Diala HAWAT

Ph.D. student, Lebanese, Uruguayan

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Research interests

Keywords Point processes, hyperuniformity, Monte Carlo methods, simulation algorithms, computational statistics, gravitational allocations.

Education

2020–present **Doctorat (Ph.D.)**, *Applied mathematics, MADIS-631 doctoral college*, CRIStAL- SigMA team, University of Lille, Lille, France, MAP5, University Paris Cité, Paris France.
Title: stochastic processes for numerical integration.
Supervisors: Raphaël Lachièze-Rey and Rémi Bardenet.

2019–2020 **Master 2 (MMA)**, *Mathematics, Modeling, and Machine Learning*, University Paris Cité, Paris, France.

2019–2020 **Master 1**, *Pure mathematics*, Lebanese University Faculty of sciences 2, Fanar, Lebanon.

Scholarships and Awards

September 2021 **AMIES**, *Winner of the challenge Mathematics and Companies organized by AMIES, SFdS, SMF, and the SMAI for Ph.D. students in France*, Paris, France.
Subject: Improving data quality **Company**: Foyer Interview

2019-2020 **FSMP**, *Laureate of the Paris Graduate School of Mathematical Sciences program for excellent students*, master (M2) grant at the university Paris Cité, Paris, France.

May 2019 **AULIB**, *The AULIB (Amis de l'Université Libanaise) award for the brillant students of the Lebanese university*, Beyrouth, Lebanon.

2018-2019 **AAHF**, *Laureate of the Alexis and Anne-Marie Habib Foundation program for excellent students*, master (M1) grant at the Lebanese university, Fanar, Lebanon.

Computer skills

Programming	Python, MATLAB, R.
Documents	LATEX, Microsoft Office.
Versioning	Git, Github

Languages

Arabic	fluent, mother tongue.
French	fluent, working language.
English	fluent, main working language.

Software/Github

structure-factor **Main developer**, Python package for estimating the structure factor and studying the hyperuniformity of point processes.
Code Documentation Companion paper

assess-data-quality **Co-developer**, Python plug-and-play algorithm for assessing data quality and finding bad data within a dataset. *Project developed during the challenge Mathematics and Companies organized by AMIES, SFdS, SMF, and the SMAI for Ph.D. students in France.*.
Code

Publications

pre-print **D. Hawat,** G. Gautier, R. Bardenet, and R. Lachièze-Rey, *On estimating the structure factor of a point process, with applications to hyperuniformity*, Under revision for Statistics and Computing; arXiv preprint arXiv:2203.08749, 2022.
arXiv Code

Conference paper **D. Hawat,** G. Gautier, R. Bardenet, and R. Lachièze-Rey, *Estimation de la fonction de structure d'un processus ponctuel pour l'étude d'hyperuniformité*, XXVIIIème Colloque Francophone De Traitement Du Signal Et Des Images (GRETSI), 2022.
HAL Code

Presentations and Posters

Conference **Computational methods for unifying multiple statistical analyses (Fusion)**, *CIRM*, Marseille, France, October 24, 2022, Presentation.

Conference **Lille Days in Point Processes and Stochastic Geometry**, *IMT*, Villeneuve d'Ascq, France, October 17, 2022, Poster.

Conference **GRETSI**, Nancy, France, September 06th, 2022, Poster.

PhD day **Statistics and probability PhD day**, *Paul Painlevé Laboratory*, Lille, France, May 19th, 2022, Presentation.

Seminary **Probability seminary**, *MAP5*, Paris, France, March 25th, 2022, Presentation.

Workshop **New trends in point process theory**, *KIT*, Karlsruhe, Germany, February 28th-March 2nd, Presentation.

Team meeting **Research center in Micro and Nanotechnologies**, *IEMN*, Villeneuve d'Ascq, France, November 29, 2021, Presentation.

Conference **Stochastic Geometry Days**, Dunkerque, France, November 15th-19th, 2021, Poster.

Conference **End-to-End Bayesian learning**, *CIRM*, Marseille, France, October 25th-29th, 2021, Poster.

Conference **International visio conference, PhD to PhD**, *LAU and UL*, Beyrouth, Lebanon, June 1st, 2021, Presentation.

Teaching

2021 30h **Probability (Proba5) -L3 Mathematics and computer sciences**, *University Paris Cité*, with Thierry CABANAL-DUVILLARD, Paris, France.

2021 12h **TP R (sampling random variables) -L3 Mathematics and computer sciences**, *University Paris Cité*, with Thierry CABANAL-DUVILLARD, Paris, France.

2021 30h **Mathematics and calculus (MC2) -L1 Mathematics and computer sciences**, *University Paris Cité*, with Marcela SZOPOS, Paris, France.

2020 18h **Mathematical tools for microeconomics -L1 Economics and Management**, *University Paris Cité*, with Serge SEGOR, Paris, France.