, L. Condat<sup>(r)</sup>, P. Richtárik  
**Stochastic proximal point methods for monotone inclusions under expected similarity**  
arXiv:2405.14255
- (247) H. Li<sup>(d)</sup>, K. Acharya<sup>(i)</sup>, P. Richtárik  
**The power of extrapolation in federated learning**  
*NeurIPS 2024*
- (246) Kai Yi<sup>(d)</sup>, G. Meinhardt<sup>(i)</sup>, P. Richtárik  
**FedComLoc: Communication-efficient distributed training of sparse and quantized models**  
arXiv:2403.09904
- (245) Y. Demidovich<sup>(p)</sup>, G. Malinovsky<sup>(d)</sup>, P. Richtárik  
**Streamlining in the Riemannian realm: Efficient Riemannian optimization with loopless variance reduction**  
arXiv:2403.06677
- (244) L. Condat<sup>(r)</sup>, A. Maranjyan<sup>(d)</sup>, P. Richtárik  
**LoCoDL: Communication-efficient distributed learning with local training and compression**  
*ICLR 2025*  
Spotlight at *NeurIPS 2024*
- (243) K. Gruntkowska<sup>(d)</sup>, A. Tyurin<sup>(p)</sup>, 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<sup>(p)</sup>, M. Pozzi<sup>(i)</sup>, I. Ilin<sup>(d)</sup>, P. Richtárik  
**Shadowheart SGD: distributed asynchronous SGD with optimal time complexity under arbitrary computation and communication heterogeneity**  
*NeurIPS 2024*
- (241) A. Panferov<sup>(i)</sup>, Y. Demidovich<sup>(p)</sup>, A. Rammal<sup>(i)</sup>, P. Richtárik  
**Correlated quantization for faster nonconvex distributed optimization**  
arXiv:2401.05518

Prepared in 2023

- (240) K. Yi<sup>(d)</sup>, 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<sup>(d)</sup>, and K. Burlachenko<sup>(d)</sup>  
**Error feedback reloaded: From quadratic to arithmetic mean of smoothness constants**  
*ICLR 2024*
- (238) J. Xin, I. Ilin<sup>(d)</sup>, S. Zhang, M. Canini, and P. Richtárik  
**Kimad: Adaptive gradient compression with bandwidth awareness**  
*DistributedML 2023*
- (237) K. Burlachenko<sup>(d)</sup>, A. Alrowithi, F. A. Albalawi, and P. Richtárik  
**Federated learning is better with non-homomorphic encryption**  
*DistributedML 2023*
- (236) Y. Demidovich<sup>(p)</sup>, G. Malinovsky<sup>(d)</sup>, E. Shulgin<sup>(d)</sup>, and P. Richtárik  
**MAST: Model-agnostic sparsified training**  
*ICLR 2025*
- (235) G. Malinovsky<sup>(d)</sup>, 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<sup>(d)</sup>  
**Consensus-based optimization with truncated noise**  
*European Journal of Applied Mathematics, 2024*
- (233) A. Rammal<sup>(i)</sup>, K. Gruntkowska<sup>(i)</sup>, N. Fedin, E. Gorbunov, and P. Richtárik  
**Communication compression for Byzantine robust learning: New efficient algorithms and improved rates**  
*AISTATS 2024*
- (232) H. Li<sup>(d)</sup>, A. Karagulyan<sup>(p)</sup>, and P. Richtárik  
**MARINA meets matrix stepsizes: Variance reduced distributed non-convex optimization**  
arXiv:2310.04614
- (231) E. Gorbunov, A. Sadiev<sup>(d)</sup>, 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*  
Oral (144/9473 = top 1.5%)
- (230) E. Shulgin<sup>(d)</sup> and P. Richtárik  
**Towards a better theoretical understanding of independent subnetwork training**  
*ICML 2024*
- (229) R. Szlendak<sup>(m)</sup>, E. Gasanov<sup>(d)</sup>, and P. Richtárik  
**Understanding progressive training through the framework of randomized coordinate descent**  
*AISTATS 2024*

