Nicolas Loizou

Contact Details

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Google Scholar :	*Google Scholar Profile*

Research Interests

Large-Scale Optimization, Machine Learning,
Randomized Algorithms, Randomized Numerical Linear Algebra,
Algorithmic Game Theory, Multi-agent Learning,
Distributed and Decentralized Algorithms, Federated Learning.

Academic Appointments

Assistant Professor, Johns Hopkins University, Jan. 2022 - present
Dep. of Applied Mathematics and Statistics & Mathematical Institute for Data Science
Secondary Appointments: Dep. of Computer Science & Dep. of Electrical and Computer Engineering
Institutes: MINDS, DSAI, ROSEI

IVADO Postdoctoral Research Fellow,
Mila - Quebec Artificial Intelligence Institute, Université de Montréal, Sept. 2019 - Dec. 2021
Hosts: Dr. Simon Lacoste-Julien and Dr. Ioannis Mitliagkas

Industry Appointments

Visiting Researcher, Vector Institute, Toronto, May 2024 - May 2025

Research Intern (AI), Meta, Fundamental AI Research (FAIR) Montreal, Aug.-Dec. 2018
Host: Dr. Michael Rabbat

Education

PhD in Optimization and Operational Research
School of Mathematics, University of Edinburgh, 2015 - 2019
Advisor: Dr. Peter Richtárik

MSc Computing,Imperial College London, 2014-2015

BSc Mathematics, National and Kapodistrian University of Athens, 2010- 2014

Publications

I have published 30+ papers in international journals and major peer-reviewed conferences. The machine learning conferences (ICML, NeurIPS, AISTATS, ICLR) have a low acceptance rate (typically below 25%) and are the primary conferences of high impact in machine learning and artificial intelligence research. My work has also appeared in prominent journals, such as IEEE Transactions on Information Theory, SIAM Journal on Scientific Computing, Computational Optimization and Applications, and Transactions on Machine Learning Research. I have 5 more papers (ArXiv preprints) currently under submission in international journals and major peer-reviewed conferences.

Thesis

N. Loizou.
Randomized Iterative Methods for Linear Systems: Momentum, Inexactness, and Gossip.
Ph.D. Dissertation, The University of Edinburgh, 2019
OR Society's Doctoral Award (runner-up) for the "Most Distinguished Body of Research leading to the Award of a Doctorate in the field of Operational Research" in the United Kingdom.

Journal Papers

D. Nguyen, M. Imami, L. Zhao, J. Wu, A. Borhani, A. Mohseni, M. Khunte, Z. Zhong, V. Shi, S. Yao, Y. Wang, N. Loizou, A. C Silva, P. J Zhang, Z. Zhang, Z. Jiao, I. Kamel, W. Liao, H. Bai
Federated Learning for Renal Tumor Segmentation and Classification on Multi-Center MRI Dataset
Journal of Magnetic Resonance Imaging, 2025

S. Mukherjee, N. Loizou, S. U. Stich
Locally Adaptive Federated Learning
Transactions on Machine Learning Research, 2024

T. Zheng, N. Loizou, P.You, E. Mallada
Dissipative Gradient Descent Ascent Method: A Control Theory Inspired Algorithm for Min-max Optimization
IEEE Control Systems Letters, 2024

A. Khaled, O. Sebbouh, N. Loizou, R. M. Gower, P. Richtárik
Unified Analysis of Stochastic Gradient Methods for Composite Convex and Smooth Optimization
Journal of Optimization Theory and Applications (JOTA), 199(2), 499-540, 2023

R. D'Orazio, N. Loizou, I. Laradji, I. Mitliagkas
Stochastic Mirror Descent: Convergence Analysis and Adaptive Variants via the Mirror Stochastic Polyak Stepsize,
Transactions on Machine Learning Research, 2023

Z. Shi, N. Loizou, P. Richtárik, M. Takac
AI-SARAH: Adaptive and Implicit Stochastic Recursive Gradient Methods
Transactions on Machine Learning Research, 2023

N. Loizou, 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.

N. Loizou, P. Richtárik.
Convergence Analysis of Inexact Randomized Iterative Methods,
SIAM Journal on Scientific Computing 42 (6), A3979-A4016, 2020.

