

Clément Bonet

Curriculum Vitae

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Positions

2023
2024

Postdoctoral researcher, ENSAE, CREST, Palaiseau, France
I am working with Anna Korba on Optimal Transport and sampling.

Education

2020
2023

Laboratoire de Mathématiques de Bretagne Atlantique (LMBA), PhD, Université Bretagne Sud, Vannes, Bretagne, France

Title: Leveraging Optimal Transport via Projections on Subspaces for Machine Learning Applications

Supervisors: François Septier (Université Bretagne Sud), Nicolas Courty (Université Bretagne Sud) and Lucas Drumetz (IMT Atlantique).

Reviewers: Gabriel Peyré (ENS), Gabriele Steidl (Technische Universität Berlin)

President of the jury: Julie Delon (Université Paris Cité)

Jury: Frank Nielsen (Sony), David Alvarez-Melis (Harvard), Rémi Flamary (Ecole Polytechnique)

2019
2020

Ecole Normale Supérieure Paris-Saclay, Master 2 MVA (Mathematics, Machine Learning and Computer Vision), Cachan, France.

Convex Optimization, Computational Statistic, Probabilistic Graphical Model, Deep Learning, Kernel Methods, Bayesian Machine Learning. High Honors.

2017
2020

Télécom Paris, Paris, France

Majors: Data Science, Random Modelization and Scientific Computing.

Publications

- [1] Clément Bonet, Paul Berg, Nicolas Courty, François Septier, Lucas Drumetz, and Minh-Tan Pham. "Spherical Sliced-Wasserstein". In: *International Conference on Learning Representations (ICLR)*. **2023**.
- [2] Clément Bonet, Laetitia Chapel, Lucas Drumetz, and Nicolas Courty. "Hyperbolic Sliced-Wasserstein via Geodesic and Horospherical Projections". In: *Proceedings of 2nd Annual Workshop on Topology, Algebra, and Geometry in Machine Learning (TAG-ML)*. Vol. 221. Proceedings of Machine Learning Research. PMLR, **2023**, pp. 334–370.
- [3] Clément Bonet, Benoît Malézieux, Alain Rakotomamonjy, Lucas Drumetz, Thomas Moreau, Matthieu Kowalski, and Nicolas Courty. "Sliced-Wasserstein on Symmetric Positive Definite Matrices for M/EEG Signals". In: *Proceedings of the 40th International Conference on Machine Learning (ICML)*. Vol. 202. Proceedings of Machine Learning Research. PMLR, **2023**, pp. 2777–2805.
- [4] Guillaume Mahey, Laetitia Chapel, Gilles Gasso, Clément Bonet, and Nicolas Courty. "Fast Optimal Transport through Sliced Wasserstein Generalized Geodesics". In: *Advances in Neural Information Processing Systems (NeurIPS)*. **2023**.

- [5] Clément Bonet, Nicolas Courty, François Septier, and Lucas Drumetz. "Efficient Gradient Flows in Sliced-Wasserstein Space". In: *Transactions on Machine Learning Research (TMLR)* (2022).
- [6] Clément Bonet, Titouan Vayer, Nicolas Courty, François Septier, and Lucas Drumetz. "Subspace Detours Meet Gromov–Wasserstein". In: *Algorithms* 14.12 (2021), p. 366.

Preprints

- [7] Clément Bonet, Lucas Drumetz, and Nicolas Courty. *Sliced-Wasserstein Distances and Flows on Cartan-Hadamard Manifolds*. 2024.
- [8] Clément Bonet, Théo Uscidda, Adam David, Pierre-Cyril Aubin-Frankowski, and Anna Korba. *Mirror and Preconditioned Gradient Descent in Wasserstein Space*. 2024.
- [9] Thibault Séjourné, Clément Bonet, Kilian Fatras, Kimia Nadjahi, and Nicolas Courty. *Unbalanced Optimal Transport meets Sliced-Wasserstein*. 2023.

Other Research Experiences

- Reviews I have reviewed at different conferences: AISTATS 2022,2023, ICML 2022, 2023, 2024 (Outstanding Reviewer in 2022), Neurips 2022, 2023, 2024, ICLR 2024.
- Open source Contributor to the Python Optimal Transport library: <https://pythonot.github.io>: I implemented the algorithm to solve the Wasserstein distance on the circle along with the Spherical Sliced-Wasserstein distance.

Talks

- 05/08/2024 Level Set meeting, UCLA.
- 28/02/2024 SIAM Conference on Uncertainty Quantification (UQ24).
- 22/01/2024 Groupe de Travail (GdT) OT-PDE-ML, Institut de Mathématique d'Orsay.
- 08/01/2024 CREST Seminar, ENSAE.
- 03/07/2023 Conférence sur l'Apprentissage Automatique (CAp) 2023, Strasbourg.
- 06/10/2022 Team Seminar, IRISA.
- 07/06/2022 Laboratory Seminar, LMBA.
- 13/12/2021 Spotlight poster at the Neurips Workshop Optimal Transport and Machine Learning (OTML).
- 19/11/2021 Team Seminar of Dynamical Systems, Probabilities and Statistics, LMBA.
- 18/11/2021 Groupement de Recherche (GDR), Information Signal Image Vision (ISIS), Optimal Transport and Machine Learning (OTML), Institut Henri Poincaré.
- 24/09/2021 Team seminar, IRISA.

Professional Experiences

Teaching Assistant

2024

Optimal Transport (M2), ENSAE, Palaiseau, France

2023

Regression Model (L3), Université Bretagne Sud, Vannes, France

2022

Linear Regression and Simulation Methods (L3), Université Bretagne Sud, Vannes, France

2021

Mathematic Statistics (L3), *Université Bretagne Sud*, Vannes, France

Internships

2020

Research Internship, *MAP5*, Paris, France

Supervisors: Raphaël Lachière-Rey, Pierre Latouche and Antoine Marchina.

Study of a subsampling algorithm using Gaussian Random Fields (<https://github.com/clbonet/Internship-MVA>).

2019

Data Analyst Internship, *Sodexo Benefits & Rewards Services*, Ixelles, Bruxelles

Establishment analysis of VISA and MasterCard reimbursement data as part of the replacement affiliate scholarship.

2018

Web Development Internship, *ZenyWay*, Paris, France

I developed the frontend interface of ZenyPass, a password manager.

Languages

French Native Speaker



English 623/677 TOEFL ITP (January 2019)



German Abitur in 2015



Skills

Programming Python ★★★★★☆, LaTeX ★★★★★☆

Basic R, Java, C, C++, SQL, HTML, CSS, Javascript.

Data Science Scikit-learn, Pytorch, Jax

Tools Git

Program Version Control and Program Repositories.

OS Linux

Daily use.