- (228) M. Grudzień, G. Malinovsky<sup>(d)</sup>, and P. Richtárik  
**Improving accelerated federated learning with compression and importance sampling**  
arXiv:2306.03240
- (227) S. Khirirat<sup>(p)</sup>, E. Gorbunov, S. Horváth, R. Islamov, F. Karray, and P. Richtárik  
**Clip21: Error feedback for gradient clipping**  
arXiv:2305.18929
- (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<sup>(p)</sup>, G. Malinovsky<sup>(d)</sup>, I. Sokolov<sup>(d)</sup> and P. Richtárik  
**A guide through the zoo of biased SGD**  
*NeurIPS 2023*
- (224) P. Richtárik, E. Gasanov<sup>(d)</sup> and K. Burlachenko<sup>(d)</sup>  
**Error feedback shines when features are rare**  
arXiv:2305.15264
- (223) I. Fatkhullin, A. Tyurin<sup>(p)</sup>, and P. Richtárik  
**Momentum provably improves error feedback!**  
*NeurIPS 2023*
- (222) K. Yi<sup>(d)</sup>, L. Condat<sup>(r)</sup>, and P. Richtárik  
**Explicit personalization and local training: double communication acceleration in federated learning**  
arXiv:2305.13170
- (221) A. Tyurin<sup>(p)</sup> and P. Richtárik  
**Optimal time complexities of parallel stochastic optimization methods under a fixed computation model**  
*NeurIPS 2023*
- (220) A. Tyurin<sup>(p)</sup> and P. Richtárik  
**2Direction: Theoretically faster distributed training with bidirectional communication compression**  
*NeurIPS 2023*
- (219) H. Li<sup>(d)</sup>, A. Karagulyan<sup>(p)</sup> and P. Richtárik  
**Det-CGD: Compressed gradient descent with matrix stepsizes for non-convex optimization**  
*ICLR 2024*
- (218) A. Karagulyan<sup>(p)</sup> and P. Richtárik  
**ELF: Federated Langevin algorithms with primal, dual and bidirectional compression**  
arXiv:2303.04622
- (217) L. Condat<sup>(r)</sup>, G. Malinovsky<sup>(d)</sup>, and P. Richtárik  
**TAMUNA: Accelerated federated learning with local training and partial participation**  
arXiv:2302.09832

- (216) G. Malinovsky<sup>(d)</sup>, S. Horváth, K. Burlachenko<sup>(d)</sup> and P. Richtárik  
**Federated learning with regularized client participation**  
 arXiv:2302.03662
- (215) A. Sadiev<sup>(d)</sup>, 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<sup>(p)</sup>, H. Dong, T. Zhang and P. Richtárik  
**Catalyst acceleration of error compensated methods leads to better communication complexity**  
*AISTATS 2023*
- (213) S. Hanzely<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Convergence of first-order algorithms for meta-learning with Moreau envelopes**  
 arXiv:2301.06806

## Prepared in 2022

- (212) M. Grudzień<sup>(i)</sup>, G. Malinovsky<sup>(d)</sup> and P. Richtárik  
**Can 5th generation local training methods support client sampling? Yes!**  
*AISTATS 2023*
- (211) M. Makarenko, E. Gasanov<sup>(d)</sup>, R. Islamov<sup>(i)</sup>, A. Sadiev<sup>(d)</sup> and P. Richtárik  
**Adaptive compression for communication-efficient distributed training**  
*TMLR 2023*
- (210) S. Hanzely<sup>(d)</sup>, 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<sup>(i)</sup>, M. Safaryan<sup>(p)</sup> and P. Richtárik  
**GradSkip: Communication-accelerated local gradient methods with better computational complexity**  
 arXiv:2210.16402
- (208) L. Condat<sup>(r)</sup>, I. Agarský<sup>(d)</sup> 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<sup>(d)</sup> and P. Richtárik  
**Improved Stein variational gradient descent with importance weights**  
 arXiv:2210.00462
- (206) K. Gruntkowska<sup>(i)</sup>, A. Tyurin<sup>(p)</sup> and P. Richtárik  
**EF21-P and friends: Improved theoretical communication complexity for distributed optimization with bidirectional compression**  
*ICML 2023*



