Margaux Zaffran

Third year PhD Student
in statistics (applied mathematics)

Palaiseau, France
26 years old
French nationality

Education

Nov. 2020 - current	**INRIA,** *PhD Student in statistics*. 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).	Palaiseau, France
2019-2020	**Ecole Polytechnique,** *MSc Data Sciences,* double degree. • 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 learning Average grade: 17.7/20.	Palaiseau, France
2016-2020	**ENSTA Paris,** *Institut Polytechnique de Paris,* engineering track. 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 methods Ranked in the top 5% of the first year class (common core, 150 students).	Palaiseau, France
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. Spanish international section, 11 weekly hours of literature and history of the Spanish-speaking world.	Marseille, France

Professional activities

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

Teaching and supervision

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

Internships and visiting stays

August to Oct. 2022	**Visiting research student,** *Technion, Israel Institute of Technology,* 3 months. Supervised by Yaniv Romano.	Haifa, Israel
April to Oct. 2020	**Research intern,** *Laboratoire des Sciences du Climat et de l'Environnement*. Clustering of extreme rainfall by coupling machine learning algorithms and Kullback-Leibler divergence. Supervised by Philippe Naveau.	Gif-sur-Yvette, France
March to Aug. 2019	**Research engineer intern,** *General Electric Healthcare*. Predicting user *(i.e. medical doctor)* preferences of an image review software by machine learning.	Buc, France
Sep. 2018 to Mar. 2019	**Research engineer intern,** *Data Innovation Lab, EDF R&D*. Developed machine learning methods to drive a nuclear unit.	Palaiseau, France
May to Aug. 2018	**Research intern,** *School of Mathematics Research, University of Bristol*. 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.	Bristol, United Kingdom

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 jurys.
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, *CMAP, Ecole Polytechnique*
- PhD Student Seminar, *CMAP, 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),** *RISE[2] (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)