Anna Korba

+33646022323 • anna.korba@ensae.fr • akorba.github.io

Academic positions

Simons Institute for the Theory of Computing — **Sep. 2021–Dec 2021**
Visiting Scientist — *Berkeley, U.S.*

Statistics department, ENSAE, CREST, IP Paris — **Sep. 2020–Present**
Assistant Professor — *Palaiseau, France*

Gatsby Unit, University College London (UCL) — **Dec. 2018–Aug. 2020**
Postdoctoral Research Fellow — *London, U.K.*
Laboratory of Pr. Arthur Gretton.

Education

Télécom ParisTech — **Oct. 2015–Oct. 2018**
Ph.D. in Applied Mathematics (Machine Learning) — *Paris, France*

- Title: Learning from Ranking Data: Theory and Methods
- Supervisor: Stephan Clémençon

ENS Cachan — **Sep. 2014–Jun. 2015**
Master MVA, First class honours — *Cachan, France*
Applied Mathematics for Computer Vision and Machine Learning.

ENSAE ParisTech — **Sep. 2012–Jun. 2015**
Engineering degree, First class honours — *Paris, France*
Applied Mathematics, Advanced Statistics & Economics.

Lycée Henri IV — **Sep. 2009–Jun. 2012**
Classes préparatoires — *Paris, France*
Mathematics, Physics, Computer Science.

Publications

Below, * denotes equal contribution. My research has been focused on kernel methods, optimal transport, sampling, optimisation and ranking data.

[1] I. Aouali, D. Rohde, V-E. Brunel, A.Korba. *Exponential Smoothing for Off-Policy Learning*. International Conference of Machine Learning (ICML), 2023.

[2] L. Li, Q. Liu, A. Korba, M. Yurochkin, J. Solomon. *Sampling with Mollified Interaction Energy Descent*. International Conference of Learning Representations (ICLR), 2023.

[3] P.-C. Aubin-Frankowski, A. Korba, F. Léger. *Mirror Descent with Relative Smoothness in Measure Spaces, with application to Sinkhorn and EM*. Advances in Neural Information Processing Systems (NeurIPS), 2022.

[4] T. Huix, S. Majewski, A. Durmus, E. Moulines, A. Korba,. *Variational Inference for Overparametrized Bayesian Neural Networks: a Theoretical and Empirical Study*. Submitted, 2022.

[5] L. Xu, A. Korba, D. Slepcev. *Accurate Quantization for Particle-Based Optimization*. International Conference of Machine Learning (ICML), 2022.

[6] A. Korba, F. Portier. *Adaptive Importance Sampling Meets Mirror Descent*. Artificial Intelligence and Statistics (AISTATS), 2022.

[7] A. Korba, P-C. Aubin-Frankowski, S. Majewski, P. Ablin. *Kernel Stein Discrepancy Descent*. International Conference of Machine Learning (ICML), 2021.

[8] A. Mastouri, Y. Zhu, L. Gultchin, A. Korba, M. Kusner, R. Silva, K. Muandet, A. Gretton. *Proximal Causal Learning with Kernels: Two-Stage Estimation and Moment Restriction*. International Conference of Machine Learning (ICML), 2021.

[9] A. Korba, A. Salim, M. Arbel, G. Luise, A. Gretton. *A Non Asymptotic Analysis of Stein Variational Gradient Descent*. Advances in Neural Information Processing Systems (NeurIPS), 2020.

[10] A. Salim, A. Korba, G. Luise. *Wasserstein Proximal Gradient*. Advances in Neural Information Processing Systems (NeurIPS), 2020.

[11] M. Arbel, A. Korba, A. Salim, A. Gretton. *Maximum Mean Discrepancy Gradient Flow.* Avances in Neural Information Processing Systems (NeurIPS), 2019.

[12] M. Achab*, A. Korba*, S. Clémençon. *Dimensionality Reduction for Bucket Ranking: A Mass Transportation Approach.* Algorithmic Learning Theory (ALT), 2019.

[13] A. Korba, A. Garcia, F. D'Alché-Buc. *A Structured Prediction Approach for Label Ranking.* Advances in Neural Information Processing Systems (NeurIPS), 2018.

[14] S. Clémençon, A. Korba. *On Aggregation in Ranking Median Regression.* European Symposium on Artificial Neural Networks (ESANN), 2018.

[15] S. Clémençon, A. Korba, E. Sibony. *Ranking Median Regression: Learning to Order through Local Consensus.* Algorithmic Learning Theory (ALT), 2018.

[16] A Korba, S. Clémençon, E. Sibony. *A Learning Theory of Ranking Aggregation.* Artificial Intelligence and Statistics (AISTATS) 2017.

[17] Y. Jiao, A. Korba, E. Sibony. *Controlling the distance to a Kemeny consensus without computing it.* International Conference on Machine Learning (ICML) 2016.

