# Nicolas Loizou

## Contact Details


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| **Address :** | Johns Hopkins University,<br>Wyman Park Building, Room S449,<br>3400 North Charles Street, Baltimore, MD 21218 |
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| **Website :** | https://nicolasloizou.github.io |
| **Google Scholar :** | *Google Scholar Profile* |


## Fields of Interests

Large-Scale Optimization, Machine Learning, Convex and Non-Convex Analysis, Randomized Algorithms, Randomized Numerical Linear Algebra, Data Science, Distributed and Decentralized Algorithms, Deep Learning.

## Professional Appointments

**Assistant Professor,**
**Johns Hopkins University, Dep. of Applied Mathematics and Statistics**, Jan. 2022 - present
Mathematical Institute for Data Science (Primary appointment)
Dep. of Computer Science (Secondary appointment)

**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

**Research Intern (AI),**
**Facebook Research, FAIR Montreal**, Aug.-Dec. 2018
*Project:* Distributed Non-convex Optimization Algorithms and Deep Learning
*Mentor:* Dr. Michael Rabbat

## Education

**University of Edinburgh, School of Mathematics**
**PhD in Operational Research and Optimization, 2015 - 2019**
*PhD Thesis:* "Randomized Iterative Methods for Linear Systems: Momentum, Inexactness and Gossip"
*Supervisor:* Dr. Peter Richtárik

**Imperial College London**
**MSc in Computing (Computational Management Science), 2014-2015**
*MSc Thesis:* "Distributionally Robust Game Theory" with Distinction 83%
*Supervisors:* Dr. Wolfram Wiesemann and Dr. Panos Parpas

**National and Kapodistrian University of Athens**
**BSc Mathematics, 2010- 2014**
*Specialization*: Applied Mathematics (Statistics and Operational Research).
*First-Class Honours (Άριστα)*: Upper 1% of 350 graduating students

# Publications

I have published 21 papers in international journals and major peer-reviewed conferences.
The machine learning conferences (ICML, NeurIPS, AISTATS) have a low acceptance rate (typically below 25%) and are the primary conferences of high impact in machine learning and artificial intelligence research. ICASSP and GlobalSIP are the two flagship conferences of the IEEE Signal Processing Society, while Allerton Conference is one of the major conferences of the IEEE Control Systems Society / IEEE Information Theory Society. I also have 3 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

Z. Shi, N. Loizou, P. Richtárik, M. Takac
**AI-SARAH: Adaptive and Implicit Stochastic Recursive Gradient Methods**
Transactions on Machine Learning Research, 2835-8856, 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

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)

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

S. Choudhury, E. Gorbunov, N. Loizou
**Single-Call Stochastic Extragradient Methods for Structured Non-monotone Variational Inequalities: Improved Analysis under Weaker Conditions**
arXiv preprint arXiv:2302.14043, Feb. 2023, (Under submission)

R. D'Orazio, N. Loizou, I. Laradji, I. Mitliagkas
**Stochastic Mirror Descent: Convergence Analysis and Adaptive Variants via the Mirror Stochastic Polyak Stepsize,** arXiv preprint arXiv:2110.15412, October 2021, (Under submission)
short version: Deep Reinforcement Learning Workshop, NeurIPS 2022

A. Khaled, O. Sebbouh, N. Loizou, R. M. Gower, P. Richtárik
**Unified Analysis of Stochastic Gradient Methods for Composite Convex and Smooth Optimization**
arXiv preprint arXiv:2006.11573, June 2020, (Under submission)

## 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

- **Postdocs**
  - Siqi Zhang (July 2022 - present)
- **PhD Students:**
  - Konstantinos Emmanouilidis (Sept. 2022 - present)
  - Sayantan Choudhury (Sept. 2022 - present)
- **MSE Students:**
  - Mengtong Xu (June 2022 - present)
  - Yichuan Wang (June 2022 - present)
  - Zhichao Jia (June 2022 - present)
- **Research Interns:**
  - Eduard Gorbunov (June 2021 - Sept. 2021) from MIPT
  - Antonio Orvieto (June 2021 - Sept. 2021) from ETH Zurich

## Achievements & Awards

- **2022:**
  - JHU Bridge Grant ($50,000)
  - Highlighted Reviewer of ICLR 2022
- **2021:**
  - **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.
- **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.
  - ICML 2020 Top Reviewer
- **2019:**

  - **IVADO Fellow Postdoctoral Scholarship**: 270000$ scholarship + 45000$ research fund + 10000$ other expenses, fully funded by IVADO, 2020-2023. (Grant ended once I starter at JHU)
  - **ICML Travel Award**: Travel support for attending ICML 2019 (Los Angeles).
  - Travel award from **Amazon Scalable Machine Learning, Berlin** for attending International Conference on Continuous Optimization (ICCOPT) , Berlin, Germany.