- (205) S. Boucherouite, G. Malinovsky<sup>(d)</sup>, P. Richtárik and E. H. Bergou  
**Minibatch stochastic three points method for unconstrained smooth minimization**  
*AAAI 2024*
- (204) E. H. Bergou<sup>(r)</sup>, K. Burlachenko<sup>(d)</sup>, A. Dutta and P. Richtárik  
**Personalized federated learning with communication compression**  
*TMLR 2023*
- (203) S. Horváth<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Adaptive learning rates for faster stochastic gradient methods**  
*arXiv:2208.05287*
- (202) L. Condat<sup>(r)</sup> 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<sup>(d)</sup>, K. Yi<sup>(d)</sup> and P. Richtárik  
**Variance reduced ProxSkip: Algorithm, theory and application to federated learning**  
*NeurIPS 2022*
- (200) A. Sadiev<sup>(i)</sup>, D. Kovalev<sup>(d)</sup> and P. Richtárik  
**Communication acceleration of local gradient methods via an accelerated primal-dual algorithm with inexact prox**  
*NeurIPS 2022*
- (199) E. Shulgin<sup>(d)</sup> and P. Richtárik  
**Shifted compression framework: generalizations and improvements**  
*UAI 2022*
- (198) L. Sun<sup>(d)</sup> 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<sup>(i)</sup>, G. Malinovsky<sup>(d)</sup>, E. Gorbunov, I. Sokolov<sup>(d)</sup>, A. Khaled, K. Burlachenko<sup>(d)</sup> and P. Richtárik  
**Don't compress gradients in random reshuffling: compress gradient differences**  
*NeurIPS 2024*
- (196) R. Islamov<sup>(i)</sup>, X. Qian<sup>(p)</sup>, S. Hanzely<sup>(d)</sup>, M. Safaryan<sup>(p)</sup> 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<sup>(d)</sup>, P. Richtárik and B. Ghanem  
**Certified robustness in federated learning**  
*NeurIPS Workshop 2022 (Federated Learning)*
- (194) A. Tyurin<sup>(p)</sup>, L. Sun<sup>(d)</sup>, K. Burlachenko<sup>(d)</sup> and P. Richtárik  
**Sharper rates and flexible framework for nonconvex SGD with client and data sampling**

*TMLR 2023*

- (193) L. Sun<sup>(d)</sup>, A. Salim and P. Richtárik  
**Federated sampling with Langevin algorithm under isoperimetry**  
*TMLR 2024*
- (192) E. Gorbunov, S. Horváth<sup>(d)</sup>, 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<sup>(d)</sup>, A. Karagulyan<sup>(p)</sup> and P. Richtárik  
**Convergence of Stein variational gradient descent under a weaker smoothness condition**  
*AISTATS 2023*
- (190) A. Tyurin<sup>(p)</sup> and P. Richtárik  
**A computation and communication efficient method for distributed nonconvex problems in the partial participation setting**  
*NeurIPS 2023*
- (189) L. Condat<sup>(r)</sup>, K. Yi<sup>(d)</sup> 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<sup>(d)</sup> and P. Richtárik  
**Federated random reshuffling with compression and variance reduction**  
*arXiv:2205.03914*
- (187) S. Horváth<sup>(d)</sup>, 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<sup>(d)</sup>, G. Malinovsky<sup>(d)</sup>, S. Stich and P. Richtárik  
**ProxSkip: Yes! Local gradient steps provably lead to communication acceleration! Finally!**  
*ICML 2022*
- (185) D. Kovalev<sup>(d)</sup>, A. Beznosikov, A. Sadiev, M. Pershianov, P. Richtárik and A. Gasnikov  
**Optimal algorithms for decentralized stochastic variational inequalities**  
*NeurIPS 2022*
- (184) A. Tyurin<sup>(p)</sup> and P. Richtárik  
**DASHA: Distributed nonconvex optimization with communication compression and optimal oracle complexity**  
*ICLR 2023*
- (183) P. Richtárik, I. Sokolov<sup>(m)</sup>, I. Fatkhullin<sup>(i)</sup>, E. Gasanov<sup>(d)</sup>, Z. Li<sup>(r)</sup> 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<sup>(r)</sup>, P. Richtárik and Y. Chi  
**BEER: Fast  $O(1/T)$  rate for decentralized nonconvex optimization with communication compression**  
*NeurIPS 2022*
- (181) G. Malinovsky<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Server-side stepsizes and sampling without replacement provably help in federated optimization**  
*DistributedML 2023*