Selected Invited talks

- International Conference of Machine Learning (ICML) 2022 tutorial (talk shared with Adil Salim), Baltimore, July 2022.
- Synergies between Data Science and PDE Analysis, Hausdorff Center for Mathematics, Bonn, June 2022.
- Applied Optimal Transport Workshop, Institute for Mathematical and Statistical Innovation, Chicago, May 2022.
- Frontiers in kinetic equations for plasmas and collective behavior, Isaac Newton Institute, Cambridge, April 2022.
- Quantization, Location, Sampling and Matching Workshop, Lagrange Research Center, Paris, March 2022.
- Sampling Algorithms and Geometries on Probability Distributions workshop, Simons institute, Berkeley, September 2021.
- Entropic Regularization of Optimal Transport and Applications, Banff International Research Station (online), June 2021.
- Parisian Optimization Seminar, Institut Henri Poincaré, October 2020.
- Second Symposium on Machine Learning and Dynamical Systems, Fields Institute, Toronto (online), September 2020.
- Statistics/Learning at Paris-Saclay (3rd edition), Institut des Hautes Etudes Scientifiques (IHES), Bures-sur-Yvette, January 2018.
- French Forum of Young Women in Mathematics, Institut Élie Cartan de Lorraine, Nancy, November 2017.

Other research activities

Supervision

- Co-supervising PhD student Tom Huix with Eric Moulines and Alain Durmus (CMAP, Polytechnique) from Nov. 2021.
- Co-supervising PhD student Imad Aouali with Victor-Emmanuel Brunel (CREST) and David Rohde (Criteo Research) from Sep. 2022.
- Co-supervising PhD student Christophe Vauthier with Quentin Mérigot (Université Paris-Saclay) from Sep. 2023.
- Supervising postdoctoral student Omar Chehab from Nov. 2023.
- Interns: Mahdi Attia (Ensta, M1 student, summer 2022); Adam David (Polytechnique, M2 student, summer 2023).

PhD committees

Examinator for the PhD defences of: (Jan. 22) Grégoire Mialon (INRIA Toth) co-supervised by Julien

Mairal and Alexandre d'Aspremont, (March 22) Gabriel Ducroq (CREST) supervised by Nicolas Chopin, (May 22) Jérémie Dona (Sorbonne Université) co-supervised by Gérard Biau and Patrick Gallinari, (April 2023) Meyer Scetbon (CREST) supervised by Marco Cuturi, (April 2023) Luc Brogat-Motte (Telecom ParisTech) supervised by Florence d'Alché-Buc.

Other Committees

- Hiring committee at Télécom ParisTech (April 2023) for an assistant professor position.
- PGMO Phd award committee (July 2023).

Reviewing

- **Conferences:** Neural Information Processing System (NeurIPS), International Conference of Machine Learning (ICML), Artifical Intelligence and Statistics (AISTATS).
- **Journals:** Journal of Machine Learning Research, (occasionally) Bernoulli, Journal of the Royal Statistical Society.

Scientific events organization

- 2019-20: Co-organizer of the CSML seminar (Computer Science and Machine Learning) at University College London and of Gatsby Unit external seminar .
- 2021: Organizer of the weekly working group/seminar on "Sampling with kernelized Wasserstein gradient flows" at the Geometric Methods in Optimization and Sampling (GMOS) program at Simons institute.
- May 2023: Co-organizer with Adil Salim and Avetik Karagulyan of a mini-symposium on "Wasserstein gradient flows and applications" at Siam conference of Optimization, Seattle.
- December 2023: Co-organizer of the workshop Optimal Transport and Machine Learning at NeurIPS 2023, New Orleans.

Funding/awards

- Co-recipient of PEPR funding led by Antonin Chambolle
- Recipient of ANR JCJC "Wasserstein gradient flows for Optimization and Sampling", ∼202k, 3 years.
- Co-recipient of Square funding of American Institute of Mathematics for a research project.

Professional experience

Teaching

ENSAE ParisTech **Sep. 2020- Present**
Lecturer *Palaiseau, France*

- Measure theory lectures for 1rst year students at ENSAE.

Télécom ParisTech **Oct. 2015–Oct. 2018**
Teaching assistant *Paris, France*

- Practical sessions for Master's students for several courses: Machine Learning (Python), Econometrics (Matlab), Introduction to Bayesian Learning (R).
- Supervision of long-run Master's students Machine Learning projects with companies.

Admin responsibilities

Polytechnique **Sep. 2021- Present**
Co-administrator *Palaiseau, France*

Shared management of the Master Data Science, one of the most selective masters in machine learning in France.

Skills

Languages: French (native), English (fluent), Italian (intermediate).

Programming: Python, R, MATLAB (advanced).

Others: Latex (advanced), HTML/CSS, D3.js (basics).