Giulia Mescolini

Rue de Lausanne 35C
1110 Morges (CH)
☏ *(+39) 345 27 55 246*
✉ *giulia.mescolini@epfl.ch*
GitHub:@giuliamesc
LinkedIn: giuliamescolini

Education

Sep 2023– ongoing
École Polytechnique Fédérale de Lausanne,
École doctorale de Mathématiques.
- PhD candidate in the group of Mathematical Analysis and Calculus of Variations (prof. M. Colombo)
- **Research interests:** analysis of PDEs, instability and blow-up phenomena in fluid dynamics.
- **Courses:** Topics on the Euler and Navier-Stokes equations, Nonlinear Schrödinger Equations.

Sep 2021– Jul 2023
École Polytechnique Fédérale de Lausanne,
Computational Science and Engineering, Master of Science.
- Double Degree Program with Politecnico di Milano
- **Master Thesis:** "Forward self-similar solutions for the forced 3D Navier Stokes Equations", supervised by Prof. M. Colombo (EPFL) and Prof. M. Grasselli (Politecnico di Milano).
- **Core Courses:** Optimal Transport, Numerics for Fluids and Structures, Stochastic Simulation, Machine Learning, Artificial Neural Networks.
- **GPA** – 5.6/6

Jan 2021– Sep 2022
Alta Scuola Politecnica,
Politecnico di Milano, Excellence multidisciplinary path.
- **Courses:** Dynamics of Innovation, Design Methods and Processes, Complex Decision-Making and Policy Design, The Intangible Value of Places.
- **Final Project:** "WoW - Web of Water". In collaboration with the company Fluid-o-Tech, my team proposed a new paradigm for water quality monitoring and data sharing in the coffee machine industry.

Sep 2020– Jul 2023
Politecnico di Milano,
Mathematical Engineering, Master of Science, 110/110 *cum laude*.
- **Core Courses:** Real and Functional Analysis, Advanced PDEs, Numerical Analysis for PDEs, Fluid-Dynamics, C++ Programming, Advanced Programming for Scientific Computing.
- **GPA** – 30.0/30.0

Sep 2017– Sep 2020
Politecnico di Milano,
Ingegneria Matematica, Bachelor of Science, 110/110 *cum laude*.
- **Core Courses:** Mathematical Analysis, Introduction to PDEs, C Programming, Probability and Statistics.
- **GPA** – 29.9/30.0

Publications

Sep 2024 *Self-similar instability and forced nonuniqueness: an application to the 2D Euler equations*, Dolce, M., Mescolini, G., arXiv:2411.18452.

Sep 2024 *On vanishing diffusivity selection for the advection equation*, Mescolini, G., Pitcho, J., Sorella, M., arXiv:2411.12910.

Talks

Apr 2024 *Self-similar solutions for the forced 3D Navier–Stokes Equations*, Bernoullis Tafelrunde, University of Basel (CH).

May 2024 *Forward self-similar solutions for the forced 3D Navier Stokes Equations*, International Conference on Elliptic and Parabolic Problems, Gaeta (IT).

Sep 2024 *Vanishing viscosity non-unique solutions to the forced 2D Euler equations*, PDE Geometric Analysis seminar, University of Wisconsin–Madison (US).

Participation to conferences

Jun 2023	Summer school: **New trends in mathematical fluid-dynamics**, Institut Fourier, Grenoble (FR).
Jul 2023	Summer school: **Deterministic and random features of fluids**, EPFL, Lausanne (CH).
Jul 2023	Summer school: **Exotic solutions and well-posedness in ODEs and PDEs**, RISM, Varese (IT).
Sep 2023	Workshop: **Enjoying Probability and Fluids in Lausanne**, EPFL, Lausanne (CH).
Feb 2024	Winter school: **Phase mixing, kinetic theory and fluid mechanics**, SwissMAP Research Station, Les Diablerets (CH).
May 2024	Conference: **International Conference on Elliptic and Parabolic Problems**, Gaeta (IT).
May 2024	Summer school: **(In)-stability phenomena in fluids**, CY Cergy Paris Université, Paris (FR).

Achievements

Sep 2023 Best Thesis Poster, EPFL.
- For the poster based on my work among the Master Projects in Computational Science and Engineering.

July 2021 Basic Sciences Fellowship, EPFL.
- Awarded with a two-years fellowship for the promising profile among the applicants for the Master in Computational Science and Engineering.

Feb 2019 Best Freshmen Prize, Politecnico di Milano.
- For the results obtained in the first year of BSc.

Teaching

Fall 2023	**Calculus of Variations**, EPFL, Teaching assistant.
Spring 2023	**Analysis IV**, EPFL, Teaching assistant.
Fall 2024	**Introduction to PDEs**, EPFL, Teaching assistant.

Work Experience

Aug 2022– R&D Intern, Nestlé Research, Lausanne.
Feb 2023
- Internship in Machine Learning for Digital Nutrition.
- Implementation of Natural Language Processing models for classification of ingredients and cooking methods in a food composition database.

Extra-Curricular Activities

Sep 2023 – Vice President, SIAM Chapter at EPFL.
ongoing
- In charge of the organization of events with companies and former PhD students for the EPFL Chapter of the Society for Industrial and Applied Mathematics (SIAM).

Sep 2022 – Tresaurer, SIAM Chapter at EPFL.
Sep 2023
- Management of the financial expenses of the SIAM Chapter.

Skills

Code	Python, C, C++, SQL, MATLAB, R, FreeFem++
Frameworks	TensorFlow, Keras, PyTorch
Utilities	Anaconda, Git, LaTeX, Jupyter Notebook, Docker, SQL Server Management Studio
CFD Software	COMSOL Multiphysics, Ansys Fluent, PHOENICS
Languages	Italian (mothertongue), English (C1), French (B1)