Adil Salim
Research scientist

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Google Scholar: Adil Salim

Employment

Spring 2025	**Visiting scholar**, *IPAM*, UCLA, Los Angeles, USA Program: Non-commutative Optimal Transport.
Oct 2024–...	**Member of Technical Staff**, *Microsoft Research*, Redmond, USA Phi-4 [2], Phi-3.14 (Math tutoring model)
Mar 2024–Sept 2024	**Member of Technical Staff**, *Microsoft AI*, Redmond, USA Microsoft Copilot
Apr 2022–Feb 2024	**Senior Researcher**, *Microsoft Research*, Redmond, USA *Language models*: Phi-3 [4], Phi-2, Phi-1 [6]. *Diffusion models (theory)*: [1, 8, 10].
Fall 2021	**Google Research Fellow**, *Simons Institute*, UC Berkeley, Berkeley, USA Program: Geometric Methods in Optimization and Sampling.
2019–2021	**Postdoctoral researcher**, *KAUST*, Visual Computing Center, Thuwal, KSA Host: Peter Richtárik. Optimal decentralized algorithms: [16, 20]
2018	**Chief Technical Officer**, *Revna Sciences*, Paris, France, Consulting in R&D
Fall 2015	**Freelance data scientist**, *ThePriceHub.com*, Paris, France, Priced industrial custom parts
Summer 2015	**Freelance data scientist**, *Kwanko*, Bourg-la-Reine, France, Developed a Real Time Bidding algorithm

Education

2015–2018	**Ph.D**, *Telecom Paris and Paris–Saclay University*, Paris, France **Summa cum laude** Title: Random monotone operators and application to stochastic optimization Supervisors: Pascal Bianchi, Walid Hachem
2014–2015	**M.Sc**, *Paris–Saclay University*, Orsay, France, Probability-Statistics **Magna cum laude**
2012–2015	**M.Sc**, *ENSAE Paris*, Malakoff, France, Data Science and Statistical Engineering Title: Free stochastic calculus – Processes with free increments Supervisor: Philippe Biane

Awards and distinctions

2024	**KAUST Rising star in AI**
2023	**ICLR notable top 5% paper**
2023	**ALT best student paper award for paper co-authored with MSR intern**
2022	**ICML 2022 Tutorial "Sampling as Optimization"**
2021	**Google Research Fellowship, Simons Institute, UC Berkeley**
2019	**NeurIPS spotlight paper**

2018	**PhD Summa cum laude**
2009–2012	**Merit Scholarship**, *Lycée Lakanal, Sceaux, France*

Professional activities

2025	**Organizer**, *Machine Learning Summer School (MLSS)*, Mbour, Senegal
2024	**Workshops chair**, *NeurIPS*, Vancouver, Canada
2023	**Mini-symposium**, *SIAM Conference on Optimization 2023*, Seattle, USA, Title: Wasserstein Gradient Flows and Applications (three sessions)
2019–2022	**Area chair**, *Black in AI Neurips workshop 2019, 2020, 2021, 2022*
2017–...	**Reviewer**, *Journals: Nature, Journal of Machine Learning Research, Transactions on Machine Learning Research, Annals of statistics, Annals of Applied Probability, Journal of the Royal Statistical Society: Series B, Mathematical Programming, Journal of the American Statistical Association, Set-Valued and Variational Analysis, Applied Mathematics and Optimization, IEEE Transactions on Information Theory, SIAM Journal on Imaging Sciences, IEEE Transactions on Signal and Information Processing over Networks, IEEE Transactions on Signal Processing, IEEE Signal Processing Letters, Automatica, Numerical Algorithms, Journal of Mathematical Analysis and Applications, Journal of Scientific Computing, Rendiconti del Circolo Matematico di Palermo, Mathematics of Operations Research, Journal of Optimization Theory and Applications, IMA Journal of Numerical Analysis, Foundations of Computational Mathematics, SIAM/ASA Journal on Uncertainty Quantification.* *Conferences: NeurIPS 2019, 2020, 2021, ICML 2020, 2021, 2022, ICLR 2021, 2022, 2023 ACM SIGKDD 2021, COLT 2022, Black in AI Neurips workshop 2018, 2023, BlackAIR 2021.*

