Hugo Lebeau

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 HugoLebeau • ⓘD 0009-0001-8317-3876 • ⑧ atRIpOIAAAAJ

Family and environmental considerations influence my career choices.

Education

Université Grenoble Alpes (MIAI)	**Grenoble, France**
PhD in Applied Mathematics	*2021–2024*

"*Teaching in Higher Education*" track.

ENS Paris-Saclay	**Gif-sur-Yvette, France**
Master MVA (MSc) — Mathematics and Machine Learning	*2020–2021*

With honors of the jury.

ENSTA Paris	**Palaiseau, France**
Diplôme d'Ingénieur (MSc) — Applied Mathematics, Optimization and Data Science	*2017–2021*

Ranked in the top 5% among 150 students.

PhD Thesis

Title: *Random Matrix and Tensor Models for Large Data Processing*

Supervisors: Romain Couillet, Florent Chatelain.

Jury: Philippe Loubaton, Rémi Bardenet, Mylène Maïda, Walid Hachem, Olivier Michel, Pierre Comon.

Experience

Research

Inria, ENS Lyon (OCKHAM Team)	**Lyon, France**
Postdoctoral Researcher	*Feb. 2025–Jan. 2027*

Theoretical study of compressive learning models.

Université Grenoble Alpes (LIG & GIPSA-lab)	**Grenoble, France**
Doctoral Researcher	*Oct. 2021–Jan. 2025*

Theoretical study of machine learning techniques with random matrix theory.

Université Grenoble Alpes (GIPSA-lab)	**Grenoble, France**
Research Intern	*Apr. 2021–Sep. 2021*

Analysis of online learning with random matrix theory.

CEA	**Saclay, France**
Research Intern	*Mar. 2020–Jul. 2020*

Proximal algorithms to improve the quality of industrial neutron imaging.

Politecnico di Milano	**Milan, Italy**
Research Intern	*May 2019–Jun. 2019*

Statistical and numerical methods for functional data on complex multidimensional domains.

Industry

AXA Climate	**Paris, France**
Data Scientist Intern	*Sep. 2019–Feb. 2020*

Weather data modeling and risk assessment for parametric insurance pricing.

Hotel Mikazuki	**Katsuura, Japan**
Intern	*Aug. 2018*

Daily bed-making.

Teaching

Random Matrix Theory and Machine Learning **ENS Paris-Saclay, Master MVA**
Teaching Assistant, 9h/year *Since spring 2022*
Introduction to the theory of large random matrices and their applications to machine learning with practical applications.

Statistics **ENS Lyon, M1**
Teaching Assistant, 24h/year *Spring 2025*
Advanced statistics topics around parametric estimation, maximum likelihood estimation, testing, regression, concentration of random variables.

Probability and Statistics (STA401) **Université Grenoble Alpes, L2**
Teaching Assistant, 18h/year *Spring 2023, 2024*
Basics of probability, standard probability laws, descriptive statistics, estimation, hypothesis testing.

Introduction to Artificial Intelligence (INF103) **Université Grenoble Alpes, L1**
Teaching Assistant, 18h/year *Fall 2021, 2022, 2023*
Introduction to basic concepts of machine learning: datasets, classifiers, training, performance evaluation, data processing.

Introduction to Machine Learning **Grenoble INP, ENSE³, M2**
Teaching Assistant, 18h/year *Fall 2022*
Overview of the main tools in machine learning: model assessment, discriminant analysis, PCA, GLM and penalization, clustering with k-means and EM, trees and random forests, deep learning.

Functional Programming **Université Grenoble Alpes, L1**
Teaching Assistant, 36h/year *Spring 2022*
Introduction to functional programming with OCAML.

Languages

French: Mother tongue **English**: Professional **German**: Intermediate

Technical skills

Programming languages
Proficient in: Python (Numpy, Scipy, Scikit-learn, Pytorch, Matplotlib)
Familiar with: R, Julia, MATLAB, C, C++, OCaml

Software
LaTeX, Git

Miscellaneous

o I love road and trail running and the science behind it (physiology, nutrition, training).

o I enjoy cycling and hiking.

o I am interested in physics and philosophy.

o I regularly read French literature.

Publications

Journals

o H. Lebeau, F. Chatelain, and R. Couillet, *A Random Matrix Approach to Low-Multilinear-Rank Tensor Approximation*, Journal of Machine Learning Research, vol. 26, no. 7, pp. 1–64, 2025.

o H. Lebeau, F. Chatelain, and R. Couillet, *Asymptotic Gaussian Fluctuations of Eigenvectors in Spectral Clustering*, IEEE Signal Processing Letters, vol. 31, pp. 1920–1924, 2024.

International Conferences

o H. Lebeau, M. E. A. Seddik, and J. H. de M. Goulart, *Performance Gaps in Multi-view Clustering under the Nested Matrix-Tensor Model*, ICLR 2024.

o H. Lebeau, R. Couillet, and F. Chatelain, *A Random Matrix Analysis of Data Stream Clustering: Coping With Limited Memory Resources*, ICML 2022.

National Conferences..

○ H. Lebeau, *Performance of Rank-One Tensor Approximation on Incomplete Data*, GRETSI 2025.

○ H. Lebeau, R. Couillet, and F. Chatelain, *HOSVD Tronquée : Analyse d'une Approximation Tensorielle Rapide*, GRETSI 2023

○ H. Lebeau, R. Couillet, and F. Chatelain, *Une analyse par matrices aléatoires de l'apprentissage en ligne : traiter des grandes données avec des ressources mémoire limitées*, GRETSI 2022.