

Nayel Bettache

nayelbettache.github.io/

✉ nbb45@cornell.edu

LinkedIn: nayel-bettache

GitHub: github.com/nayelbettache

Number: +33611392258

ACADEMIC APPOINTMENTS

Vis. Assistant Professor at Cornell University (<i>Statistics & Data Science dept.</i>) Performing research, teaching three courses and being involved in faculty meetings.	Ithaca, United States Since Aug. 2024
Vis. Research Scientist at Harvard University Invited by Tracy Ke. Performed research on topic models and time series.	Cambridge, United States April 2023
Vis. Research Scientist at Cornell University Invited by Florentina Bunea. Focused on topic models and optimal transport.	Ithaca, United States May 2023
Graduate Researcher at CREST Supervised by Cristina Butucea. Worked on high dimensional estimation.	Palaiseau, France Jan. 2021 - Aug. 2021

EDUCATION

PhD in Mathematical Statistics at Institut Polytechnique de Paris Supervised by Cristina Butucea. President of Jury: A.B. Tsybakov. Title: <i>Matrix-valued time series in high dimension.</i>	Palaiseau, France Sep. 2021 - Jul. 2024
M.Sc Statistics and Learning at ENSAE IP Paris High-dimensional Statistics, Non-parametric Statistics, Compressed Sensing, Markov Chain	Palaiseau, France Sep. 2017 - Jul. 2020
M.Sc Data Science at Ecole Polytechnique Deep Learning, Bayesian Learning, Causal Inference	Palaiseau, France Sep. 2019 - Jul. 2020

PUBLICATIONS

1. N. Bettache, "Bivariate Matrix-valued Linear Regression (BMLR): Finite-sample performance under Identifiability and Sparsity Assumptions", *Arxiv preprint 2412.17749* (2024)
2. N. Bettache, "Matrix-valued Time Series in High Dimension", *PhD Thesis, Institut Polytechnique de Paris* (2024)
3. N. Bettache, C. Butucea, "Two-sided Matrix Regression", *Arxiv preprint 2303.04694* (2023), Submitted at *Electronic Journal of Statistics*.
4. N. Bettache, C. Butucea, M.Sorba, "Fast nonasymptotic testing and support recovery for large sparse Toeplitz covariance matrices", *Journal of Multivariate Analysis* (2022)

TEACHING

Instructor at Cornell University Received a 4.35/5 evaluation by students for teaching effectiveness. <u>Machine Learning</u> for undergraduate and graduate students, <u>R Programming</u> for undergraduate and graduate students, <u>Statistical Methods II</u> for PhD students.	Ithaca, United States Aug. 2024 - May 2025
Teaching Assistant at ENSAE IP PARIS Honored in the top 1% of teachers for exceptional pedagogical quality. Measure Theory, Probability Theory, Convex Optimization, Statistical Learning.	Palaiseau, France Jan. 2021 - May 2024

MEDIA

Founder of <u>Nayel Prépa</u> Received a stellar 100% 5-star rating on Trustpilot. Founding a company democratising access to high-quality mathematics education. Pioneering online live teaching sessions for 15+ undergraduate students at a time. Publishing 78 videos and amassed over 300k views on <u>YouTube</u> . Generated over \$100k in revenue.	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

INDUSTRIAL EXPERIENCE

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

INTERESTS

Teaching and Mentorship

Passionate about engaging with students, designing courses, and mentoring individuals.

<https://www.nayelprepa.fr/>

Running and Road Cycling

Competitive athlete training 10+h/week. Passionate about physiology, human endurance performance and longevity.

<https://www.strava.com/athletes/3613145>