N. Loizou, P. Richtárik.
Momentum and Stochastic Momentum for Stochastic Gradient, Newton, Proximal Point and Subspace Descent Methods
Computational Optimization and Applications, 77 (3), 653-710, 2020. **COAP 2020 Best Paper Prize.**

Peer-reviewed Conference Papers

D. Oikonomou, N. Loizou
Sharpness Aware Minimization: General Analysis and Improved Rates
12th International Conference on Learning Representations (ICLR 2025)

D. Oikonomou, N. Loizou
Stochastic Polyak Step-sizes and Momentum: Convergence Guarantees and Practical Performance
12th International Conference on Learning Representations (ICLR 2025)

S. Choudhury, N. Tupitsa, N. Loizou, S. Horvath, M. Takac, E. Gorbunov
Remove that Square Root: A New Efficient Scale-Invariant Version of AdaGrad
Advances in Neural Information Processing Systems 38 (NeurIPS 2024)

Y. Wang, P. Jian, Y. Dai, C. Jones, H. Sair, J. Shen, N. Loizou, J. Wu, W. Hsu, M. Imami, Z. Jiao, P. Zhang, H. Bai, **Enhancing vision-language models for medical imaging: bridging the 3D gap with innovative slice selection**
Advances in Neural Information Processing Systems 38 (NeurIPS 2024)

K. Emmanouilids, R.Vidal, N. Loizou
Stochastic Extragradient with Random Reshuffling: Improved Convergence for Variational Inequalities
27th International Conference on Artificial Intelligence and Statistics (AISTATS 2024)

S. Zhang, S. Choudhury, S. U. Stich, N. Loizou
Communication-Efficient Gradient Descent-Accent Methods for Distributed Variational Inequalities: Unified Analysis and Local Updates
11th International Conference on Learning Representations (ICLR 2024)
short version: Optimization for Machine Learning Workshop, NeurIPS 2022

S. Choudhury, E. Gorbunov, N. Loizou
Single-Call Stochastic Extragradient Methods for Structured Non-monotone Variational Inequalities: Improved Analysis under Weaker Conditions
Advances in Neural Information Processing Systems 37 (NeurIPS 2023)

S. Sokota, R. D'Orazio, J.Z Kolter, N. Loizou, M. Lanctot, I. Mitliagkas, N. Brown, C. Kroer
A Unified Approach to Reinforcement Learning, Quantal Response Equilibria, and Two-Player Zero-Sum Games,
11th International Conference on Learning Representations (ICLR 2023)
short version: Deep Reinforcement Learning Workshop, NeurIPS 2022

A. Beznosikov, E. Gorbunov, H. Berard, N. Loizou
Stochastic Gradient Descent-Ascent: Unified Theory and New Efficient Methods,
26th International Conference on Artificial Intelligence and Statistics (AISTATS 2023),
short version: Optimization for Machine Learning Workshop, NeurIPS 2022

A. Orvieto, S. Lacoste-Julien, N. Loizou
Dynamics of SGD with Stochastic Polyak Stepsizes: Truly Adaptive Variants and Convergence to Exact Solution,
Advances in Neural Information Processing Systems 36 (NeurIPS 2022)

Eduard Gorbunov, Hugo Berard, Gauthier Gidel, Nicolas Loizou
Stochastic Extragradient: General Analysis and Improved Rates,
The 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022).

Eduard Gorbunov, Nicolas Loizou, Gauthier Gidel
Extragradient Method: $O(1/K)$ Last-Iterate Convergence for Monotone Variational Inequalities and Connections With Cocoercivity,
The 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022).