Supervision

2024	**Co-supervision (with Ronen Eldan and Yi Zhang) of Khashayar Gatmiry's (PhD student at MIT with Jonathan Kelner) internship**, *Microsoft Research*, Redmond, USA
2024	**Co-supervision (with Peter Richtárik) of Michał Grudzień master's thesis**, *Oxford University*, Oxford, UK
2023	**Co-supervision (with Jerry Li) of Jaume De Dios Pont's (PhD student at UCLA with Terence Tao) internship**, *Microsoft Research*, Redmond, USA
2022	**Co-supervision (with Sébastien Bubeck) of Sinho Chewi's (PhD student at MIT with Philippe Rigollet) internship**, *Microsoft Research*, Redmond, USA

Publications

[1] Khashayar Gatmiry, Sitan Chen, Adil Salim, High-accuracy and dimension-free sampling with diffusions *in preparation*, May 2025.

[2] Marah Abdin *et al.*, Phi-4 Technical Report *arXiv preprint arXiv:2412.08905*, December 2024.

[3] Victor Priser, Pascal Bianchi, Adil Salim, Long-time asymptotics of noisy SVGD outside the population limit *ICLR 2025*.

[4] Marah Abdin *et al.*, Phi-3 Technical report: A Highly Capable Language Model Locally on Your Phone *arXiv preprint arXiv:2404.14219*, April 2024.

[5] Adil Salim. A Strong Law of Large Numbers for Random Monotone Operators. *Set-Valued and Variational Analysis*, 2023.

[6] Suriya Gunasekar, Yi Zhang *et al.*, Textbooks Are All You Need. *arXiv preprint arXiv:2306.11644*, June 2023.

[7] Krishnakumar Balasubramanian, Larry Goldstein, Nathan Ross, Adil Salim, Gaussian random field approximation via Stein's method with applications to wide random neural networks. *arXiv preprint arXiv:2306.16308*, June 2023.

[8] Sitan Chen, Sinho Chewi, Holden Lee, Yuanzhi Li, Jianfeng Lu, Adil Salim, The probability flow ODE is provably fast. *NeurIPS 2023*.

[9] Michael Ziyang Diao, Krishna Balasubramanian, Sinho Chewi, Adil Salim, Forward-backward Gaussian variational inference via JKO in the Bures-Wasserstein Space. *ICML 2023*.

[10] Sitan Chen, Sinho Chewi, Jerry Li, Yuanzhi Li, Adil Salim, Anru R. Zhang, Sampling is as easy as learning the score: theory for diffusion models with minimal data assumptions. *ICLR 2023,* **Top 5% paper**.

[11] Sinho Chewi, Sébastien Bubeck, Adil Salim, On the complexity of finding stationary points of smooth functions in one dimension. *ALT 2023,* **Best student paper award**.

[12] Lukang Sun, Adil Salim, Peter Richtárik, Federated Sampling with Langevin Algorithm under Isoperimetry. *TMLR 2023*.

[13] Krishnakumar Balasubramanian, Sinho Chewi, Murat A. Erdogdu, Adil Salim, Matthew Zhang, Towards a Theory of Non-Log-Concave Sampling: First-Order Stationarity Guarantees for Langevin Monte Carlo. *COLT 2022*.

[14] Yongxin Chen, Sinho Chewi, Adil Salim, Andre Wibisono, Improved analysis for a proximal algorithm for sampling. *COLT 2022*.

[15] Adil Salim, Lukang Sun, Peter Richtárik. Complexity Analysis of Stein Variational Gradient Descent Under Talagrand's Inequality T1. *ICML 2022*.

[16] Adil Salim, Laurent Condat, Dmitry Kovalev and Peter Richtárik. An Optimal Algorithm for Strongly Convex Minimization under Affine Constraints. *AISTATS 2022*.