## Prepared in 2021

- (180) D. Kovalev<sup>(d)</sup>, 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<sup>(d)</sup>, Z. Li<sup>(r)</sup> 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<sup>(d)</sup>, S. Horváth<sup>(d)</sup> and P. Richtárik  
**FL-PyTorch: Optimization research simulator for federated learning**  
*DistributedML 2021*
- (177) E. Gasanov<sup>(d)</sup>, 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<sup>(p)</sup>, R. Islamov<sup>(i)</sup>, M. Safaryan<sup>(p)</sup> 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<sup>(d)</sup>, A. Tyurin<sup>(p)</sup> and P. Richtárik  
**Permutation compressors for provably faster distributed nonconvex optimization**  
*ICLR 2022*
- (173) I. Fatkhullin<sup>(i)</sup>, I. Sokolov<sup>(d)</sup>, E. Gorbunov<sup>(d)</sup>, Z. Li<sup>(p)</sup> and P. Richtárik  
**EF21 with bells & whistles: practical algorithmic extensions of modern error feedback**  
 arXiv:2110.03294
- (172) X. Qian<sup>(p)</sup>, 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<sup>(r)</sup> and P. Richtárik  
**FedPAGE: A fast local method for federated learning**  
arXiv:2108.04755
- (169) Z. Li<sup>(r)</sup> 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<sup>(m)</sup>, and I. Fatkhullin<sup>(i)</sup>  
**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<sup>(d)</sup>, E. Gasanov<sup>(d)</sup>, 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<sup>(i)</sup>, M. Safaryan<sup>(p)</sup>, and P. Richtárik  
**Theoretically better and numerically faster distributed optimization with smoothness-aware quantization techniques**  
*NeurIPS 2022*
- (164) A. Salim<sup>(p)</sup>, L. Sun<sup>(d)</sup>, and P. Richtárik  
**A convergence theory for SVGD in the population limit under Talagrand's inequality T1**  
*ICML 2022*
- (163) L. Condat<sup>(r)</sup> and P. Richtárik  
**MURANA: A generic framework for stochastic variance-reduced optimization**  
*MSML 2022*
- (162) M. Safaryan<sup>(p)</sup>, R. Islamov<sup>(i)</sup>, X. Qian<sup>(p)</sup>, and P. Richtárik  
**FedNL: Making Newton-type methods applicable to federated learning**  
*ICML 2022*
- (161) G. Malinovsky<sup>(m)</sup>, A. Sailanbayev<sup>(d)</sup>, and P. Richtárik  
**Random reshuffling with variance reduction: new analysis and better rates**  
arXiv:2104.09342

- (160) Z. Li<sup>(r)</sup> and P. Richtárik  
**ZeroSARAH: Efficient nonconvex finite-sum optimization with zero full gradient computations**  
 arXiv:2103.01447
- (159) A. Salim<sup>(p)</sup>, L. Condat<sup>(r)</sup>, D. Kovalev<sup>(d)</sup>, 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<sup>(d)</sup>, E. Shulgin<sup>(m)</sup>, P. Richtárik, A. Rogozin<sup>(i)</sup>, and A. Gasnikov  
**ADOM: Accelerated decentralized optimization method for time-varying networks**  
*ICML 2021*
- (156) K. Mishchenko<sup>(d)</sup>, B. Wang<sup>(i)</sup>, D. Kovalev<sup>(d)</sup>, and P. Richtárik  
**IntSGD: Floatless compression of stochastic gradients**  
*ICLR 2022*  
[ICLR 2022 Spotlight paper](#)
- (155) M. Gorbunov<sup>(i)</sup>, K. Burlachenko<sup>(d)</sup>, Z. Li<sup>(r)</sup>, and P. Richtárik  
**MARINA: faster non-convex distributed learning with compression**  
*ICML 2021*
- (154) M. Safaryan<sup>(p)</sup>, F. Hanzely<sup>(d)</sup>, and P. Richtárik  
**Smoothness matrices beat smoothness constants: better communication compression techniques for distributed optimization**  
*NeurIPS 2021*
- (153) K. Islamov<sup>(i)</sup>, X. Qian<sup>(p)</sup>, and P. Richtárik  
**Distributed second order methods with fast rates and compressed communication**  
*ICML 2021*
- (152) K. Mishchenko<sup>(d)</sup>, A. Khaled<sup>(i)</sup>, and P. Richtárik  
**Proximal and federated random reshuffling**  
*ICML 2022*

## Prepared in 2020

- (151) S. Horváth<sup>(d)</sup>, A. Klein, P. Richtárik, and C. Archambeau  
**Hyperparameter transfer learning with adaptive complexity**  
*AISTATS 2021*
- (150) X. Qian<sup>(p)</sup>, 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<sup>(p)</sup>, H. Dong, P. Richtárik, and T. Zhang  
**Error compensated proximal SGD and RDA**

