Nayel Bettache

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Academic Experience

PhD Candidate at CREST — Palaiseau, France
Under the supervision of Cristina Butucea.
High dimensional statistics, Matrix-valued time series, Topic Models. — Since Sep. 2021

Visiting Researcher at Harvard University — Cambridge, United States
Invited by Tracy Ke.
Topic Models, Time Series. — April-May 2023

Visiting Researcher at Cornell University — Ithaca, United States
Invited by Florentina Bunea.
Topic Models, Optimal Transport. — May 2023

Graduate Researcher at CREST — Palaiseau, France
Under the supervision of Cristina Butucea.
High dimensional regression, Tensor decomposition, Convex optimization. — Jan. 2021 –Aug. 2021

Education

ENSAE IP Paris: M.Sc Statistics and Learning — 2017 –2020

Ecole Polytechnique M.Sc DataScience — 2019 –2020

Institution Aux Lazaristes: Classes Préparatoires MPSI-MP — 2014–2017

Publications

[1] **N. Bettache** and C. Butucea, "Two-sided matrix regression", *arXiv preprint arXiv:2303.04694*, 2023.

[2] **N. Bettache**, C. Butucea, and M. Sorba, "Fast non-asymptotic testing and support recovery for large sparse toeplitz covariance matrices", *Journal of Multivariate Analysis*, 2022.

Teaching

- **Teaching Assistant** at ENSAE IP PARIS — Since Jan. 2021
  Measure Theory, Probability Theory, Convex Optimization, Statistical Learning, Linear Algebra, Statistics.
- **Mathematics Oral Examiner** at Lycée Michelet — Sep. 2018 –Apr. 2020
  Providing weekly examinations to second year students preparing nationwide competitive exams.

Professional Experience

BNP PARIBAS CIB: Quantitative Research Internship — London, United Kingdom
Under the supervision of Cristina Butucea.
Knowledge Graph Embedding: Query2box implementation with Pytorch Lightning. — Jul.2020 –Dec. 2020

ADVESTIS: Quantitative Research Internship — Paris, France
Under the supervision of Cristina Butucea.
Machine Learning for Cross-Asset Portfolio Optimisation. — Jun. 2019 –Oct. 2019

MIROVA: Quantitative Research Project — Paris, France
Under the supervision of Cristina Butucea.
Regression for Portfolio Optimisation under Environmental Impact Constraints. — Sep. 2018 –Apr. 2019

CREST: Research Intern   Palaiseau, France
Under the supervision of Cristina Butucea.
LASSO Procedures for High-Dimensional Regression under Sparsity Assumptions.   Jun. 2018 –Sep. 2018

Grants

- **Junior Scientific Visibility:** Fondation Mathématique Jacques Hadamard (2300€)   2023

Talks

- **Talks**: PhD Student Day, CREST (2022 & 2023), Stat300 Seminar, Harvard (2023)