Chris Junchi Li, Yaodong Yu, Nicolas Loizou, Gauthier Gidel, Yi Ma, Nicolas Le Roux, Michael I Jordan
On the Convergence of Stochastic Extragradient for Bilinear Games with Restarted Iteration Averaging,
The 25th International Conference on Artificial Intelligence and Statistics (AISTATS 2022),
short version: Optimization for Machine Learning Workshop, NeurIPS 2021 (**Oral Presentation**)

Nicolas Loizou, Hugo Berard, Gauthier Gidel, Ioannis Mitliagkas, Simon Lacoste-Julien
Stochastic Gradient Descent-Ascent and Consensus Optimization for Smooth Games: Convergence Analysis under Expected Co-coercivity
Advances in Neural Information Processing Systems 35 (NeurIPS 2021)

R. M. Gower, O. Sebbouh, N. Loizou
SGD for Structured Nonconvex Functions: Learning rates, Minibatching and Interpolation
The 24th International Conference on Artificial Intelligence and Statistics (AISTATS 2021),
short version: Optimization for Machine Learning Workshop, NeurIPS 2020

N. Loizou, S. Vaswani, I. Laradji, S. Lacoste-Julien
Stochastic Polyak Step-size for SGD: An Adaptive Learning Rate for Fast Convergence
The 24th International Conference on Artificial Intelligence and Statistics (AISTATS 2021)
short version: Optimization for Machine Learning Workshop, NeurIPS 2020 (**Spotlight Talk**)

N. Loizou, H. Berard, A. Jolicoeur-Martineau, P. Vincent, S. Lacoste-Julien, I. Mitliagkas
Stochastic Hamiltonian Gradient Methods for Smooth Games
Proceedings of the 37th International Conference on Machine Learning (ICML), pages 6370–6381, 2020.

A Koloskova, N Loizou, S Boreiri, M Jaggi, S. U. Stich
A Unified Theory of Decentralized SGD with Changing Topology and Local Updates
Proceedings of the 36th International Conference on Machine Learning (ICML), pages 5381–5393, 2020.

R. M. Gower, N. Loizou, X. Qian, A. Sailanbayev, E. Shulgin, P. Richtárik.
SGD: General Analysis and Improved Rates,
Proceedings of the 36th International Conference on Machine Learning (ICML), pages 5200–5209, 2019.

M. Assran, N. Loizou, N. Ballas, M. Rabbat.
Stochastic Gradient Push for Distributed Deep Learning,
Proceedings of the 36th International Conference on Machine Learning (ICML), pages 344–353, 2019.
short version: Systems for ML workshop, NeurIPS 2018

N. Loizou, M. Rabbat, and P. Richtárik.
Provably accelerated randomized gossip algorithms.
International Conference on Acoustics, Speech and Signal Processing (ICASSP), pages 7505–7509, 2019.

N. Loizou, P. Richtárik.
Accelerated gossip via stochastic heavy ball method.
Annual Allerton Conference on Communication, Control, and Computing (Allerton), pages 927–934, 2018.

N. Loizou, P. Richtárik.
A New Perspective on Randomized Gossip Algorithms,
IEEE Global Conference on Signal and Information Processing (GlobalSIP), pages 440-444, 2016.

N. Loizou.
Distributionally Robust Games with Risk-Averse Players,
Proceedings of 5th International Conference on Operations Research and Enterprise Systems (ICORES),
pages 186-196, 2016.

Preprints

R. M. Gower, G. Garrigos, N. Loizou, K. Mishchenko, D. Oikonomou, F. Schaipp
Analysis of an Idealized Stochastic Polyak Method and its Application to Black-Box Model Distillation
arxiv preprint, arXiv:2504.01898, April. 2025

T. Yoon, S. Choudhury, N. Loizou
Multiplayer Federated Learning: Reaching Equilibrium with Less Communications arxiv preprint,
arXiv:2501.08263, Jan. 2025

Peer-reviewed Workshop Papers / Others

Siqi Zhang, Nicolas Loizou
ProxSkip for Stochastic Variational Inequalities: A Federated Learning Algorithm for Provable Communication Acceleration
Optimization for Machine Learning Workshop, NeurIPS 2022

R. D'Orazio, N. Loizou, I. H. Laradji, I. Mitliagkas
On Stochastic Mirror Descent: Convergence Analysis and Adaptive Variants
ICML 2021 - Workshop: Beyond first-order methods in ML systems

F. Hanzely, J. Konečný, N. Loizou, P. Richtárik, D. Grishchenko.
A Privacy Preserving Randomized Gossip Algorithm via Controlled Noise Insertion,
NeurIPS 2018 - Privacy Preserving Machine Learning Workshop

N. Loizou, P. Richtárik.
Linearly convergent stochastic heavy ball method for minimizing generalization error,
NeurIPS 2017 - Optimization for Machine Learning Workshop

