

Daphné Giorgi

Research engineer in scientific computing

Experience

Research Engineer

2014–Present **CNRS, LPSM – Sorbonne Université, Paris**

- Multilevel estimators
- Robust model-based clustering
- Clustering in longitudinal networks
- Individual based models for populations simulation
- Simulations web page at Simulations@LPSM
- Software development: C++, R, python
- Web application development: Flask, Shiny, Voilà
- Additional skills: SWIG, pybind11, Rcpp

2012–2014 **INRIA, CMAP, Commands Team, École Polytechnique, Paris–Saclay**

- Toolbox solving optimal control problems
- Software development: C++
- GUI development: Qt
- Additional skills: CMake, Continuous Integration

Internship

2011 **GDF Suez Trading, Risk Methodologies, Paris, La Défense**

- 6 months
- Proximities: Principal Component Analysis, Seasonal adjustment of curves
 - Software development in VBA, R

2010 **HSBC, Quantitative Risk Valuation Group, Paris**

- 6 months
- Basis spread market: Tool of curves construction, Bermudean options pricer
 - Software development in C++

Education

2014–2017 **PhD Applied Mathematics, Université Pierre et Marie Curie, Paris 6**

2009–2010 **Master IFMA, Université Pierre et Marie Curie, Paris 6**

Pass with honours degree

2007–2009 **Master Fundamental Mathematics, Università degli Studi di Firenze, Italy**

Pass with 110/110 magna cum laude

PhD thesis

title *Théorèmes limites pour estimateurs Multilevel avec et sans poids. Comparaisons et applications*

supervisor Gilles Pagès

Master thesis

title *Probability Models for Biology: Genetics and Neurosciences*

supervisors Lorenzo Zambotti & Marco Romito

Software

- 2025 **STARRS**, *STochastic Algorithms for Robust multivariate Statistics*
- 2024 **graphclust**, *Graph clustering for a collection of networks*, CRAN
- 2020, 2024 **IBMPopSim**, *Individual based model population simulation*, CRAN, GitHub
- 2018 **ppsbm**, *Clustering in Longitudinal Networks*, CRAN
- 2017 **Simulations web page**, Simulations@LPSM
- 2014 **Bocop**, *Toolbox solving optimal control problems*, <https://www.bocop.org/>

Communication

- 2024 **Publication**, *Efficient simulation of individual-based population models: the R Package IBMPopSim*, D. Giorgi, S. Kaakäi, V. Lemaire, *Computo*
DOI: 10.57750/sfxn-1t05
- 2022 **Seminar**, *An R package for simulating Individual-Based Models*, Insurance Data Science Conference 2022, Università Cattolica di Milano
- 2021 **Seminar**, *IBMPopSim : un paquet R pour la simulation de populations individu centrées*, Webinaires Maths-Innovation de SUMMIT Mathématiques pour la finance et l'assurance, Sorbonne Université, Paris
- 2020 **Publication**, *Weak error for nested Multilevel Monte Carlo*, D. Giorgi, V. Lemaire, G. Pagès, *Journal: Methodolgy and Computing in Applied Probability*
DOI: <https://doi.org/10.1007/s11009-019-09751-3>
- 2019 **Seminar**, *An R package for simulating Individual-Based Models*, Insurance Data Science Conference 2019, ETH, Zurich
- 2017 **Seminar**, *Asymptotic behaviour of Multilevel estimators with and without weights*, Groupe de travail des Thésard, LPMA, Paris 7
Seminar, *Asymptotique des estimateurs Multilevel avec et sans poids*, Groupe de travail Méthodes Stochastiques et Finance, CERMICS, Marne-la-Vallée
Publication, *Limit theorems for weighted and regular Multilevel estimators*, Autors: D. Giorgi, V. Lemaire, G. Pagès, *Journal: Monte Carlo Methods and Applications*
DOI: <https://doi.org/10.1515/mcma-2017-0102>
Flash talk, *Limit theorems for Multilevel estimators with and without weights*, Advances in Financial Mathematics Conference, Paris
- 2016 **Seminar**, *Limit Theorems for Weighted and Regular Multilevel Estimators*, Groupe de travail Finance mathématique, probabilités numériques et statistique des processus, LPMA, Paris
Minisymposium, *Comportement asymptotique fort et faible des estimateurs multilevel*, CANUM 2016, Obernai
- 2014 **Seminar**, *Bocop Boîte à Outils en Commande Optimale*, Groupe de travail CMAP, CMAP Polytechnique, Paris-Saclay

Training

- 2023-2025 **CNRS Formation: Introduction au machine learning et au deep learning avec Python**, 3j, TP, Python

2024 **ANF R Calcul**, 5j, Formation
Introduction au HPC
Rcpp

Teaching

2025 **Approfondissement en C++**, M2, CM, C++
2023-2025 **Probabilités numériques et Machine Learning**, M1, TP, Python
2018-2025 **Programmation en C++**, M1, TP, C++
2018 **Probabilités**, L3, TP, Python

Commitee/jury

Organizing commitee

2023-2025 **Conference**, *Journée Filles Maths et Info*, Sorbonne Université, Paris
2019-present **Seminar**, *infomath*, Seminar on numeric tools for mathematics, Sorbonne Université, Paris
2022 **Conference**, *FoCM 2023*, Foundations of Computational Mathematics, Sorbonne Université, Paris
2021 **Conference**, *Conference of Numerical Probability in honour of Gilles Pagès' 60th birthday*, 26-28 May 2021, Sorbonne Université, Paris

Jury member

2025 **HCERES**, *DER-PUR270025897-EPIA*
2024 **CNRS**, *IE Statistiques*, Bap E (CE)
2022 **CNRS**, *IR Calcul scientifique*, Bap E (CIA, CINA, CE)

Collective responsibilities

2022- **Conseil de l'UFR de mathématiques**, *Full member*, Sorbonne Université, Paris
2025- **Prevention assistant**, *LPSM*, Sorbonne Université, Paris
2022- **Groupe Calcul**, *Full member*, CNRS

Computer skills

	Level	Skill	Comment
Language:	■■■■■	C++	<i>Standard 11,14,17,20</i>
	■■■■■	Python	<i>Pytorch, jupyter cling</i>
	■■■■■	R	<i>Rcpp, packages development</i>
	■■■■■	VBA	
	■■■■■	Qt	
	■■■■■	Scilab, Matlab	
	■■■■■	LaTeX	
	■■■■■	html	
OS:	■■■■■	GNU/Linux	<i>Ubuntu, Debian</i>
	■■■■■	Microsoft Windows	
	■■■■■	OS X	

Tools  git *GitLab, GitHub, pages, CI*

Languages

Level	Language	Comment
	French	<i>Native language</i>
	Italian	<i>Native language</i>
	English	<i>Fluent, Written and spoken</i>
	Arabic	<i>Basic communication skills, Egyptian dialect</i>

Interests

Volunteer **Mat'les vacances**, *Teacher at the Summer Mathematic Camp*, (2017, 2018, 2019)

Volunteer **Mat'les ressources**, *Coordinator of submissions*, 2017-present

Sports Cycling, swimming

Hobbies Origami, piano