Ali Kavis

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Degrees

École Polytechnique Fédérale de Lausanne, 9/2017-8/2023
Ph.D. in School of Computer and Communication Sciences
Thesis: Universal and adaptive methods for robust stochastic optimization

Bilkent University, Ankara, Turkey, 8/2012 - 6/2017
B.S. in Computer Engineering (Salutatorian with GPA: 3.99/4.00)

Employment

Assistant Professor, 08/2027 -
Aarhus University, Department of Computer Science.

Senior Researcher, 10/2026 - 06/2027
ETH Zurich, Department of Computer Science.

Postdoctoral Fellow, 11/2023 - 05/2026
The University of Texas at Austin, ECE Department.

Research Assistant, 9/2017 - 8/2023
École Polytechnique Fédérale de Lausanne (EPFL), IC Department.

Research Grants

Swiss National Science Foundation, Postdoc.Mobility Grant (**CHF 120K**)
Project: *Universal and robust stochastic optimization*
Duration: 11/2023 - 10/2025. (Individual Grant)

Swiss National Science Foundation Postdoc.Mobility Return Grant (**CHF 115K**)
Project: *Parameter-free adaptive methods for robust large-scale optimization*
Duration: 10/2026 - 06/2027. (Individual Grant)

Publications

[1] R. Jiang*, **A. Kavis***, A. Mokhtari*. *Online Learning-guided Learning Rate Adaptation via Gradient Alignment*, Under review for ICML 2027

[2] P. Bansal, **A. Kavis**, S. Sanghavi. *Understanding Self-Supervised Learning via Gaussian Mixture Models*, NeurIPS 2025

[3] S. Sanyal*, H. Prairie*, R. Das*, **A. Kavis***, S. Sanghavi. *Upweighting Easy Samples in Fine-Tuning Mitigates Forgetting*, ICML 2025

[4] R. Jiang, **A. Kavis**, Q. Jin, S. Sanghavi, A. Mokhtari. *Adaptive and Optimal Second-order Optimistic Methods for Minimax Optimization*, NeurIPS 2024

[5] [3] A. Rodomanov, **A. Kavis**, Y. Wu, K. Antonakopoulos, V. Cevher. *Universal Gradient Methods for Stochastic Convex Optimization*, ICML 2024

[6] V. Cevher, A. Cutkosky, **A. Kavis**, G. Piliouras, S. Skoulakis, L. Viano. *Alternation makes the adversary weaker in two-player games*, NeurIPS 2023

[7] A. Agafonov, D. Kamzolov, A. Gasnikov, **A. Kavis**, K. Antonakopoulos, V. Cevher, M. Takáč. *Advancing the lower bounds: An accelerated, stochastic, second-order method with optimal adaptation to inexactness*, ICLR 2023.

[8] **A. Kavis***, S. Skoulakis*, K. Antonakopoulos, L. T. Dadi, V. Cevher. *Adaptive Stochastic Variance Reduction for Non-convex Finite-Sum Minimization*, NeurIPS 2022

[9] K. Antonakopoulos*, **A. Kavis***, V. Cevher. *Extra-Newton: A First Approach to Noise-Adaptive Accelerated Second-Order Methods*, NeurIPS 2022

[10] **A. Kavis**, K. Y. Levy, V. Cevher. *High Probability Bounds for a Class of Nonconvex Algorithms with AdaGrad Stepsize*, ICLR 2022

[11] K. Y. Levy, **A. Kavis**, V. Cevher. *STORM+: Fully Adaptive SGD with Recursive Momentum for Nonconvex Optimization*, NeurIPS 2021

[12] K. Antonakopoulos, T. Pethick, **A. Kavis**, P. Mertikopoulos, V. Cevher. *Sifting through the noise: Universal first-order methods for stochastic variational inequalities*, NeurIPS 2021

[13] P. Mertikopoulos, N. Hallak, **A. Kavis**, V. Cevher. *On the almost sure convergence of stochastic gradient descent in non-convex problems*, NeurIPS 2020

[14] P. T. Y. Rolland, A. Eftekhari, **A. Kavis**, V. Cevher. *Double-Loop Unadjusted Langevin Algorithm*, ICML 2020

[15] **A. Kavis***, K. Y. Levy*, F. Bach, V. Cevher. *UniXGrad: A Universal, Adaptive Algorithm with Optimal Guarantees for Constrained Optimization*, NeurIPS 2019

[16] P. Rolland, **A. Kavis**, A. Immer, A. Singla, V. Cevher. *Efficient learning of smooth probability functions from Bernoulli tests with guarantees*, ICML 2019

[17] Y. P. Hsieh, **A. Kavis**, P. T. Y. Rolland, V. Cevher. *Mirrored Langevin Dynamics*, NeurIPS 2018

Invited Talks

Advanced Telecommunications Research Institute International, Kyoto, Japan, 2026.
Online Learning-guided Learning Rate Adaptation.

INFORMS 2025, Atlanta, 2025.
Parameter-free second-order methods for min-max optimization.

ICCOPT 2025, USC, 2025.
Parameter-free second-order methods for min-max optimization.

EUROPT 2025, University of Southampton, 2025.
Parameter-free second-order methods for min-max optimization.

IFML Symposium Workshop, Simons Institute, UC Berkeley, 2024.
Parameter-free second-order methods for min-max optimization.

ODI Group (Prof. Niao He), ETH Zurich, 2024.
Parameter-free second-order methods for min-max optimization.

IFML, UT Austin, 2024.
Designing fast, parameter-free algorithms for convex optimization

SIAM Conference on Optimization, 2023.
A first approach to noise-adaptive accelerated second-order methods

SIAM MDS Conference, 2022.
High probability convergence of AdaGrad for non-convex optimization.

Teaching Experience

Teaching Assistant
Mathematics of Data: From Theory to Computation (2018-2022, Head TA in 2021)
Theory and Methods for Reinforcement Learning (2022)
Information, Computation, Communication (2020)
Practice of Object-Oriented Programming (2018)

Tutorial at EUSIPCO 2020, 1/2021
Title: *Adaptive Optimization Methods for Machine Learning and Signal Processing*
Co-lecturers: Ali Kavis*, Ahmet Alacaoglu, Kfir Levy, Volkan Cevher*

Guest Lecturer at ECE-461P Data Science Principles, UT Austin, 2024 & 2025
Lectures: *Stochastic Gradient Descent, Convex Functions*

Honors and Awards

Spotlight Paper @ NeurIPS 2018, 2019 & 2023; ICML 2025
Top Reviewer @ NeurIPS 2024, ICML 2025.

Travel Award @ NeurIPS 2019
EPFL IC Doctoral Studies Fellowship, 2017-2018
Bilkent University Comprehensive Scholarship (tuition waiver & stipend), 2012-2017

Professional Service

Reviewer Duty
Mathematical Programming, NeurIPS, COLT, ICLR, ICML, JMLR, OJMO, Springer Machine Learning, IEEE Transactions on Information Theory

Minisymposium at SIAM OP23 (Organizer), 5/2023
Adaptivity and universality: First-order methods and beyond

Session at EUROPT 2025 (Organizer), 6/2025
Recent advances in min-max optimization

Language Skills

Turkish (Native), English (Fluent), French (Beginner)