

Ahmet Alacaoglu

PERSONAL INFORMATION

Department of Mathematics
University of British Columbia
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Vancouver, BC V6T 1Z2, Canada

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ahmetalacaoglu.github.io

RESEARCH INTERESTS

Continuous/stochastic optimization, machine learning, min-max games/variational inequalities/monotone operator theory, reinforcement learning theory

EMPLOYMENT HISTORY

University of British Columbia, Vancouver, BC, Canada
Department of Mathematics

Assistant Professor

July 2024 - present

University of Wisconsin–Madison, Madison, WI, USA

Wisconsin Institute for Discovery

Postdoctoral Research Associate

September 2021 - July 2024

Advisor: Prof. Stephen J. Wright

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

Institute of Electrical and Micro Engineering

Doctoral Assistant

September 2016 - August 2021

University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

Department of Statistics and Operations Research

Visiting Researcher

September 2017 - October 2017

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

Ph.D. Computer and Communication Sciences

September 2016 - August 2021

Advisor: Prof. Volkan Cevher

Bilkent University, Ankara, Turkey

B.Sc. Electrical and Electronics Engineering

August 2012 - June 2016

UNDER REVIEW

1. **A. Alacaoglu**, V. Cevher, S. J. Wright, “On the Complexity of a Simple Primal-Dual Coordinate Method”, arXiv: 2201.07684

PUBLICATIONS

2. **A. Alacaoglu**, D. Kim, S. J. Wright, “Revisiting Inexact Fixed-Point Iterations for Min-Max Problems: Stochasticity and Structured Nonconvexity”, *International Conference on Machine Learning (ICML)*, 2024
3. X. Cai, **A. Alacaoglu**, J. Diakonikolas, “Variance Reduced Halpern Iteration for Finite-Sum Monotone Inclusions”, *International Conference on Learning Representations (ICLR)*, 2024

4. **A. Alacaoglu**, S. J. Wright, “Complexity of Single Loop Algorithms for Nonlinear Programming with Stochastic Objective and Constraints”, *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024
5. **A. Alacaoglu**, H. Lyu, “Convergence of First-Order Methods for Constrained Nonconvex Optimization with Dependent Data”, *International Conference on Machine Learning (ICML)*, 2023
6. **A. Alacaoglu**, A. Böhm, Y. Malitsky, “Beyond the Golden Ratio for Variational Inequality Algorithms”, *Journal of Machine Learning Research (JMLR)*, 2023
7. **A. Alacaoglu**, Y. Malitsky. “Stochastic Variance Reduction for Variational Inequality Methods”, *Conference on Learning Theory (COLT)*, 2022
8. **A. Alacaoglu**, O. Fercoq, V. Cevher. “On the convergence of stochastic primal-dual hybrid gradient”, *SIAM Journal on Optimization (SIOPT)*, 2022
9. **A. Alacaoglu**, L. Viano, N. He, V. Cevher. “A Natural Actor-Critic Framework for Zero-Sum Markov Games”, *International Conference on Machine Learning (ICML)*, 2022
10. **A. Alacaoglu**, Y. Malitsky, V. Cevher. “Convergence of adaptive algorithms for constrained weakly convex optimization”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2021
11. **A. Alacaoglu**, Y. Malitsky, V. Cevher. “Forward-reflected-backward method with variance reduction”, *Computational Optimization and Applications (COAP)*, 2021
12. **A. Alacaoglu**, O. Fercoq, V. Cevher. “Random extrapolation for primal-dual coordinate descent”, *International Conference on Machine Learning (ICML)*, 2020
13. **A. Alacaoglu**, Y. Malitsky, P. Mertikopoulos, V. Cevher. “A new regret analysis for Adam-type algorithms”, *International Conference on Machine Learning (ICML)*, 2020
14. M.-L. Vladarean, **A. Alacaoglu**, Y.-P. Hsieh, V. Cevher. “Conditional gradient methods for stochastically constrained convex minimization”, *International Conference on Machine Learning (ICML)*, 2020
15. M. F. Sahin, A. Eftekhari, **A. Alacaoglu**, F. Latorre, V. Cevher. “An Inexact Augmented Lagrangian Framework for Nonconvex Optimization with Nonlinear Constraints”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2019
16. O. Fercoq, **A. Alacaoglu**, I. Necoara, V. Cevher. “Almost surely constrained convex optimization”, *International Conference on Machine Learning (ICML)*, 2019
17. Q. Tran-Dinh, **A. Alacaoglu**, O. Fercoq, V. Cevher. “An Adaptive Primal-Dual Framework for Nonsmooth Convex Minimization”, *Mathematical Programming Computation*, 2019
18. A. A. Ozaslan, **A. Alacaoglu**, O. B. Demirel, T. Cukur, E. U. Saritas. “Fully automated gridding reconstruction for non-Cartesian x-space magnetic particle imaging”, *Physics in Medicine & Biology*, 2019
19. **A. Alacaoglu**, Q. Tran-Dinh, O. Fercoq, V. Cevher. “Smooth Primal-Dual Coordinate Descent Algorithms for Nonsmooth Convex Optimization”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2017