[17] Adil Salim, Laurent Condat, Konstantin Mishchenko and Peter Richtárik. Dualize, Split, Randomize: Fast Nonsmooth Optimization Algorithms. *Journal of Optimization Theory and Applications*, 2022

[18] Adil Salim and Peter Richtárik. Primal Dual Interpretation of the Proximal Stochastic Gradient Langevin Algorithm. *NeurIPS 2020*.

[19] Adil Salim, Anna Korba and Giulia Luise. The Wasserstein Proximal Gradient Algorithm. *NeurIPS 2020*.

[20] Dmitry Kovalev, Adil Salim and Peter Richtárik. Optimal and Practical Algorithms for Smooth and Strongly Convex Decentralized Optimization. *NeurIPS 2020*.

[21] Anna Korba, Adil Salim, Michael Arbel, Giulia Luise and Arthur Gretton. A Non-Asymptotic Analysis for Stein Variational Gradient Descent. *NeurIPS 2020*.

[22] Sélim Chraibi, Ahmed Khaled, Dmitry Kovalev, Adil Salim, Peter Richtárik and Martin Takáč. Distributed Fixed Point Methods with Compressed Iterates. *arXiv preprint arXiv:1912.09925*, December 2019.

[23] Sélim Chraibi, Adil Salim, Samuel Horváth, Filip Hanzely and Peter Richtárik. Learning To Optimize Via Dual Space Preconditioning. *Technical Report*, September 2019.

[24] Adil Salim, Dmitry Kovalev and Peter Richtárik. Stochastic Proximal Langevin Algorithm: Potential Splitting and Nonasymptotic Rates. *NeurIPS 2019,* **Spotlight**.

[25] Michael Arbel, Anna Korba, Adil Salim and Arthur Gretton. Maximum Mean Discrepancy Gradient Flow. *NeurIPS 2019*.

[26] Anna Korba, Adil Salim, Michael Arbel and Arthur Gretton. Yet another look at Stein Variational Gradient Descent. *ICML 2019 Workshop on Stein's Method*.

[27] Pascal Bianchi, Walid Hachem and Adil Salim. A Fully Stochastic Primal-Dual Algorithm. *Optimization Letters*, June 2020.

[28] Adil Salim and Walid Hachem. On the Performance of the Stochastic FISTA. *Technical Report*, March 2019.

[29] Adil Salim, Pascal Bianchi and Walid Hachem. Snake: a Stochastic Proximal Gradient Algorithm for Regularized Problems over Large Graphs. *IEEE Transaction on Automatic Control*, May 2019.

[30] Pascal Bianchi, Walid Hachem and Adil Salim. A constant step Forward-Backward algorithm involving random maximal monotone operators. *Journal of Convex Analysis*, May 2019.

[31] Pascal Bianchi, Walid Hachem and Adil Salim. Constant step stochastic approximations involving differential inclusions: Stability, long-run convergence and applications. *Stochastics*, 2018.

[32] Sholom Schechtman, Adil Salim and Pascal Bianchi. Passty Langevin. *CAp 2019*.

[33] Adil Salim, Pascal Bianchi and Walid Hachem. A Constant Step Stochastic Douglas-Rachford Algorithm with Application to Non Separable Regularization. *IEEE ICASSP 2018*.

[34] Adil Salim, Pascal Bianchi and Walid Hachem. A Stochastic Proximal Point Algorithm for Total Variation Regularization over Large Scale Graphs. *IEEE CDC 2016*.

[35] Adil Salim, Pascal Bianchi and Walid Hachem. Snake: a Stochastic Proximal Gradient Algorithm for Regularized Problems over Large Graphs. *NIPS 2017 Workshop Black in AI*.

[36] Rahul Mourya, Pascal Bianchi, Adil Salim and Cédric Richard. An adaptive Distributed Asynchronous Algorithm with Application to Target Localization. *IEEE CAMSAP 2017*.

[37] Pascal Bianchi, Walid Hachem and Adil Salim. Convergence d'un algorithme du gradient proximal stochastique à pas constant et généralisation aux opérateurs monotones aléatoires. *GRETSI 2017*.

[38] Adil Salim, Pascal Bianchi and Walid Hachem. Snake: a Stochastic Proximal Gradient Algorithm for Regularized Problems over Large Graphs. *CAp 2017*.