

Margaux Zaffran

Third year PhD Student
in statistics (applied mathematics)

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French nationality



Education

- Nov. 2020 **INRIA, PhD Student in statistics.** Palaiseau, France
- current Distribution-free uncertainty quantification for machine learning algorithms.
Application to forecasting short-term electricity market prices.
Supervised by [Aymeric Dieuleveut](#) (Ecole Polytechnique) and [Julie Josse](#) (INRIA).
- 2019-2020 **Ecole Polytechnique, MSc Data Sciences, double degree.** Palaiseau, France
 - Statistical learning theory, generalization properties, bootstrap and resampling methods
 - Online learning and aggregation, reinforcement learning, deep learning
 - Optimal transport, probabilistic graphical models, extreme values, Bayesian learningAverage grade: 17.7/20.
- 2016-2020 **ENSTA Paris, Institut Polytechnique de Paris, engineering track.** Palaiseau, France
Simulation and Mathematical Engineering track, Optimization and Data Sciences specialization.
 - Statistics: statistical modeling, linear and non-linear time series
 - Optimization: Markov decision process, large systems, proximal methodsRanked in the top 5% of the first year class (common core, 150 students).
- 2014-2016 **Lycée Louis-Le-Grand, Mathematics and Physics, classes préparatoires aux grandes écoles.** Paris, France
- 2014 **Lycée Marseilleveyre, French scientific Baccalauréat and Spanish Bachillerato.** Marseille, France
Spanish international section, 11 weekly hours of literature and history of the Spanish-speaking world.

Professional activities

- Nov. 2020 **Research engineer (PhD contract), Electricité De France (EDF) R&D.** Palaiseau, France
to current Forecasting short-term electricity market prices with uncertainty quantification.
Supervised by [Olivier Féron](#) and [Yannig Goude](#).

Teaching and supervision

- 2022 **MSc Student Supervision, EDF R&D, 5 months.** Palaiseau, France
Grégoire Dutot (MVA) MSc thesis: probabilistic electricity price forecasting, towards extreme events.
- 2022 **Teaching Assistant, Université Paris Dauphine - PSL, 2nd year of the MSc Digital Economics.** Paris, France
- current Practical session on Electricity Price Forecasting for the Business Cases class.
- 2021 **Teaching Assistant, ENSTA Paris, 3rd year of BSc and 1st year of MSc.** Palaiseau, France
- current
 - Linear time series, 1st year of MSc (15h/year)
 - Introduction to probability, 3rd year of BSc (15h/year)
 - Introduction to statistics (estimators, confidence intervals, tests), 3rd year of BSc (15h/year)

Internships and visiting stays

- August to **Visiting research student, Technion, Israel Institute of Technology, 3 months.** Haifa, Israel
Oct. 2022 Supervised by [Yaniv Romano](#).
- April to **Research intern, Laboratoire des Sciences du Climat et de l'Environnement.** Gif-sur-Yvette, France
Oct. 2020 Clustering of extreme rainfall by coupling machine learning algorithms and Kullback-Leibler divergence.
Supervised by [Philippe Naveau](#).
- March to **Research engineer intern, General Electric Healthcare.** Buc, France
Aug. 2019 Predicting user (*i.e. medical doctor*) preferences of an image review software by machine learning.
- Sep. 2018 **Research engineer intern, Data Innovation Lab, EDF R&D.** Palaiseau, France
to Mar. 2019 Developed machine learning methods to drive a nuclear unit.
- May to **Research intern, School of Mathematics Research, University of Bristol.** Bristol, United Kingdom
Aug. 2018 Worked on quantile regression: optimal bandwidth for smoothing the pinball loss w.r.t. coefficients mean squared error.
Supervised by [Matteo Fasiolo](#) and [Simon N. Wood](#).

Grants and awards

- 2022 **Laureate of the Séphora Berrebi Scholarship in Advanced Mathematics**, *Association Séphora Berrebi*, 2k€. Some jury members: Bo'az Klartag, Laurent Lafforgue, Erwan Le Pennec, Mathieu Rosenbaum, Sylvia Serfaty, Mikhail Sodin, Ofer Zeitouni.
- 2022 **Junior scientific visibility**, *FMJH and LMH*, 2.3k€. Funding the research stay at the Technion - Israel Institute of Technology.
- 2022 **Best MSc thesis project**, *ENSTA Paris*, 2k€. Awarding the research internship at the Laboratoire des Sciences du Climat et de l'Environnement (MSc thesis). Popularized pitch in front of more than 1000 people at Folies Bergères (Paris).
- 2018 **Excellence research scholarship**, *Université Paris-Saclay*, 1.8k€. Obtained to finance the research internship at the University of Bristol.
- 2014 **First prize**, *National Physics Olympiad*. Research project in a team of 3, supervised by our physics teacher Claude Torregrosa, on a topic we have chosen. Written report and oral presentations in front of two scientific juries. One-day presentation at the Palais de la Découverte (Paris) in front of their public visitors (children, neophytes, etc).

