Rayane MOUHLI

PhD student at Université Paris Cité & Sorbonne Université

Formation

PhD in applied mathematics – Université Paris Cité (MAP5) & Sorbonne Université (LJLL) 2023-2026
- *« Ontogenesis by large deformations » under the supervision of Barbara Gris and Irène Kaltenmark*

Mathematics, Vision, Learning (MVA) – ENS Paris-Saclay – Research master's degree 2022-2023
- *Geometric Data Analysis - Medical Image Analysis – Topological Data Analysis Optimal Transport – Deep learning for medical image analysis - Geometry and shape spaces Deformable models and minimal path methods for image analysis*

ENSAE – Institut Polytechnique de Paris – Engineering school 2019-2023
- *Advanced Machine Learning – Bayesian Statistics – Optimization – Deep Learning Hidden Markov Models and Sequential Monte-Carlo – Natural Language Processing*

Preparatory class in Math-Physics – Claude Fauriel High School– Saint-Etienne 2016-2019
- *Intensive preparatory course for competitive entrance into top French engineering schools*

Teaching experiences

Teacher assistant – Université Paris Cité – Paris 2023-2025
- *Mathematics and calculus, Differential calculus and dynamic systems (undergraduate level)*

Higher school preparatory classes examiner in mathematics – ICAM – Paris Sept 2022-June 2023
- *Examiner for weekly oral interrogations in preparatory class for engineering schoo*l

Teacher assistant – Noe – Paris 2021-2022
- *Tutoring in Python and SQL for future product managers.*

Research experiences

Research internship – University of Utah – Salt Lake City (Utah, USA) June – Dec. 2023
- *Internship under the supervision of Sarang Joshi at the University of Utah.*
- *Image registration using geodesic regression in the LDDMM framework.*

Research internship – Commissariat à l'Energie Atomique (CEA) – Paris March–Sept 2022
- *Objective of the internship : extraction of skeletons from point clouds*
- *Implementation of geometric methods : Delaunay triangulation, Voronoi diagram, Alpha-shape*, *Laplacian Smoothing, Mesh Contraction*

Data Scientist (R&D internship) – fifty-five – Paris Sept 2021–Mar 2022
- *Prediction of the purchase of a product by an user in the 3 days following his visit on a website by machine learning and time series methods : XGBoost, ARIMA, recurrent neural network models LSTM (Tensorflow)*

Invited conferences and seminar talks

- MAP5 lab PhDs' seminar, Paris (Feb 2025)
- Workshop "Infinite-dimensional Geometry: Theory and Applications", Erwin Schrodinger Institute, Vienna, (Feb 2025)
- Workshop on Varifolds, Nancy (November 2024)
- Congrès des Jeunes Chercheurs en Mathématiques Appliquées (CJ-CMA), ENS Lyon (October 2024)
- Geometric Sciences in Action: from Geometric Statistics to Shape Analysis, CIRM, Marseille (May 2024)
- Shape seminar, Paris

Other skills

Computer skills : Python – SQL - LateX

Languages :

- **French (**native)
- **Anglais** : C1+ (180+ Cambridge Linguaskill)
- **Arabic** : beginner