PROFESSIONAL SERVICE

- Conference reviewer: ICML 2020-2024, NeurIPS 2019-2024, ICLR 2020-2022, 2024, COLT 2022-2024, AISTATS 2024
- Expert reviewer: ICML 2021
- Journal reviewer:

- SIAM Journal on Optimization (SIOPT)
- Mathematical Programming (MAPR)
- Mathematics of Operations Research (MOR)
- SIAM Journal on Imaging Sciences (SIIMS)
- Journal of Machine Learning Research (JMLR)
- IEEE Transactions on Information Theory (ITIT)
- Journal of Optimization Theory and Applications (JOTA)
- Computational Optimization and Applications
- Applied and Computational Harmonic Analysis (ACHA)
- IEEE Transactions on Automatic Control
- Optimization Methods and Software
- Journal of Mathematical Imaging and Vision (JMIV)
- EURO Journal on Computational Optimization
- Applied Mathematics and Optimization (AMOP)
- Action Editor: Transactions on Machine Learning Research (TMLR)
- Seminar organizer, IFDS Ideas Forum, UW-Madison, Fall 2021
- Session chair, INFORMS Optimization Society Meeting, SC, USA, 2022
- Session organizer/chair, International Conference on Continuous Optimization (ICCOPT), PA, USA, 2022
- Session organizer/chair, SIAM Conference on Mathematics of Data Science (MDS), CA, USA, 2022
- Session organizer/chair, SIAM Conference on Optimization (OP23), WA, USA, 2023

TEACHING EXPERIENCE

Tutorial:

- “Adaptive Optimization Methods for Machine Learning and Signal Processing”, with Kfir Levy, Ali Kavis, Volkan Cevher, *EUSIPCO 2020*, Virtual

Teaching assistant for the courses:

- Mathematics of data: from theory to computation (EPFL)
- Theory and methods for reinforcement learning (EPFL)
- Advanced topics in machine learning (EPFL)
- Advanced information, computation, communication II (EPFL)
- Linear algebra and differential equations (Bilkent University)

HONORS AND AWARDS

- Selected as an outstanding reviewer, NeurIPS 2019, 2021, 2023, ICML 2020, ICLR 2021, 2024
- Student Travel Award, NeurIPS, 2017, 2019
- EPFL IC School Fellowship for Doctoral Studies, 2016
- Bilkent University EE Department Academic/Research Excellence Awards, 2016
- Comprehensive scholarship (tuition waiver and monthly stipend) for undergraduate study awarded by Bilkent University, 2012

INVITED SEMINARS AND COLLOQUIA

1. International Symposium on Mathematical Programming (ISMP), Montreal, QC, Canada, Jul 2024
2. EUROPT Conference on Advances in Continuous Optimization, Lund, Sweden, Jun 2024
3. Information: Theory and Applications (ITA) Workshop, San Diego, CA, USA, Feb 2024
4. University of Minnesota, CSE DSI Machine Learning Seminar Series, Twin Cities, MN, USA, Oct 2023
5. Foundations of Computational Mathematics (FoCM 2023), Paris, France, May 2023
6. SIAM Conference on Optimization (OP23), Seattle, WA, USA, Jun 2023

7. UC Berkeley, Industrial Engineering and Operations Research Seminar, CA, USA, Feb 2023
8. Purdue University, Industrial Engineering Seminar, IN, USA, 2023
9. University of British Columbia, Mathematics Seminar, BC, Canada, 2023
10. Washington University in St. Louis, ESE Seminar, MO, USA, 2023
11. Purdue University, Mathematics Seminar, IN, USA, 2023
12. CISP, Seminar, Germany, 2023
13. NC State University, Industrial and Systems Engineering Seminar, NC, USA, 2023
14. 12th US-Mexico Workshop on Optimization and Its Applications, Huatulco, Oaxaca, Mexico, 2023
15. Optimization in the Big Data Era, Institute for Mathematical Sciences, National University of Singapore, Singapore, 2022
16. Rensselaer Polytechnic Institute Mathematical Sciences Colloquium, NY, USA, 2022
17. Rutgers University Optim & ML Seminar, NJ, USA, 2022
18. INFORMS Annual Meeting, Indianapolis, IN, USA, 2022
19. SIAM Conference on Mathematics of Data Science (MDS), San Diego, CA, USA (Hybrid), 2022
20. International Conference on Continuous Optimization (ICCOPT), Bethlehem, PA, USA, 2022
21. INFORMS Optimization Society (IOS) Meeting, Greenville, SC, USA, 2022
22. International Symposium on Mathematical Programming (ISMP), Virtual, 2022
23. EUROPT, Toulouse, France (Virtual), 2021
24. Vector Institute Seminar, Toronto, ON, Canada, 2021
25. LTCI Seminar, Telecom Paris, Paris, France, 2021
26. International Conference on Continuous Optimization (ICCOPT), Berlin, Germany, 2019
27. International Symposium on Mathematical Programming (ISMP), Bordeaux, France, 2018