

Meyer Scetbon

Curriculum Vitae

Microsoft Research
MSR, Cambridge
✉ meyerscetbon@gmail.com
📄 <https://meyerscetbon.github.io>

Research Interests

I have a keen interest in foundation models and genuine world models, specifically focusing on how foundation models can articulate their comprehension of the real world by incorporating causality.

Education

- 2019–2023 **Ph.D. Candidate, Applied Mathematics**, *Center for Research in Economics and Statistics, Paris*.
- Dissertation Topic: *Causal Inference through Optimal Transport*.
 - Advisor: Marco Cuturi.
- 2017–2018 **M.Sc. in Applied Mathematics**, *École Normale Supérieure Paris-Saclay, Paris*.
- Major in Mathematics, Vision and Learning. Highest honors.
- 2015–2019 **École Normale Supérieure Paris-Saclay**, Paris.
- Admitted in mathematics as "Normalien". One of France's leading school in mathematical sciences.

Papers

Published

Unbalanced Low-rank Optimal Transport Solvers, Meyer Scetbon*, Michal Klein*, Giovanni Palla, Marco Cuturi, in *Advances in Neural Information Processing Systems 37 (NeurIPS)*, 2023

Robust Linear Regression: Gradient-descent, Early-stopping, and Beyond, Meyer Scetbon, Elvis Dohmatob, in *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023

Low-rank Optimal Transport: Approximation, Statistics and Debiasing, Meyer Scetbon, Marco Cuturi, in *Advances in Neural Information Processing Systems 36 (NeurIPS)*, 2022

Linear-Time Gromov Wasserstein Distances using Low Rank Couplings and Costs, Meyer Scetbon, Gabriel Peyré, Marco Cuturi, in *International Conference on Machine Learning (ICML)*, 2022.

An lp-based Kernel Conditional Independence Test, Meyer Scetbon*, Laurent Meunier*, Yaniv Romano, in *International Conference on Machine Learning (ICML)*, 2022.

Triangular Flows for Generative Modeling: Statistical Consistency, Smoothness Classes, and Fast Rates, Nicholas J. Irons, Meyer Scetbon, Soumik Pal, Zaid Harchaoui, in *Proceedings of the 25th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2022.

Deep K-SVD Denoising, Meyer Scetbon, Michael Elad, Peyman Milanfar, in *IEEE Transactions on Image Processing (TIP)*, 2021.

Low-Rank Sinkhorn Factorization, Meyer Scetbon, Marco Cuturi, Gabriel Peyré, in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.

Mixed Nash Equilibria in the Adversarial Examples Game, Laurent Meunier*, Meyer Scetbon*, Rafael Pinot, Jamal Atif, Yann Chevaleyre, in *Proceedings of the 38th International Conference on Machine Learning (ICML)*, 2021.

A Spectral Analysis of Dot-product Kernels, Meyer Scetbon, Zaid Harchaoui, in *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2021.

Equitable and Optimal Transport with Multiple Agents, Meyer Scetbon*, Laurent Meunier*, Jamal Atif, Marco Cuturi, in *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2021.

Linear Time Sinkhorn Divergences using Positive Features, Meyer Scetbon, Marco Cuturi, in *Advances in Neural Information Processing Systems 33 (NeurIPS)*, 2020.

Harmonic Decompositions of Convolutional Networks, Meyer Scetbon, Zaid Harchaoui, in *Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.

Comparing distributions: l1 geometry improves kernel two-sample testing, Meyer Scetbon, Gaël Varoquaux, **Spotlight** in *Advances in Neural Information Processing Systems 32 (NeurIPS)*, 2019.

Software

- 2023 **Causica**, Contributor, <https://github.com/microsoft/causica>.
- 2022 **Optimal Transport Tools (OTT)**, Contributor, <https://github.com/ott-jax/ott>.
- 2021 **lp conditional independence test**, Main contributor, <https://github.com/meyerscetbon/lp-ci-test>.
- 2021 **LinearGromov**, Main contributor, <https://github.com/meyerscetbon/LinearGromov>.
- 2021 **LOT**, Main contributor, <https://github.com/meyerscetbon/LOT>.
- 2021 **EOT**, Main contributor, <https://github.com/meyerscetbon/EOT>.
- 2020 **LinearSinkhorn**, Main contributor, <https://github.com/meyerscetbon/LinearSinkhorn>.

2020 **Deep KSVD**, Main contributor, <https://github.com/meyerscetbon/Deep-K-SVD>.

2019 **l1 two sample test**, Main contributor, https://github.com/meyerscetbon/l1_two_sample_test.

Teaching Assistant

Spring 2021 **Optimal Transport: theory, computations, statistics and ML**, *ENSAE*, Paris.

Introduction to the theory of optimal transport and its various recent tools developed for applications in machine learning. 40 students.

2020–2021 **Optimization**, *ENSAE*, Paris.

Presentation of the processes for formalising an optimization problem and its useful techniques for econometrics, statistics and machine learning. 25 students.

2020–2021 **Probability Theory**, *ENSAE*, Paris.

Introduction to the fundamental concepts in the probability calculus. Conditional and convergence laws are studied in detail. 25 students.

Autumn 2020 **Introduction to stochastic processes**, *ENSAE*, Paris.

This course is an introduction to discrete-time martingales and Markov chains and their applications in statistics. 25 students.

Academic service

Conference Reviewer **Neural Information Processing Systems (NeurIPS) 2020-2023 (Outstanding Reviewer, Top Reviewer)**, International Conference on Machine Learning (ICML) 2021-2023, International Conference on Artificial Intelligence and Statistics (AISTATS) 2021-2023 (**Top Reviewer**).

Journal Reviewer **Journal of Machine Learning Research**, Society for Industrial and Applied Mathematics, Bernoulli Journal, IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal of Computational and Graphical Statistics.

Work Experiences

May 2023 **Researcher at Microsoft Research**, *Cambridge*.
Working on Causal Foundation Models.

Summer **Research internship at Meta AI**, *Paris*.

2022 Research project on adversarial robustness. Under the supervision of Elvis Dohmatob.

Autumn **Visit at the Simons Institute, University of California**, *Berkeley*.

2021 Enrolled in the program on the geometric methods in optimization and sampling. Invited by Peter Bartlett.

Autumn **Visit at the University of Washington**, *Seattle*.

2019 Research project on the optimal learning rates for deep networks on the sphere. Invited by Zaid Harchaoui.

Spring 2019 **Research internship at Technion**, *Haifa*.

Research project on sparse coding and dictionary learning adapted to deep architectures. Under the supervision of Michael Elad.

- Winter 2019 **Research internship at the University of Washington, *Seattle*.**
Research project on the learning theory of deep neural networks. Under the supervision of Zaid Harchaoui.
- Spring 2018 **Research internship at the French Institute for Research in Computer Science and Automation (Inria), *Paris*.**
Research project on kernel-based two-sample testing. Under the supervision of Gaël Varoquaux.

Languages and Skills

- **Language**
French (mother tongue), English(fluent), Spanish (working knowledge).
- **Computer skills**
Python, MATLAB, R, LaTeX.