

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*, CRISAL- SigMA team, University of Lille, Lille, France, MAP5, University Paris Cité, Paris France.
Title: stochastic processes for numerical integration.
Supervisors: Raphael 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 brilliant 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 **Probability (Proba5) -L3 Mathematics and computer sciences**, University Paris Cité, with 30h Thierry CABANAL-DUVILLARD, Paris, France.
- 2021 **TP R (sampling random variables) -L3 Mathematics and computer sciences**, University 12h Paris Cité, with Thierry CABANAL-DUVILLARD, Paris, France.
- 2021 **Mathematics and calculus (MC2) -L1 Mathematics and computer sciences**, University 30h Paris Cité, with Marcela SZOPOS, Paris, France.
- 2020 **Mathematical tools for microeconomics -L1 Economics and Management**, University Paris 18h Cité, with Serge SEGOR, Paris, France.