- **2018:**
  - **Edinburgh University Travel Award** for visiting Optimization and Machine Learning Research Group, Lehigh University, 10 Apr – 15 May 2018.
  - Travel award from **Amazon Scalable Machine Learning, Berlin** for attending 23rd International Symposium on Mathematical Programming , Bordeaux, France
  - Travel award from **Amazon Scalable Machine Learning, Berlin** for attending DIMACS/TRIPODS/MOPTA, Lehigh University,Bethlehem, PA, USA

- **2017:**
  - **Grant, Edinburgh Research and Development Fund** (cover my expenses for the attendance of Conference on Computational Management Science, Bergamo Italy)
  - Travel award from **Laura Wisewell Travel Fund** for attending SIAM Conference on Optimization
  - **SIAM Student Travel Award** for attending SIAM Conference on Optimization

- **2016:**
  - **IEEE Signal Processing Society Travel Grant** for attending GlobalSip
  - **PCMI Scholarship.** Cover almost all of my expenses for the attendance of the PCMI Summer School in Utah "Mathematics of Data"
  - Scholarship from the **A.G. Leventis Foundation** for PhD studies at University of Edinburgh (2016–2017)
  - **Grant, Edinburgh Research and Development Fund** (cover my expenses for the attendance of Machine Learning Summer School in Cadiz, Spain)
  - **ICORES** Travel Award

- **2015:**
  - Travel award from **Laura Wisewell Travel Fund** for attending International Conference on Operations Research and Enterprise Systems in Rome
  - Scholarship from **A.G. Leventis Foundation** for PhD studies at University of Edinburgh (2015-2016)
  - **Principal's Career Development Scholarship**: Highly competitive PhD scholarship awarded to several students across University of Edinburgh

- **2014:**
  - **MSc Full Scholarship from Imperial College London Department of Computing** (Scholarships are awarded on academic merit to outstanding applicants.)
  - Scholarship from **A.G. Leventis Foundation** for MSc studies at Imperial College (2014-2015)

## Presentations (Upcoming and Past)

*Talks*

- 10-14 July 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 April 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
  title: "Dynamics of SGD with Stochastic Polyak Stepsizes: Truly Adaptive Variants and Convergence to Exact Solution"
- 25-28 July 2022: **International Conference on Continuous Optimization (ICCOPT) 2022** , Lehigh University, Bethlehem, Pennsylvania.
  title:"Stochastic Gradient Descent-Ascent: Unified Theory and New Efficient Methods"
- 08 March 2022: **MINDS seminar**, Johns Hopkins University, Baltimore, US
  title: "Stochastic Iterative Methods for Smooth Games: Practical Variants and Convergence Guarantees"
- 06-14 Dec 2021: **NeurIPS 2021**, (virtual conference)
  title: "Stochastic Gradient Descent-Ascent and Consensus Optimization for Smooth Games: Convergence Analysis under Expected Co-coercivity"
- 24-27 Oct 2021: **INFORMS annual meeting**, (virtual conference)
  title: "Stochastic Gradient Descent-Ascent and Consensus Optimization for Smooth Games: Convergence Analysis under Expected Co-coercivity"
- 20-23 Jul 2021: **Siam Conference On Optimization**, (virtual conference)
  title: "Stochastic Polyak Step-size for SGD: An Adaptive Learning Rate for Fast Convergence"
- 07-09 Jul 2021: **18th International Workshop on Continuous Optimization**, (virtual conference)
  title: "Stochastic Polyak Step-size for SGD: An Adaptive Learning Rate for Fast Convergence"
- 28 April 2021: **Computer Science department, Rice University**.
  title: "Large-Scale Optimization for Machine Learning and Data Science"
- 13-15 Apr 2021: **24th International Conference on Artificial Intelligence and Statistics** (AISTATS)
  title: "Stochastic Polyak step-size for SGD: An adaptive learning rate for fast convergence"
  title: "SGD for structured nonconvex functions: Learning rates, minibatching and interpolation"
- 23 Feb 2021: **University of British Columbia (Okanagan campus)**.
  title: "Large-Scale Optimization for Machine Learning and Data Science"
- 16 Feb 2021: **ECE Rising Star Seminar Series, University of Wisconsin-Madison**.
  title: "Large-Scale Optimization for Machine Learning and Data Science"
- 28 Jan 2021: **MINDS 2021 Winter Symposium, Johns Hopkins University**.
  title: "Large-Scale Optimization for Machine Learning and Data Science"