F. Hanzely, J. Konečný, N. Loizou, P. Richtárik, D. Grishchenko
Privacy Preserving Randomized Gossip Algorithms
arXiv preprint arXiv:1706.07636, June 2017

N. Loizou.
Distributionally Robust Game Theory,
MSc Thesis, Imperial College London, 2015.

Mentoring and Advising

Current Members

- **Postdocs**

  - Ruhui Jin (Sept 2025 - present)
  - TaeHo Yoon (Dec 2024 - present)

- **PhD Students:**

  - Dimitrios Oikonomou (CS), (Sept. 2023 - present)
  - Sayantan Choudhury (AMS), (Sept. 2022 - present)

- **MSE Students:**

  - Ezra Greenberg, (Sept 2025 - Present)
  - Bhavika Balani, (Jan 2025 - Present)
  - Jingyi Gu, (Jan 2025 - Present)

Past Members

- **Postdocs**

  - Siqi Zhang (July 2022 - July 2024)
    Next: Assistant Professor, Department of Industrial Engineering, Nanjing University.

- **MSE Students:**

  - Konstantinos Emmanouilidis (CS), (Sept. 2022 - Sept. 2024)
    Next: PhD student, Department of Computer and Information Science, UPenn.
  - Mengtong Xu (June 2022 - Dec. 2022)
    Next: PhD Student, Department of Computer Science and Technology, Tsinghua University.
  - Yichuan Wang (June 2022 - Dec. 2022)
    Next: PhD Student, Department of Electrical and Computer Engineering, Boston University.
  - Zhichao Jia (June 2022 - Dec. 2022)
    Next: PhD Student, School of Industrial and Systems Engineering, Georgia Tech.

- **Undergraduate Students:**

  - Sun Tanomkiattikun (Jan. 2025 - May 2025)

- **Research Interns:**

  - Eduard Gorbunov (June 2021 - Sept. 2021) from MIPT

> – Antonio Orvieto (June 2021 - Sept. 2021) from ETH Zurich

- **High-school Students:**

  – Christopher Davis (Summer 2024)
  – Carter Pisano (Summer 2023)

Funding

JHU-Catalyst Award 2025 ($100,000): Reaching Equilibrium with Less Communication: Multi-player Federated Learning for Multi-agent LLM Systems, *PI:* N.Loizou (single-PI)

NSF: CIS Medium ($900,000): Post-Modern Min-Max Optimization Theory: Departure from Classical Minimization Theory. co-PI: Ernest Ryu (UCLA), 2025-2028 (JHU Part: $525,000)

JHU-Discovery Award 2024 ($100,000): Data Valuation in Distributed and Private Large-Scale Radiology (share: 25%)

Accelerated Translational Incubator Pilot Program (co-PI)($50,000):Enhancing Large Vision-Language Model Efficacy through Representative Slice Selection from 3D Medical Imaging Data (share: 25%)

CISCO Research Award (single-PI) ($110,000): Multi-Player Federated Learning: Efficient Algorithms and Applications (2023-2025)

JHU Bridge Grant, 2022 ($50,000)

IVADO Fellow Postdoctoral Scholarship: 270000$ scholarship + 45000$ research fund + 10000$ other expenses, fully funded by IVADO, 2020-2023. (Grant ended once I started at JHU)

Awards

- **COAP 2020 Best paper prize**: Our paper "Momentum and stochastic momentum for stochastic gradient, Newton, proximal point and subspace descent methods," published in Computational Optimization and Application, was voted by the editorial board as the best paper appearing in the journal in 2020.

- 2019 **OR Society's Doctoral Award** (runner-up) for the "Most Distinguished Body of Research leading to the Award of a Doctorate in the field of Operational Research" in the UK.

- Top/Highlighted reviewer of ML conferences. Examples: ICLR 2022, ICML 2020

Awards during PhD:

- Scholarship from the **A.G. Leventis Foundation** for PhD studies at University of Edinburgh

- **Principal's Career Development Scholarship**: Highly competitive PhD scholarship awarded to several students across University of Edinburgh

Presentations

- 02–05 June, 2026: **Siam Conference on Optimization**, Edinburgh, UK.

