

Nayel Bettache

nayelbettache.github.io/

✉ nbb45@cornell.edu

LinkedIn: nayel-bettache

GitHub: github.com/nayelbettache

Number: +33611392258

ACADEMIC POSITIONS

- Vis. Assistant Professor** at Cornell University (*Statistics & Data Science dpt.*) Ithaca, United States
Conducted research and taught (lead instructor) undergraduate and graduate courses. Aug. 2024 - Present
Statistical Methods II for PhD students (60+ students),
Machine Learning for undergraduate and graduate students (110+ students),
R Programming for undergraduate and graduate students (40+ students).
Received a 4.35/5 evaluation by students for teaching effectiveness.
- Vis. Research Scientist** at Harvard University Cambridge, United States
Invited by Tracy Ke. Performed research on topic models and time series. April 2023
- Vis. Research Scientist** at Cornell University Ithaca, United States
Invited by Florentina Bunea. Focused on topic models and optimal transport. May 2023
- Teaching Assistant** at ENSAE IP PARIS Palaiseau, France
Assisted in teaching, grading, and mentoring students. Jan. 2021 - May 2024
Measure Theory, Probability Theory, Convex Optimization, Statistical Learning.
Honored in the top 1% of teachers for exceptional pedagogical quality.
- Graduate Researcher** at CREST, ENSAE IP Paris Palaiseau, France
Supervised by Cristina Butucea. Worked on high dimensional estimation. Jan. 2021 - Aug. 2021

EDUCATION

- PhD in Mathematical Statistics** at Institut Polytechnique de Paris Palaiseau, France
Supervised by Cristina Butucea. President of Jury: A.B. Tsybakov. Sep. 2021 - Jul. 2024
Title: *Matrix-valued time series in high dimension*. Received highest honors from the jury.
- M.Sc Statistics and Learning** at ENSAE IP Paris Palaiseau, France
High-dimensional Statistics, Non-parametric Statistics, Compressed Sensing. Sep. 2017 - Jul. 2020
- M.Sc Data Science** at Ecole Polytechnique Palaiseau, France
Machine Learning, Deep Learning, Causal Inference. Sep. 2019 - Jul. 2020

SELECTED PUBLICATIONS

1. N. Bettache, "Bivariate Matrix-valued Linear Regression (BMLR): Finite-sample performance under Identifiability and Sparsity Assumptions", *Arxiv preprint 2412.17749* (2024), Submitted at ICML 2025.
2. N. Bettache, C. Butucea, "Low-rank regularization in two-sided matrix regression", Published by *Electronic Journal of Statistics* (2025).
3. N. Bettache, "Matrix-valued Time Series in High Dimension", *PhD Thesis, Institut Polytechnique de Paris* (2024).
4. N. Bettache, C. Butucea, M.Sorba, "Fast nonasymptotic testing and support recovery for large sparse Toeplitz covariance matrices", Published by *Journal of Multivariate Analysis* (2022).

INDUSTRIAL EXPERIENCE

- Quantitative Research Intern** at BNP PARIBAS CIB London, England
Supervised by Philippe Amzelek. Grade: 18.5/20. Jul. 2020 - Dec. 2020
Knowledge Graph Embedding: Query2box implementation with Pytorch Lightning.
- Quantitative Research Intern** at ADVESTIS Paris, France
Supervised by Christophe Geissler. Grade: 18/20. Jun. 2019 - Oct. 2019
Machine Learning for Cross-Asset Portfolio Optimisation.
- Research Scientist Intern** at CREST Palaiseau, France
Supervised by Cristina Butucea. Grade: 17/20. Jun. 2018 - Sep. 2018
LASSO Procedures for High-Dimensional Regression under Sparsity Assumptions.

ENTREPRENEURSHIP

Founder of Nayel Prépa

Received a stellar 100% 5-star rating on Trustpilot.

Founded an online platform making high-quality mathematics education accessible to all.

Designed and led live interactive courses for groups of 15+ undergraduate students.

Produced and published 80 educational videos, garnering over 300K views on YouTube.

Generated over \$100k in revenue within three years through premium courses and resources.

Online

Sep. 2021 - Aug 2024

TALKS

Matrix-valued time series in high dimension

PhD Oral Defense

Palaiseau, France

Jul. 2024

Dynamic Topic Models

PhD Seminar

Palaiseau, France

Jul. 2024

Two-sided Matrix Regression

European Meeting of Statistician

Warsaw, Poland

Jul. 2023

Two-sided Matrix Regression

Harvard Stat300 Seminar

Cambridge, USA

May 2023

Two-sided Matrix Regression

PhD Student Day

Palaiseau, France

Mar. 2023

Stationary Time Series: Testing and Lag Selection procedures

PhD Student Day

Palaiseau, France

Mar. 2022

INTERNATIONAL CONFERENCES

Meeting in Mathematical Statistics

New challenges in high-dimensional statistics

Luminy, France

Dec. 2024

Statistics and Learning Theory in the Era of Artificial Intelligence

Theoretical advances on inference in high-dimensional statistical models

Oberwolfach, Germany

Jun. 2024

Meeting in Mathematical Statistics

Statistical thinking in the age of AI: Robustness, fairness and privacy

Luminy, France

Dec. 2023

European Meeting of Statisticians

Main conference in statistics and probability in Europe

Warsaw, Poland

Jul.2023

Statistical Foundations of Data Science and their Applications

A conference in celebration of Jianqing Fan's 60th Birthday

Princeton, USA

May 2023

Meeting in Mathematical Statistics

Machine Learning and non parametric statistics

Luminy, France

Dec. 2022

IMS Meeting

Joint workshop - COLT and IMS 2022

London, UK

Jun. 2022