- (148) E. Gorbunov<sup>(i)</sup>, F. Hanzely<sup>(d)</sup>, and P. Richtárik  
**Local SGD: unified theory and new efficient methods**  
*AISTATS 2021*
- (147) D. Kovalev<sup>(d)</sup>, 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<sup>(i)</sup>, S. Horváth<sup>(d)</sup>, and P. Richtárik  
**Optimal client sampling for federated learning**  
*TMLR 2022*  
*Privacy Preserving Machine Learning (NeurIPS 2020 Workshop)*
- (145) E. Gorbunov<sup>(i)</sup>, D. Kovalev<sup>(d)</sup>, D. Makarenko, and P. Richtárik  
**Linearly converging error compensated SGD**  
*NeurIPS 2020*
- (144) A. Albasyoni<sup>(m)</sup>, M. Safaryan<sup>(p)</sup>, L. Condat<sup>(r)</sup>, 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<sup>(d)</sup>, S. Hanzely<sup>(m)</sup>, S. Horváth<sup>(d)</sup>, and P. Richtárik  
**Lower bounds and optimal algorithms for personalized federated learning**  
*NeurIPS 2020*
- (142) L. Condat<sup>(r)</sup>, G. Malinovsky<sup>(m)</sup>, 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<sup>(p)</sup>, 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<sup>(p)</sup>, 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<sup>(d)</sup>, A. Salim<sup>(p)</sup>, and P. Richtárik  
**Optimal and practical algorithms for smooth and strongly convex decentralized optimization**  
*NeurIPS 2020*
- (136) Ahmed Khaled<sup>(i)</sup>, Othmane Sebbouh<sup>(i)</sup>, 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<sup>(d)</sup> 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<sup>(p)</sup> and P. Richtárik  
**Primal dual interpretation of the proximal stochastic gradient Langevin algorithm**  
*NeurIPS 2020*
- (133) Z. Li<sup>(p)</sup> and P. Richtárik  
**A unified analysis of stochastic gradient methods for nonconvex federated optimization**  
*SpicyFL 2020: NeurIPS Workshop on Scalability, Privacy, and Security in Federated Learning*
- (132) K. Mishchenko<sup>(d)</sup>, A. Khaled<sup>(i)</sup>, and P. Richtárik  
**Random reshuffling: simple analysis with vast improvements**  
*NeurIPS 2020*
- (131) M. Alfarrá<sup>(m)</sup>, S. Hanzely<sup>(m)</sup>, A. Albasyoni<sup>(m)</sup>, 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<sup>(p)</sup>, L. Condat<sup>(r)</sup>, K. Mishchenko<sup>(d)</sup>, 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<sup>(i)</sup>, A. Dutta<sup>(p)</sup>, A. Tiwari<sup>(i)</sup>, 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<sup>(i)</sup>, D. Kovalev<sup>(d)</sup>, E. Gasanov<sup>(d)</sup>, L. Condat<sup>(r)</sup>, and P. Richtárik  
**From local SGD to local fixed point methods for federated learning**  
*ICML 2020*
- (127) A. Beznosikov<sup>(i)</sup>, S. Horváth<sup>(d)</sup>, P. Richtárik and M. Safaryan<sup>(p)</sup>  
**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<sup>(p)</sup>, D. Kovalev<sup>(d)</sup>, X. Qian<sup>(p)</sup> and P. Richtárik  
**Acceleration for compressed gradient descent in distributed and federated optimization**  
*ICML 2020*
- (125) D. Kovalev<sup>(d)</sup>, R. M. Gower, P. Richtárik and A. Rogozin<sup>(i)</sup>  
**Fast linear convergence of randomized BFGS**  
 arXiv:2002.11337
- (124) F. Hanzely<sup>(d)</sup>, N. Doikov, P. Richtárik and Yu. Nesterov  
**Stochastic subspace cubic Newton method**  
*ICML 2020*
- (123) Mher Safaryan<sup>(p)</sup>, Egor Shulgin<sup>(m)</sup> 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<sup>(d)</sup> 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<sup>(d)</sup>, 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*  
*OPT2020: 12th Annual Workshop on Optimization for Machine Learning (NeurIPS 2020 Workshop)*
- (120) F. Hanzely<sup>(d)</sup>, D. Kovalev<sup>(d)</sup> and P. Richtárik  
**Variance reduced coordinate descent with acceleration: new method with a surprising application to finite-sum problems**  
*ICML 2020*
- (119) A. Khaled<sup>(i)</sup> and P. Richtárik  
**Better theory for SGD in the nonconvex world**  
*TMLR 2022*

## Prepared in 2019

- (118) A. Khaled<sup>(i)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Tighter theory for local SGD on identical and heterogeneous data**  
*AISTATS 2020*
- (117) S. Chraïbi<sup>(i)</sup>, A. Khaled<sup>(i)</sup>, D. Kovalev<sup>(i)</sup>, A. Salim<sup>(p)</sup>, P. Richtárik and M. Takáč  
**Distributed fixed point methods with compressed iterates**  
 arXiv:1912.09925
- (116) S. Horváth<sup>(d)</sup>, C.-Y. Ho, Ľ. Horváth<sup>(i)</sup>, 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<sup>(m)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Stochastic Newton and cubic Newton methods with simple local linear-quadratic rates**



