

Francis Bach

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Formation

- 2009 Habilitation à diriger les recherches, Ecole Normale Supérieure, Cachan
- 2005 Thèse en Informatique, Université de Californie, Berkeley, Etats-Unis
Dissertation: “Machine learning for blind source separation”
Directeur de thèse: Prof. Michael I. Jordan.
- 2000 D.E.A. en mathématiques appliquées (M.V.A.), Ecole Normale Supérieure, Cachan
- 2000 Corps National des Mines, Paris
- 1997 Ecole Polytechnique, Palaiseau

Expérience professionnelle

- Depuis 2007 Ingénieur Général des Mines, détaché à INRIA, Paris
Responsable de l’équipe-projet SIERRA - Ecole Normale Supérieure (depuis 2011)
Membre de l’équipe-projet WILLOW - Ecole Normale Supérieure (2007-2010)
- 2005 - 2007 Maître-assistant, Ecole des Mines de Paris, Fontainebleau

Prix et distinctions

- 2021 Prix du meilleur article et prix du meilleur article “10 ans après”, congrès NeurIPS
- 2020 Election à l’Académie des Sciences
- 2019 Prix Jean-Jacques Moreau
- 2019 Prix du meilleur article “10 ans après”, congrès ICML
- 2018 Prix du meilleur article, congrès NeurIPS
- 2018 Prix Lagrange en optimisation continue
- 2018 Thomson-Reuters / Clarivate highly-cited researcher (ainsi qu’en 2014 et 2017)
- 2016 European Research Council (ERC) consolidator investigator grant
- 2015 Chaire Schlumberger, Institut des Hautes Etudes Scientifiques
- 2014 Prix du meilleur article “10 ans après”, congrès ICML
- 2012 Prix INRIA jeune chercheur
- 2009 European Research Council (ERC) starting investigator grant
- 2005 Eli Jury Award, U.C. Berkeley (meilleure thèse en traitement du signal)
- 2005 Prix du meilleur article par un étudiant, congrès AISTATS
- 2004 Prix du meilleur article, mention honorable, congrès ICML
- 1997 Prix d’Option, Département de mathématiques, Ecole Polytechnique

Activités professionnelles

- Président, International Conference on Machine Learning (ICML) board, 2021-2023
- Co-éditeur-en-chef, Journal of Machine Learning Research (JMLR), depuis 2018

Sélections de publications

53,000 citations (<https://scholar.google.fr/citations?user=6PJWcFEAAAAJ>)

- 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
- F. Bach, R. Jenatton, J. Mairal, G. Obozinski. Optimization with sparsity-inducing penalties. *Foundations and Trends in Machine Learning*, 4(1):1-106, 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