- 12 Dec 2025: **Department of Mathematics Seminar**, UCLA, Los Angeles.

- 24-28 April 2025: **ICLR 2025**, Singapore.

- 15 Jan 2025: **ROSEI Summit 2025**, Johns Hopkins University

- 25 Nov 2024: **Departmental Colloquium, Rice CMOR**, Rice University

- 21 Nov 2024: **Princeton Optimization Seminar**, Princeton University

- 12 Nov 2024: **CSE DSI Machine Learning Seminar Series**, University of Minnesota.

- 30 Oct 2024: **SILO Seminar**, University of Wisconsin, Madison

- 21-26 Jul 2024: **25th International Symposium on Mathematical Programming**, Montreal, Canada.

- 18 June 2024: **Vector Institute AI Seminar**, Vector Institute, Toronto, Canada.

- 08-11 May 2024: **ICLR 2024**, Vienna, Austria.

- 07 May 2024: **Computational Optimization seminar**, Imperial College London, UK

- 02-04 May 2024: **AISTATS 2024**, València, Spain.

- 22-24 Mar 2024: **INFORMS Optimization Society (IOS) Conference**, Rice University, Texas, USA.

- 10-16 Dec 2023: **NeurIPS 2022**, New Orleans, USA

- 20 Oct 2023: **Continuous Optimization Seminar**, University of Waterloo, Waterloo, Canada.

- 21 Sept 2023: **Flatiron Institute Seminar**, New York City, USA.

- 29 Aug 2023: **JHU ECE Seminar**, Baltimore, Maryland, USA.

- 10-14 Jul 2023: **14th International conference on Sampling Theory and Applications (SampTA 2023)**, Yale University, U.S.

- 31 May-03 Jun 2023: **SIAM Conference on Optimization (OP23)**, Seattle, Washington, U.S.

- 25-27 Apr 2023: **AISTATS 2023**, València, Spain

- 22-24 Mar 2023: **57th Annual Conference on Information Science and Systems**, Baltimore, USA

- 22-24 Feb 2023: **Coordinated Science Laboratory Student Conference (CSLSC)**, The University of Illinois at Urbana-Champaign, USA

- 28 Nov-03 Dec 2022: **NeurIPS 2022**, New Orleans, USA

- 25-28 Jul 2022: **International Conference on Continuous Optimization (ICCOPT) 2022** , Lehigh University, Bethlehem, Pennsylvania.

- 08 March 2022: **MINDS seminar**, Johns Hopkins University, Baltimore, US

- 06-14 Dec 2021: **NeurIPS 2021**, (virtual conference)

- 24-27 Oct 2021: **INFORMS annual meeting**, (virtual conference)

- 20-23 Jul 2021: **Siam Conference On Optimization**, (virtual conference)

- 07-09 Jul 2021: **18th International Workshop on Continuous Optimization**, (virtual conference)

- 28 April 2021: **Computer Science department, Rice University**.

- 13-15 Apr 2021: **24th International Conference on Artificial Intelligence and Statistics** (AISTATS)

- 23 Feb 2021: **University of British Columbia (Okanagan campus)**.

- 16 Feb 2021: **ECE Rising Star Seminar Series, University of Wisconsin-Madison**.

- 28 Jan 2021: **MINDS 2021 Winter Symposium, Johns Hopkins University**.

- 11 Dec 2020: **Optimization for Machine Learning Workshop, NeurIPS**, Spotlight Talk.

- 02 Dec 2020: **Montreal Machine Learning and Optimization (MTL MLOpt) Seminar**.

- 30 Nov 2020: **Smooth Games - Reading Group EPFL**, Virtual Talk.

- 07-13 Nov 2020: **INFORMS annual meeting**, Virtual Conference.

- 12-18 Jul 2020: **37th International Conference on Machine Learning (ICML)**, Virtual Conference

- 06-09 Jul 2020: **SIAM Conference on Imaging Science**, Virtual Conference

- 19 March 2020: **54th Annual Conference on Information Sciences and Systems (CISS)**, Virtual Conference.