Scientific activities

Research papers

- In progress **A new dissimilarity for extreme rainfall clustering** *Working paper*
M. Zaffran, P. Naveau
- 2022 **Adaptive Conformal Predictions for Time Series** *39th International Conference on Machine Learning*
M. Zaffran, A. Dieuleveut, O. Féron, Y. Goude, J. Josse
- 2021 **qgam: Bayesian non-parametric quantile regression modelling in R** *Journal of Statistical Software*
M. Fasiolo, S. N. Wood, M. Zaffran, R. Nedellec, Y. Goude
- 2020 **Fast calibrated additive quantile regression** *Journal of the American Statistical Association*
M. Fasiolo, S. N. Wood, M. Zaffran, R. Nedellec, Y. Goude
- 2020 **On the Wiener optical method to study molecular diffusion in liquids** *American Journal of Physics*
J.M. Roussel, M. Gailhanou, A. Larrivé, L. Montero, M. Zaffran, C. Torregrosa

Research talks

- July 2022 **Adaptive Conformal Predictions for Time Series** *39th International Conference on Machine Learning*
Baltimore, USA
- June 2022 **Introduction to Conformal Prediction (for Time Series)** *Mathematical Methods for Modern Statistics 3*
Marseille, France
- June 2022 **Adaptive Conformal Predictions for Time Series** *53th French Statistical Days*
Lyon, France
- March 2022 **Adaptive Conformal Predictions for Time Series** *International Seminar on Distribution-Free Statistics*
Online
- Nov. 2021 **Adaptive Conformal Predictions for Time Series** *INRIA Causality and Missing Data Seminar*
Online
- April 2021 **Conformalized Quantile Regression, reading group** *Machine Learning Journal Club*
Online
- June 2021 **A new dissimilarity for extreme rainfall clustering** *52th French Statistical Days*
Online

Various talks in internal audiences:

- 2 Causality and Missing Data Seminars, *INRIA*
- SIMPAS Group Meeting, *CMAF, Ecole Polytechnique*
- PhD Student Seminar, *CMAF, Ecole Polytechnique*
- 3 Group Meetings, *EDF R&D*
- 2 Group Meetings, *Technion - Israel Institute of Technology*

Reviewing

Reviewer for the *Journal of Business and Economic Statistics* (JBES).

Associative commitment

- 2022-now **Vice-president**, *The Young Statisticians, SFdS (French Statistical Society)*.
- 2022 **Volunteer**, *The Young Statisticians, SFdS (French Statistical Society)*.
Helping for the organization of the Youth Activities at the French Statistical Days (JdS).
- 2022-now **Volunteer**, *Femmes et mathématiques, Animath*, <https://filles-et-maths.fr/>.
 - Speaker during various speed-meetings with high-school girls
 - Interviewee for a video for high school science teachers and young girls
- 2021-now **Elected member**, *parity and diversity committee, CMAP, Ecole Polytechnique*.
- 2020-2021 **Member**, *Machine Learning Journal Club, CMAP, Ecole Polytechnique*.
- 2016-2018 **Project leader (2018) and member (2017)**, *RISE² (Rencontres Innovation et Sciences des Étudiants de l'ENSTA Paris)*.
Event bringing together companies, researchers and start-ups.
Keynote speakers: Cédric Villani (2017), Étienne Klein (2018).
- 2016-2017 **Treasurer**, *GraviTation (ENSTA Paris science association)*.

Technical skills

- Computer** • R, Python, \LaTeX , Matlab, C, C++ • MacOS, Linux, Windows • iWork, Office, LibreOffice
- Languages** • English: fluent [*TOEIC 945/990*] • Spanish: bilingual [*DELE level C1*] • Russian: beginner

Miscellaneous

- Sport** • Rhythmic gymnastics in competition • Weekly leisure swimming since 2004 • Alpine skiing in leisure since 2000
- Hobbies** • Board and card games
• Debating (former delegate at the European Youth Parliament)