Francis Bach

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Education

2009   Habilitation à diriger les recherches, Ecole Normale Supérieure, Cachan, France

2005   Ph.D. in Computer Science, University of California, Berkeley, CA, USA
       Dissertation: "Machine learning for blind source separation"
       Advisor: Prof. Michael I. Jordan.

2000   M.S. in Applied Mathematics, Ecole Normale Supérieure, Cachan, France

2000   Master of Public Administration (M.P.A.), Corps National des Mines, Paris, France

1997   B.S. in Mathematics, Ecole Polytechnique, Palaiseau, France

Professional experience

2007 - present   Research faculty, INRIA - Ecole Normale Supérieure, Paris, France
                  Head of SIERRA project-team (since 2011)
                  Member of WILLOW project-team (2007-2010)

2005 - 2007   Assistant Professor, Ecole des Mines de Paris, Fontainebleau, France

Awards and distinctions

2021   Neurips Conference Test of time award and outstanding paper award

2020   Election at the French Academy of Sciences

2019   Prix Jean-Jacques Moreau

2019   Test of time award (10-year best paper award), ICML conference

2018   NeurIPS conference best paper award

2018   Lagrange Prize in continuous optimization

2018   Thomson-Reuters / Clarivate highly-cited researcher (also in 2014 and 2017)

2016   European Research Council (ERC) consolidator grant

2015   Schlumberger Chair, Institut des Hautes Etudes Scientifiques

2014   Test of time award (10-year best paper award), ICML conference

2012   INRIA Young Researcher Prize

2009   European Research Council (ERC) starting investigator grant

2005   Eli Jury Award, U.C. Berkeley (Best thesis in signal processing)

2005   Best student paper award, AISTATS conference

2004   Best paper, honorable mention, ICML conference

Professional activities

President of the board of the International Conference on Machine Learning (ICML), 2021-2023

Co-editor-in-Chief, Journal of Machine Learning Research (JMLR), 2018-2023

Series Editor, Adaptive Computation and Machine Learning, MIT Press, since 2016

Selected publications

64,000 citations (`https://scholar.google.fr/citations?user=6PJWcFEAAAAJ`)

– F. Bach, L. Chizat. Gradient Descent on Infinitely Wide Neural Networks: Global Convergence and Generalization. Proceedings of the International Congress of Mathematicians, 2022.

– L. Chizat, F. Bach. On the Global Convergence of Gradient Descent for Over-parameterized Models using Optimal Transport. *Advances in Neural Information Processing Systems (NeurIPS)*, 2018.

– L. Pillaud-Vivien, A. Rudi, F. Bach. Statistical Optimality of Stochastic Gradient Descent on Hard Learning Problems through Multiple Passes. *Advances in Neural Information Processing Systems (NeurIPS)*, 2018.

– F. Bach. Submodular Functions: from Discrete to Continuous Domains. *Mathematical Programming*, 2018.

– D. Scieur, A. d'Aspremont, F. Bach. Regularized Nonlinear Acceleration. *Advances in Neural Information Processing Systems (NIPS)*, 2016

– A. Dieuleveut, F. Bach. Non-parametric Stochastic Approximation with Large Step sizes. *The Annals of Statistics*, 44(4):1363-1399, 2016.

– F. Bach. Duality between subgradient and conditional gradient methods. *SIAM Journal of Optimization*, 25(1):115-129, 2015

– J. Mairal, F. Bach, J. Ponce. Sparse Modeling for Image and Vision Processing. *Foundations and Trends in Computer Vision*, 8(2-3):85-283, 2014

– F. Bach. Learning with Submodular Functions: A Convex Optimization Perspective. *Foundations and Trends in Machine Learning*, 6(2-3):145-373, 2013

– F. Bach and E. Moulines. Non-strongly-convex smooth stochastic approximation with convergence rate $O(1/n)$. *Advances in Neural Information Processing Systems (NIPS)*, 2013

– N. Le Roux, M. Schmidt, F. Bach. A stochastic gradient method with an exponential convergence rate for strongly-convex Optimization with Finite Training Sets. *Advances in Neural Information Processing Systems (NIPS)*, 2013

– F. Bach, R. Jenatton, J. Mairal, G. Obozinski. Structured sparsity through convex optimization. *Statistical Science*, 27(4):450-468, 2012

– J. Mairal, F. Bach, J. Ponce, G. Sapiro. Online learning for matrix factorization and sparse coding. *Journal of Machine Learning Research*, 11:10-60, 2010

– F. Bach. Consistency of the group Lasso and multiple kernel learning. *Journal of Machine Learning Research*, 9:1179-1225, 2008

– A. d'Aspremont, F. Bach and L. El Ghaoui. Optimal solutions for sparse principal component analysis. *Journal of Machine Learning Research*, 9:1269-1294, 2008

– F. Bach, M. I. Jordan, Learning spectral clustering, with application to speech separation. *Journal of Machine Learning Research*, 7:1963-2001, 2006

– F. Bach, D. Heckerman, E. Horvitz, Considering cost asymmetry in learning classifiers. *Journal of Machine Learning Research*, 7:1713-1741, 2006

– F. Bach, G. R. G. Lanckriet, M. I. Jordan. Multiple kernel learning, conic duality, and the SMO algorithm. *Proceedings of the International Conference on Machine Learning (ICML)*, 2004

– F. Bach, M. I. Jordan. Kernel independent component analysis. *Journal of Machine Learning Research*, 3:1-48, 2002