- 11 Dec 2020: **Optimization for Machine Learning Workshop, NeurIPS**, Spotlight Talk.
  title: "Stochastic Polyak Step-size for SGD: An Adaptive Learning Rate for Fast Convergence"
- 02 Dec 2020: **Montreal Machine Learning and Optimization (MTL MLOpt) Seminar**.
  title: "SGD for Modern Machine Learning: Practical Variants and Convergence Guarantees"
- 30 Nov 2020: **Smooth Games - Reading Group EPFL**, Virtual Talk.
  title: "Stochastic Hamiltonian Gradient Methods for Smooth Games"
- 07-13 Nov 2020: **INFORMS annual meeting**, Virtual Conference.
  title: "Stochastic Polyak Step-size for SGD: An Adaptive Learning Rate for Fast Convergence"
- 12-18 Jul 2020: **37th International Conference on Machine Learning (ICML)**, Virtual Conference
  title: "Stochastic Hamiltonian Gradient Methods for Smooth Games"
  title: "A Unified Theory of Decentralized SGD with Changing Topology and Local Updates"
- 06-09 Jul 2020: **SIAM Conference on Imaging Science**, Virtual Conference
  title: "Revisiting Randomized Gossip Algorithms: A Novel Framework through Kaczmarz-type Methods"
- 19 March 2020: **54th Annual Conference on Information Sciences and Systems (CISS)**, Virtual Conference.
  title: "Revisiting Randomized Gossip Algorithms: A Novel Framework through Kaczmarz-type Methods"
- 06 Aug 2019: **International Conference on Continuous Optimization (ICCOPT)** , Berlin, Germany
  title: "Stochastic Gradient Push for Distributed Deep Learning"
- 11 Jun 2019: **36th International Conference on Machine Learning (ICML)** , Los Angeles, USA
  title: "SGD: General Analysis and Improved Rates"
- 28 Apr 2019: **All Hands Meetings on Big Data Optimization** , KAUST, Saudi Arabia
  title: "SGD: General Analysis and Improved Rates"
- 8 Dec 2018: **Privacy Preserving Machine Learning Workshop, NIPS 2018** , Montreal , Canada
  title: "A Privacy Preserving Randomized Gossip Algorithm via Controlled Noise Insertion"
- 16 Nov 2018: **MILA Tea Talks** , University of Montreal , Montreal , Canada
  title: "Stochastic Heavy Ball Method, Average Consensus and Distributed Deep Learning"
- 13 Nov 2018: **Mathematics in Machine Learning Seminar** , McGill University, Montreal , Canada
  title: "Momentum and stochastic momentum for stochastic gradient, Newton, proximal point and subspace descent methods"
- 04 Oct 2018: **56th Annual Allerton Conference on Communication, Control, and Computing (Allerton)** , Monticello, IL, USA
  title: "Accelerated Gossip via Stochastic Heavy Ball Method"
- 04 Sept 2018: **Facebook Montreal Research Seminar** , Montreal , Canada
  title: "Randomized Optimization Methods for Large Scale Problems"
- 13-17 Aug 2018: **DIMACS/TRIPODS/MOPTA** , Lehigh University, Bethlehem, PA, USA
  title: "Revisiting the Foundations of Randomized Gossip Algorithms"
- 1-6 Jul 2018: **International Symposium on Mathematical Programming** , Bordeaux, France **(invited)**
  title: "Convergence Analysis of Inexact Randomized Iterative Methods"

- 11 Apr 2018: **OptML group Seminar** , Lehigh University,Bethlehem, PA, USA
  title: "Momentum and Stochastic Momentum for Stochastic Gradient, Newton, Proximal Point and Subspace Descent Methods"
- 05 Feb 2018, **Optimization and Big Data 2018, KAUST**, Thuwal, Saudi Arabia,
  talk: "Momentum and Stochastic Momentum for Stochastic Gradient, Newton, Proximal Point and Subspace Descent Methods"
- 05 Oct 2017, **RISELab, Department of Computer Science, UC Berkeley**, California, USA
  talk: "Stochastic and Doubly Stochastic Dual Heavy Ball Methods for Quadratic Optimization with Low-Rank Hessian"
- 31 May 2017, **Conference on Computational Management Science**, Bergamo, Italy, **(invited)**
  talk: "Distributionally Robust Games with Risk-Averse Players "
- 22 May 2017, **SIAM Conference on Optimization**, Vancouver, British Columbia, Canada **(invited)**
  talk: "Stochastic Heavy Ball Method for Solving Linear Systems"
- 09 Dec 2016, **IEEE Global Conference on Signal and Information Processing (GlobalSIP)**, Washington D.C, USA
  talk: "A new Perspective on Randomized Gossip Algorithms"
- 07 Sept 2016, **5th IMA Conference on Numerical Linear Algebra and Optimisation**, Birmingham, UK, **(organizer of 2 mini-symposia)**
  talk: "Randomized Gossip Algorithms: Complexity, Duality and New Variants"
- 01 Aug 2016, **Young Researchers in Mathematics Conference (YRM)**, Saint Andrews, UK
  talk: "A new Perspective on Randomized Gossip Algorithms"
- 23 Feb 2016: **5th International Conference on Operational Research and Enterprise Systems (ICORES)**, Rome Italy
  talk: "Distributionally Robust Games with Risk Averse Players"