- 06 Aug 2019: **International Conference on Continuous Optimization (ICCOPT)** , Berlin, Germany

- 11 Jun 2019: **36th International Conference on Machine Learning (ICML)** , Los Angeles, USA

- 14 May 2019: **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)**, Brighton, United Kingdom

- 28 Apr 2019: **All Hands Meetings on Big Data Optimization** , KAUST, Saudi Arabia

- 8 Dec 2018: **Privacy Preserving Machine Learning Workshop, NIPS 2018** , Montreal , Canada

- 16 Nov 2018: **MILA Tea Talks** , University of Montreal , Montreal , Canada

- 13 Nov 2018: **Mathematics in Machine Learning Seminar** , McGill University, Montreal , Canada

- 04 Oct 2018: **56th Annual Allerton Conference on Communication, Control, and Computing (Allerton)** , Monticello, IL, USA

- 04 Sept 2018: **Facebook Montreal Research Seminar** , Montreal , Canada

- 13-17 Aug 2018: **DIMACS/TRIPODS/MOPTA** , Lehigh University, Bethlehem, PA, USA

- 1-6 Jul 2018: **International Symposium on Mathematical Programming** , Bordeaux, France **(invited)**

- 11 Apr 2018: **OptML group Seminar** , Lehigh University,Bethlehem, PA, USA

- 05 Feb 2018, **Optimization and Big Data 2018, KAUST**, Thuwal, Saudi Arabia,

- 8 Dec 2017, **NIPS Workshop on Optimization for Machine Learning**, Los Angeles, USA

- 05 Oct 2017, **RISELab, Department of Computer Science, UC Berkeley**, California, USA

- 31 May 2017, **Conference on Computational Management Science**, Bergamo, Italy, **(invited)**

- 22 May 2017, **SIAM Conference on Optimization**, Vancouver, British Columbia, Canada **(invited)**

- 12 Apr 2017, **KAUST Research Conference 2017: Visual Computing - Modeling and Reconstruction**, KAUST, Saudi Arabia

- 12 Jan 2017, **SIAM UKIE Annual Meeting 2017**, Glasgow, UK

- 09 Dec 2016, **IEEE Global Conference on Signal and Information Processing (GlobalSIP)**,Washington D.C, USA

- 12 Oct 2016, **Data Science Research Day 2016**, Edinburgh, UK

- 07 Sept 2016, **5th IMA Conference on Numerical Linear Algebra and Optimisation**, Birmingham, UK, **(organizer of 2 mini-symposia)**

- 26 May 2016, **3DT and Friends Student Conference**, Edinburgh, UK

- 16 May 2016, **Machine Learning Summer School (MLSS)**, Cádiz, Spain

- 23 Feb 2016: **5th International Conference on Operational Research and Enterprise Systems (ICORES)**, Rome, Italy

Teaching[1]

- **Johns Hopkins University**:

  Fall 2024: Iterative Algorithms in Machine Learning: Theory and Applications* (EN.553.767)
  Fall 2024: Optimization for Data Science* (EN.553.662)
  Spring 2023: Iterative Algorithms in Machine Learning: Theory and Applications* (EN.553.767)
  Fall 2023: Optimization for Data Science* (EN.553.662)
  Spring 2023: Iterative Algorithms in Machine Learning: Theory and Applications* (EN.553.767)
  Fall 2022: Large-Scale Optimization for Data Science* (EN.553.669)

- **The University of Edinburgh**:

  Tutor for the courses:
  Spring 2018: Modern Optimization Methods for Big Data Problems.
  Spring 2017: Modern Optimization Methods for Big Data Problems, Optimization in Finance.
  Autumn 2016: Fundamentals of optimization, Simulation, Probability.
  Spring 2016: Proofs and Problem Solving.

- **Other Teaching Experience**:

  Summers 2013-2020: Lifeguard/First-Aid trainer for adult classes (District administration Larnaca, Cyprus).

Research Visits

- 10 Apr – 15 May 2018,
  Optimization and Machine Learning Research Group, Lehigh University (Dr. Martin Takac)

- 15 Mar – 5 May 2017, 01 Feb – 15 Mar 2018, 07 April – 15 May 2019
  Visual Computing Center, KAUST, Thuwal, KSA (Dr. Peter Richtarik)

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[1]I have proposed and developed from scratch courses marked with an asterisk.