- (114) A. Khaled<sup>(i)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**Better communication complexity for local SGD**  
*NeurIPS 2019 Workshop: Federated Learning for Data Privacy and Confidentiality*
- (113) A. Khaled<sup>(i)</sup> and P. Richtárik  
**Gradient descent with compressed iterates**  
*NeurIPS 2019 Workshop: Federated Learning for Data Privacy and Confidentiality*
- (112) A. Khaled<sup>(i)</sup>, K. Mishchenko<sup>(d)</sup> 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<sup>(p)</sup>, 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<sup>(p)</sup>, A. Sailanbayev<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**MISO is making a comeback with better proofs and rates**  
arXiv:1906.01474
- (108) E. Gorbunov<sup>(i)</sup>, A. Bibi, O. Sezer, E. H. Bergou<sup>(p)</sup> 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<sup>(p)</sup>, D. Kovalev<sup>(m)</sup> and P. Richtárik  
**Stochastic proximal Langevin algorithm: potential splitting and nonasymptotic rates**  
*NeurIPS 2019*
- (105) E. H. Bergou<sup>(p)</sup>, M. Canini, A. Dutta<sup>(p)</sup>, P. Richtárik and Y. Xiao<sup>(i)</sup>  
**Direct nonlinear acceleration**  
*EURO Journal on Computational Optimization, 2022*
- (104) K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**A stochastic decoupling method for minimizing the sum of smooth and non-smooth functions**  
arXiv:1905.11535
- (103) K. Mishchenko<sup>(d)</sup>, D. Kovalev<sup>(m)</sup>, E. Shulgin<sup>(i)</sup>, P. Richtárik and Y. Malitsky  
**Revisiting stochastic extragradient**  
*AISTATS 2020*

- (102) F. Hanzely<sup>(d)</sup> and P. Richtárik  
**One method to rule them all: variance reduction for data, parameters and many new methods**  
arXiv:1905.11266
- (101) E. Gorbunov<sup>(i)</sup>, F. Hanzely<sup>(d)</sup> and P. Richtárik  
**A unified theory of SGD: variance reduction, sampling, quantization and coordinate descent**  
*AISTATS 2020*
- (100) S. Horváth<sup>(d)</sup>, C.Y. Ho, L. Horváth<sup>(i)</sup>, A. N. Sahu, M. Canini and P. Richtárik  
**Natural compression for distributed deep learning**  
*MSML 2022*
- (99) R. M. Gower, D. Kovalev<sup>(m)</sup>, F. Lieder and P. Richtárik  
**RSN: Randomized Subspace Newton**  
*NeurIPS 2019*
- (98) A. Dutta<sup>(p)</sup>, F. Hanzely<sup>(d)</sup>, 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<sup>(d)</sup> 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<sup>(d)</sup> 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<sup>(d)</sup>, D. Kovalev<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup>, 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<sup>(p)</sup>, E. Gorbunov<sup>(i)</sup> and P. Richtárik  
**Stochastic three points method for unconstrained smooth minimization**  
*SIAM Journal on Optimization 30(4):2726–2749, 2020*
- (92) E. H. Bergou<sup>(p)</sup>, A. Bibi, B. Ghanem, O. Sener and P. Richtárik  
**A stochastic derivative-free optimization method with importance sampling**  
*AAAI 2020*

- (91) K. Mishchenko<sup>(d)</sup>, F. Hanzely<sup>(d)</sup> and P. Richtárik  
**99% of distributed optimization is a waste of time: the issue and how to fix it**  
*UAI 2020*
- (90) K. Mishchenko<sup>(d)</sup>, E. Gorbunov<sup>(i)</sup>, 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<sup>(d)</sup>, X. Qian<sup>(p)</sup>, A. Sailanbayev<sup>(d)</sup>, E. Shulgin<sup>(i)</sup> and P. Richtárik  
**SGD: general analysis and improved rates**  
*ICML 2019*
- (88) D. Kovalev<sup>(d)</sup>, S. Horváth<sup>(d)</sup> 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<sup>(p)</sup>, 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<sup>(d)</sup>, J. Konečný<sup>(d)</sup>, N. Loizou<sup>(d)</sup>, P. Richtárik and D. Grishchenko<sup>(i)</sup>  
**A privacy preserving randomized gossip algorithm via controlled noise insertion<sup>77</sup>**  
*NeurIPS 2018 Workshop: Privacy Preserving Machine Learning*
- (84) K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**A stochastic penalty model for convex and nonconvex optimization with big constraints**  
 arXiv:1810.13387
- (83) N. Loizou<sup>(d)</sup>, M. Rabbat and P. Richtárik  
**Provably accelerated randomized gossip algorithms**  
*ICASSP 2019*
- (82) F. Hanzely<sup>(d)</sup> and P. Richtárik  
**Accelerated coordinate descent with arbitrary sampling and best rates for minibatches**  
*AISTATS 2019*
- (81) S. Horváth<sup>(d)</sup> and P. Richtárik  
**Nonconvex variance reduced optimization with arbitrary sampling**  
*ICML 2019*  
 Horváth: Best DS<sup>3</sup> (Data Science Summer School) Poster Award<sup>78</sup>, 2018

