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)