- 20–30 of July 2016,
  Machine Learning and Optimization Group, Microsoft Research, Seattle, USA. (Dr. Lin Xiao)

Professional Service

- **Organization and Chairing:**

  - **Mini-symposium Organizer:** SIAM Conference on Optimization (OP26), Edinburgh, United Kingdom, June 02-05, 2026
  - **Conference Organization Committee:** DeepMath Conference 2023 and 2024
  - **Mini-symposium Organizer:** "Adaptive, Line-Search, and Parameter-Free Stochastic Optimization". International Symposium on Mathematical Programming, Montreal, Canada, July 21-26, 2024
  - **Mini-symposium Organizer:** "Recent Advancements in Optimization Methods for Machine Learning". SIAM Conference on Optimization, Seattle, Washington, US May 31-June 03, 2023
  - **Mini-symposium Organizer:** "Optimization Methods in Machine Learning". 57th Annual Conference on Information Science and Systems (CISS), Baltimore, USA, March 22-24, 2023
  - **Cluster Co-Chair**, "Optimization for Data Science and Machine Learning" at the International Conference on Continuous Optimization (ICCOPT) 2022, Lehigh University, Bethlehem, Pennsylvania (with S. Stich).
  - **Mini-symposium Organizer:** " Recent Advancements in Optimization Methods for Machine Learning". SIAM Conference on Optimization, Virtual Conference, 20-23 Jul 2021
  - **Session Chair:** "Stochastic Optimization Algorithms". INFORMS Annual Meeting, Phoenix AZ, USA, November 2018
  - **Mini-symposium Organizer:** "Optimization Methods in Machine Learning". 5th IMA Conference on Numerical Linear Algebra and Optimisation , Univeristy of Birmingham, UK, September 2016
  - **Mini-symposium Organizer:** "Randomized Numerical Linear Algebra". 5th IMA Conference on Numerical Linear Algebra and Optimisation , Univeristy of Birmingham, UK, September 2016
  - **Seminar Organizer:** "All Hands Meetings on Big Data Optimization" The University of Edinburgh, Scotland, 2015-2017

- **Editorial Board for:**

  Information and Inference: a Journal of the IMA **(Associate Editor)**

- **Area Chair for:**

  International Conference on Machine Learning (ICML): 2024, 2025
  International Conference on Artificial Intelligence and Statistics (AISTATS): 2025

- **Reviewer for:**

Grant Proposals:	*Department of Energy (DOE)*
	National Science Foundation (NSF)
Journals:	*Mathematical Programming,*
	SIAM Journal on Optimization (SIOPT)
	Mathematics of Operations Research
	Journal of Machine Learning Research (JMLR)
	European Journal of Operational Research,
	Numerical Algorithms,
	Numerical Linear Algebra with Applications,
	IEEE Transactions on Signal and Information Processing over Networks,
	SIAM Journal on Mathematics of Data Science (SIMODS),
Conferences:	*International Conference on Machine Learning (ICML): 2019-present*
	Annual Conference on Neural Information Processing Systems (NeurIPS): 2020-present
	International Conference on Learning Representations (ICLR): 2019-present
Workshops:	*Smooth Games Optimization and Machine Learning Workshop, NeurIPS 2019*
	Optimization for Machine Learning Workshop, NeurIPS: 2020-present

- **Service at Johns Hopkins**

  – AI-X Foundry Website Committee (Chair)

  – MINDS Fellows Committee (Chair), 2023-present

  – Organizer of MINDS Weekly Seminar, 2023-present

  – AMS Communications & Marketing Committee 2022-2024

  – MSE in Data Science Admission Committee 2022-2024

  – Data Science Postdoctoral Fellows Search Committee 2022-2023

  – Graduate Board Oral Examination:
    * Maryam Esmat (Physics & Astronomy), 2024
    * Wilson Gregory (AMS), 2024
    * Mao Hong (AMS), 2023
    * Ning Liu (AMS), 2023
    * Tianqi Zheng (ECE), 2023

  – PhD Thesis Committee Member:
    * Mao Hong (AMS), 2024
    * Tianqi Zheng (ECE), 2024

Last updated: September 14, 2025