*Posters*

- 12 Jun 2019: **36th International Conference on Machine Learning (ICML)**, Los Angeles, USA
  title: "Stochastic Gradient Push for Distributed Deep Learning"
- 11 Jun 2019: **36th International Conference on Machine Learning (ICML)**, Los Angeles, USA
  title: "SGD: General Analysis and Improved Rates"
- 14 May 2019: **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)**, Brighton, United Kingdom
  title: "Provably Accelerated Randomized Gossip Algorithms"
- 8 Dec 2018: **Privacy Preserving Machine Learning Workshop, NIPS 2018**, Montreal , Canada
  title: "A Privacy Preserving Randomized Gossip Algorithm via Controlled Noise Insertion"
- 13-17 Aug 2018: **DIMACS/TRIPODS/MOPTA**, Lehigh University,Bethlehem, PA, USA
  poster: "Accelerated gossip via stochastic heavy ball method."
- 5-8 Feb 2018, **Optimization and Big Data 2018, KAUST**, Thuwal, Saudi Arabia,
  poster: "Linearly convergent stochastic heavy ball method for minimizing generalization error"
- 8 Dec 2017, **NIPS Workshop on Optimization for Machine Learning**, Los Angeles, USA
  poster: "Linearly convergent stochastic heavy ball method for minimizing generalization error"

- 12 April 2017, **KAUST Research Conference 2017: Visual Computing - Modeling and Reconstruction**, KAUST, Saudi Arabia
  poster: "A New Perspective on Randomized Gossip Algorithm"
- 12 Jan 2017, **SIAM UKIE Annual Meeting 2017**, Glasgow, UK
  poster: "Randomized Gossip Algorithms: Complexity, Duality and New Variants"
- 12 Oct 2016, **Data Science Research Day 2016**, Edinburgh, UK
  poster: "Randomized Gossip Algorithms: Complexity, Duality and New Variants"
- 26 May 2016, **3DT and Friends Student Conference**, Edinburgh, UK
  poster: "Randomized Gossip Algorithms: New Insights"
- 16 May 2016, **Machine Learning Summer School (MLSS)**, Cádiz, Spain
  poster: "Randomized Gossip Algorithms: New Insights"

# Teaching[1]

- **Johns Hopkins University**:

  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.

- **National and Kapodistrian University of Athens**:

  Main Instructor:
  Autumn 2013 - Spring 2014: Computer Science laboratories (Matlab and Python). I was the sole person responsible for designing and executing these labs during two semesters.

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

[1] I have proposed and developed from scratch courses marked with an asterisk. I was a TA (teaching assistant / tutor) for all other courses.

# Professional Service

- **Reviewer for:**

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| Journals: | *European Journal of Operational Research*,<br>*Numerical Algorithms (2)*,<br>*Numerical Linear Algebra with Applications*,<br>*IEEE Transactions on Signal and Information Processing over Networks*,<br>*SIAM Journal on Mathematics of Data Science (SIMODS)*,<br>*Mathematical Programming*,<br>*Journal of Machine Learning Research (JMLR)* |
| Conferences: | *International Conference on Machine Learning (ICML): 2019-2021*<br>*Annual Conference on Neural Information Processing Systems (NeurIPS): 2020-2022*<br>*International Conference on Learning Representations (ICLR): 2019-2023* |
| Workshops: | *Smooth Games Optimization and Machine Learning Workshop, NeurIPS 2019*<br>*Optimization for Machine Learning Workshop, NeurIPS: 2020-2022* |

- **Organization and Chairing:**
  - **Mini-symposium Organizer:** " Recent Advancements in Optimization Methods for Machine Learning". SIAM Conference on Optimization, Seattle, Washington, US May 31-June 03, 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

- **Service at Johns Hopkins**
  - AMS Communications & Marketing Committee 2022-2023
  - MSE in Data Science Admission Committee 2022-2023
  - Data Science Postdoctoral Fellows Search Committee 2022-2023
  - MSE in Data Science Admission Committee 2021-2022

## Skills and interests

- **Computer Skills:**
  - Operating systems: Microsoft Windows, Linux, Mac OSX
  - Programming languages: Julia, Python, Matlab, LaTeX
  - Deep Learning: PyTorch
  - Optimization Software: Yalmip, CVX
- **Interests:**
  - Swimming: Avid swimmer, competing in countless Pancyprian competitions and gaining numerous medals.
  - Music, film, reading and traveling.
  - Member of: SIAM, INFORMS, MOS (Mathematical Optimization Society)
- **Languages:**
  - Greek (native), English (fluent)

Last updated: March 2, 2023