<sup>77</sup>Short version of [58]

<sup>78</sup>The first prize out of 170 competing posters presented by MS students, PhD students and postdocs. SH is an MS student. Cash award 500 EUR.

- (80) F. Hanzely<sup>(d)</sup>, K. Mishchenko<sup>(d)</sup> and P. Richtárik  
**SEGA: Variance reduction via gradient sketching**  
*NeurIPS 2018*
- (79) F. Hanzely<sup>(d)</sup>, 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<sup>(d)</sup> 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<sup>(d)</sup>, B. Ghanem, R. M. Gower and P. Richtárik  
**Improving SAGA via a probabilistic interpolation with gradient descent**  
 arXiv:1806.05633
- (75) A. Dutta<sup>(p)</sup>, F. Hanzely<sup>(d)</sup> and P. Richtárik  
**A nonconvex projection method for robust PCA**  
*AAAI 2019*
- (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<sup>(p)</sup>, X. Li and P. Richtárik  
**Weighted low-rank approximation of matrices and background modeling**  
 arXiv:1804.06252
- (72) F. Hanzely<sup>(d)</sup> 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<sup>(d)</sup>, 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<sup>(i)</sup> 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<sup>(i)</sup>, E. Gorbunov<sup>(i)</sup>, E. Gasanov<sup>(i)</sup> 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<sup>(d)</sup> 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<sup>(p)</sup> and P. Richtárik  
**Online and batch supervised background estimation via L1 regression**  
*WACV 2019*
- (63) N. Loizou<sup>(d)</sup> and P. Richtárik  
**Linearly convergent stochastic heavy ball method for minimizing generalization error**  
*NeurIPS 2017 Workshop: Optimization for Machine Learning*
- (62) D. Csiba<sup>(d)</sup> 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<sup>(p)</sup> 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<sup>(p)</sup>, 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<sup>(d)</sup>, J. Konečný<sup>(d)</sup>, N. Loizou<sup>(d)</sup>, P. Richtárik and D. Grishchenko<sup>(i)</sup>  
**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<sup>(i)</sup> and P. Richtárik  
**Parallel stochastic Newton method**  
*Journal of Computational Mathematics* 36(3):405-427, 2018

## Prepared in 2016

- (54) R. M. Gower<sup>(d)</sup> and P. Richtárik  
**Linearly convergent randomized iterative methods for computing the pseudoinverse**  
arXiv:1612.06255
- (53) J. Konečný<sup>(d)</sup> and P. Richtárik  
**Randomized distributed mean estimation: accuracy vs communication**  
*Frontiers in Applied Mathematics and Statistics* 4:62, 2018
- (52) J. Konečný<sup>(d)</sup>, 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<sup>(d)</sup>, H. B. McMahan, D. Ramage and P. Richtárik  
**Federated optimization: distributed machine learning for on-device intelligence**  
arXiv:1610.02527
- (50) N. Loizou<sup>(d)</sup> 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<sup>(d)</sup>, P. Richtárik, B. Póczos and A. Smola  
**AIDE: Fast and communication efficient distributed optimization**  
arXiv:1608.06879
- (48) D. Csiba<sup>(d)</sup> 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<sup>(p)</sup> and P. Richtárik  
**Optimization in high dimensions via accelerated, parallel and proximal coordinate descent**<sup>79</sup>  
*SIAM Review* 58(4), 2016

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<sup>79</sup>A (refreshed) reprint of [21] originally published in SIAM Journal on Optimization

