

# Rayane MOUHLI

✉ rayane.mouhli@u-paris.fr | 🌐 rayanemouhli.github.io

Ph.D. Student in Mathematics at Université Paris Cité (MAP5)

## EDUCATION

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- **Ph.D. in Mathematics** 2023 - 2026  
*Université Paris Cité (MAP5) & Sorbonne Université (LJLL)* Paris, France
  - Thesis: "Decoupling deformations in shape analysis" under the supervision of Irène Kaltenmark and Barbara Gris.
- **Mathematics, Vision, Learning (MVA) - Research master's degree** 2022 - 2023  
*ENS Paris-Saclay* Paris, France
  - Relevant Coursework: Geometric Data Analysis, Medical Image Analysis, Topological Data Analysis, Deep learning for medical image analysis, Geometry and shape spaces.
- **ENSAE - Engineering degree** 2019 - 2023  
*Engineering Degree - Master Data Science, Statistics, and Machine Learning* Palaiseau, France
  - Relevant Coursework: Advanced Machine Learning, Bayesian Statistics, Hidden Markov Models and Sequential Monte-Carlo, Natural Language Processing.
- **B.Sc., Lycée Claude Fauriel** 2016 - 2019  
*CPGE MPSI/MP* Saint-Étienne, France
  - Intensive preparatory course for competitive entrance into top French engineering schools (Mathematics, Physics and Computer Science).

## TEACHING EXPERIENCE

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- **Teaching Assistant** 2023 - 2026  
*Université Paris Cité* Paris, France
  - 1st-year Bachelor: Mathematics and Calculus 1, Mathematics and Calculus 2.
  - 3rd-year Bachelor: Differential Calculus and Dynamical Systems.
  - Supervision of projects and grading of defense presentations for L1 and L2 students.
- **Oral Examiner in Mathematics** 2022 - 2023  
*ICAM - Engineering School* Paris, France
  - Examined weekly oral examinations in mathematics, in preparatory class for engineering school.
- **Data Analyst Instructor** 2021 - 2022  
*Noé* Paris, France
  - Supervised practical sessions in Python and SQL applied to Product Management.

## PUBLICATIONS

S=IN SUBMISSION

- [S.1] Mouhli, R., Pierron, T. (2025). **Decoupling actions of finite-dimensional Lie groups and of groups of diffeomorphisms in the large deformation framework.** *Preprint (submitted for publication).*

## ACADEMIC RESPONSIBILITIES

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- **Ph.D. Student Representative of FP2M** 2024 - 2026  
*Fédération Parisienne de Modélisation Mathématique (FP2M)* Paris, France
  - Organized inter-laboratory scientific events (MAP5, Modal'X, SAMM), promoted research work and managed the network of Ph.D. students within the federation.

## TALKS & SEMINARS

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- **Curves and Surfaces** June 2026  
*Decoupling actions of vector fields in shape analysis* Saint-Malo, France
- **MAP5 Ph.D. Students Seminar** January 2026  
*Introduction to shape analysis* Paris, France
- **M2/Ph.D. Students Meeting at Sorbonne Université** January 2026  
*Introduction to shape analysis* Paris, France
- **Shape Seminar** May 2025  
*Decorrelation of vector fields using first variation of varifolds* Paris, France
- **MAP5 Ph.D. Students Seminar** February 2025  
*Decorrelation of vector fields using first variation of varifolds* Paris, France
- **Infinite-dimensional Geometry: Theory and applications** February 2025  
*Decorrelation of vector fields using first variation of varifolds* Vienna, Austria
- **Congress of Young Researchers in Applied Mathematics (CJC-MA)** October 2024  
*Decorrelation of vector fields using first variation of varifolds* Lyon, France

## PROFESSIONAL EXPERIENCE

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- **Research Internship** 2023 (6 months)  
*Scientific Computing and Imaging Institute - University of Utah* Salt Lake City, USA
  - Medical image (MRI) registration via geodesic regression in the large deformation framework.
  - Under the supervision of Dr. Sarang Joshi.
- **Research Internship** 2022 (6 months)  
*French Alternative Energies and Atomic Energy Commission (CEA)* Paris, France
  - In-situ extraction of dislocation forests in molecular dynamics (skeleton extraction of a point cloud).
- **Data Scientist (R&D Internship)** 2021 - 2022 (6 months)  
*fifty-five* Paris, France
  - Purchase probability prediction using deep learning and time series.
- **Data Analyst** 2020 - 2021  
*FC Nantes eSport* Nantes, France
  - Data processing, infographic creation, and data pipeline implementation.
- **Intern in the General Management Department** 2020 (2 months)  
*Greater Paris Metropolis* Paris, France
  - Built a management tool for a post-crisis recovery plan of the Greater Paris Metropolis.

## SKILLS

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- **Programming:** Python, SQL,  $\LaTeX$
- **Languages:** English (C1+, 180+ Cambridge Linguaskill), Arabic (Beginner), Spanish (Beginner)