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.
Automn 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 2022	**Research internship at Meta AI**, *Paris*.
	Research project on adversarial robustness. Under the supervision of Elvis Dohmatob.
Autumn 2021	**Visit at the Simons Institute, University of California**, *Berkeley*.
	Enrolled in the program on the geometric methods in optimization and sampling. Invited by Peter Bartlett.
Autumn 2019	**Visit at the University of Washington**, *Seattle*.
	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.