SIAM SIGEST Outstanding Paper Award, 2017

- (46) R. M. Gower<sup>(d)</sup>, D. Goldfarb and P. Richtárik  
**Stochastic block BFGS: squeezing more curvature out of data**  
*ICML 2016*
- (45) D. Csiba<sup>(d)</sup> and P. Richtárik  
**Importance sampling for minibatches**  
*Journal of Machine Learning Research 19(27):1–21, 2018*
- (44) R. M. Gower<sup>(d)</sup> 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<sup>(p)</sup>, P. Richtárik and Y. Yuan  
**Even faster accelerated coordinate descent using non-uniform sampling**  
*ICML 2016*
- (42) R. M. Gower<sup>(d)</sup> and P. Richtárik  
**Stochastic dual ascent for solving linear systems**  
arXiv:1512.06890
- (41) C. Ma, J. Konečný<sup>(d)</sup>, 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*<sup>80</sup>
- (39) R. M. Gower<sup>(d)</sup> 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<sup>(d)</sup> and P. Richtárik  
**Primal method for ERM with flexible mini-batching schemes and non-convex losses**  
arXiv:1506:02227
- (37) J. Konečný<sup>(d)</sup>, 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*

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<sup>80</sup>We did not receive any reviews after 2.5 years since submission. The paper was recently accepted after a change in JMLR leadership.

Konečný: BASP Frontiers Best Contribution Award, 2015

- (36) R. Tappenden<sup>(p)</sup>, M. Takáč<sup>(d)</sup> and P. Richtárik  
**On the complexity of parallel coordinate descent**  
*Optimization Methods and Software* 33(2), 372-395, 2018
- (35) D. Csiba<sup>(d)</sup>, Z. Qu<sup>(p)</sup> 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<sup>(p)</sup>, P. Richtárik, M. Takáč<sup>(d)</sup> and O. Fercoq<sup>(p)</sup>  
**SDNA: Stochastic dual Newton ascent for empirical risk minimization**  
*ICML 2016*

## Prepared in 2014

- (32) Z. Qu<sup>(p)</sup> 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<sup>(p)</sup> 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<sup>(d)</sup>, Z. Qu<sup>(p)</sup> 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<sup>(p)</sup>, P. Richtárik and T. Zhang  
**Quartz: Randomized dual coordinate ascent with arbitrary sampling**  
*NeurIPS 2015*
- (28) J. Konečný<sup>(d)</sup>, J. Liu, P. Richtárik and M. Takáč<sup>(d)</sup>  
**mS2GD: Mini-batch semi-stochastic gradient descent in the proximal setting**<sup>81</sup>  
*NeurIPS 2014 Workshop: Optimization for Machine Learning*
- (27) J. Konečný<sup>(d)</sup>, Z. Qu<sup>(p)</sup> and P. Richtárik  
**S2CD: Semi-stochastic coordinate descent**<sup>82</sup>

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<sup>81</sup>A short version of the journal paper [37]

<sup>82</sup>A short version of the journal paper [30]



- (26) J. Konečný<sup>(d)</sup> and P. Richtárik  
**Simple complexity analysis of simplified direct search**  
arXiv:1410.0390
- (25) J. Mareček<sup>(p)</sup>, P. Richtárik and M. Takáč<sup>(d)</sup>  
**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<sup>(p)</sup>, Z. Qu<sup>(p)</sup>, P. Richtárik and M. Takáč<sup>(d)</sup>  
**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<sup>(p)</sup>, P. Richtárik and M. Takáč<sup>(d)</sup>  
**Matrix completion under interval uncertainty**  
*European Journal of Operational Research 256(1):35–43, 2017*

## Prepared in 2013

- (21) O. Fercoq<sup>(p)</sup> 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<sup>(d)</sup> and P. Richtárik  
**Semi-stochastic gradient descent**  
*Frontiers in Applied Mathematics and Statistics 3:9, 2017*
- (19) P. Richtárik and M. Takáč<sup>(d)</sup>  
**On optimal probabilities in stochastic coordinate descent methods**  
*Optimization Letters 10(6):1233–1243, 2016*
- (18) P. Richtárik and M. Takáč<sup>(d)</sup>  
**Distributed coordinate descent method for learning with big data**  
*Journal of Machine Learning Research 17 (75):1–25, 2016*
- (17) O. Fercoq<sup>(p)</sup> 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<sup>(p)</sup>, 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<sup>(p)</sup>, 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<sup>(d)</sup>, 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<sup>(d)</sup>, 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<sup>(d)</sup>, 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<sup>(m)</sup>, 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<sup>(d)</sup>  
**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<sup>(d)</sup>  
**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<sup>(d)</sup>  
**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<sup>(d)</sup>  
**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*