

Anna Korba

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Academic positions

Simons Institute for the Theory of Computing <i>Visiting Scientist</i>	Sep. 2021–Dec 2021 <i>Berkeley, U.S.</i>
Statistics department, ENSAE, CREST, IP Paris <i>Assistant Professor</i>	Sep. 2020–Present <i>Palaiseau, France</i>
Gatsby Unit, University College London (UCL) <i>Postdoctoral Research Fellow</i> Laboratory of Pr. Arthur Gretton.	Dec. 2018–Aug. 2020 <i>London, U.K.</i>

Education

Télécom ParisTech <i>Ph.D. in Applied Mathematics (Machine Learning)</i> <ul style="list-style-type: none">○ Title: Learning from Ranking Data: Theory and Methods○ Supervisor: Stephan Cléménçon	Oct. 2015–Oct. 2018 <i>Paris, France</i>
ENS Cachan <i>Master MVA, First class honours</i> Applied Mathematics for Computer Vision and Machine Learning.	Sep. 2014–Jun. 2015 <i>Cachan, France</i>
ENSAE ParisTech <i>Engineering degree, First class honours</i> Applied Mathematics, Advanced Statistics & Economics.	Sep. 2012–Jun. 2015 <i>Paris, France</i>
Lycée Henri IV <i>Classes préparatoires</i> Mathematics, Physics, Computer Science.	Sep. 2009–Jun. 2012 <i>Paris, France</i>

Publications

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

- [1] P.-C. Aubin-Frankowski, A. Korba, F. Léger. *Mirror Descent with Relative Smoothness in Measure Spaces, with application to Sinkhorn and EM*. Submitted, 2022.
- [2] T. Huix, S. Majewski, A. Durmus, E. Moulines, A. Korba,. *Variational Inference for Overparametrized Bayesian Neural Networks: a Theoretical and Empirical Study*. Submitted, 2022.
- [3] L. Xu, A. Korba, D. Slepcev. *Accurate Quantization for Particle-Based Optimization*. International Conference of Machine Learning (ICML), 2022.
- [4] A. Korba, F. Portier. *Adaptive Importance Sampling Meets Mirror Descent*. Artificial Intelligence and Statistics (AISTATS), 2022.
- [5] A. Korba, P.-C. Aubin-Frankowski, S. Majewski, P. Abblin. *Kernel Stein Discrepancy Descent*. International Conference of Machine Learning (ICML), 2021.
- [6] 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.
- [7] 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.
- [8] A. Salim, A. Korba, G. Luise. *Wasserstein Proximal Gradient*. Advances in Neural Information Processing Systems (NeurIPS), 2020.
- [9] M. Arbel, A. Korba, A. Salim, A. Gretton. *Maximum Mean Discrepancy Gradient Flow*. Advances in Neural Information Processing Systems (NeurIPS), 2019.
- [10] M. Achab*, A. Korba*, S. Cléménçon. *Dimensionality Reduction for Bucket Ranking: A Mass Transportation Approach*. Algorithmic Learning Theory (ALT), 2019.
- [11] A. Korba, A. Garcia, F. D'Alché-Buc. *A Structured Prediction Approach for Label Ranking*. Advances in Neural Information Processing Systems (NeurIPS), 2018.

- [12] S. Cléménçon, A. Korba. *On Aggregation in Ranking Median Regression*. European Symposium on Artificial Neural Networks (ESANN), 2018.
- [13] S. Cléménçon, A. Korba, E. Sibony. *Ranking Median Regression: Learning to Order through Local Consensus*. Algorithmic Learning Theory (ALT), 2018.
- [14] A Korba, S. Cléménçon, E. Sibony. *A Learning Theory of Ranking Aggregation*. Artificial Intelligence and Statistics (AISTATS) 2017.
- [15] 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.
- International Conference of Machine Learning (Ranking session), New York, June 2016.

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.

PhD committees.....

Examinator for the PhD defences of: (Jan. 21) Grégoire Mialon (INRIA Toth) co-supervised by Julien Mairal and Alexandre d'Aspremont, (March 21) Gabriel Ducroq (CREST) supervised by Nicolas Chopin, (May 21), Jérémie Dona (Sorbonne Université) co-supervised by Gérard Biau and Patrick Gallinari.

Reviewing.....

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

Seminars organization.....

- Co-organizer of the CSML seminar (Computer Science and Machine Learning) at University College London and of Gatsby Unit external seminar (2019/2020).

- 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 (Fall 2021).

Professional experience

Teaching.....

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

- Measure theory lectures for 1st 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 of the field in France.

Industrial.....

Principal Researcher **Jan. 2019–Present**
Fentech *Paris, France*

Development of algorithms for research projects in machine learning (themes: recommandation, causal inference).

Data Scientist consultant **Sep. 2015–Sep. 2017**
Various companies *Paris, France*

Development of algorithms for computer vision, text mining, pricing strategies.

Skills

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

Programming: Python, R, MATLAB (advanced).

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