

Paul-Louis Delacour

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Delft, The Netherlands



OBJECTIVE

Ph.D. candidate in applied mathematics specializing in high-dimensional statistics, random matrix theory, and Bayesian learning. Seeking a research position where I can apply rigorous statistical foundations to real-world challenges in signal recovery, hyperspectral imaging, and mass spectrometry data analysis.

EDUCATION

- **TU Delft** 2022-
Delft, Netherlands
Ph.D in applied mathematics with a focus on high-dimensional statistics.
 - Research on statistical modeling, signal recovery, and phase transitions in high-dimensional random matrix models.
- **ETH Zürich** 2019-2022
Zürich, Switzerland
MSc. in Data Science.
 - GPA: 5.25/6.00
 - Relevant modules: Advanced Machine Learning, Advanced Algorithms, Optimization for Data Science.
- **EPFL** 2016-2019
Lausanne, Switzerland
BSc. in Communication Systems.
 - Grade: 5.35/6.00
 - Relevant Modules: Machine Learning, Algorithms, Theory of Computation, Probabilities and Statistics.
- **Lycée du Grésivaudan** 2013-2016
Meylan, France
Baccalauréat scientifique option Mathematics.
 - Obtained with the Highest distinction

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, P=PATENT, S=IN SUBMISSION, T=THESIS

- [J.1] Delacour, et al. (2025). **Signal Recovery Using a Spiked Mixture Model**. *IEEE Transactions on Signal Processing*, Vol. 73, pp. 3748-3761, 2025. DOI: 10.1109/TSP.2025.3593082
- [S.2] Delacour, et al.(2026). **Signal Strength Aware Latent Spaces Reveal Molecularly Distinct Substructures within Human Kidney Tissue**. In *Preprint*. DOI: 0.64898/2026.01.15.699686

RESEARCH PROJECTS

- **Master thesis: [Reduction of convex programming]** 2021
theoretical work
 - Proposed a reduction from constrained convex optimization to unique sink orientations (USO) of hypercubes, improving theoretical complexity bounds.
 - Achieved significant improvements in run-time complexity for high-dimensional optimization problems, including computing the smallest enclosing ball of a point set.
- **Bachelor thesis: [Spectral approximation of graphs]** 2019
theoretical work with practical implementations
 - Spectral approximation of large graphs with smaller ones and its impact on clustering.
 - Implemented spectral approximation algorithms, processing network data

SKILLS

- **Programming Languages:** Python , R , C , Java , Scala with a focus on parallelism and concurrent programming
- **Research Skills:** Guarantees for machine learning
- **Mathematical & Statistical Tools:** Random matrices, High-dimensional probability, Machine Learning, Statistics
- **Data Science & Machine Learning:** Deep learning, Bayesian learning

ADDITIONAL INFORMATION

Languages: French (Native), English (Full Professional Proficiency), Spanish (Limited Professional Proficiency)