

Adeline Fermanian

PhD student in statistics

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Education

- November 2018-Present **PhD in statistics**, *LPSM - Sorbonne Université*, Paris, France.
Funded by DIM MathInnov. Title: *Signature, rough paths and machine learning*. Supervised by Gérard Biau (Professor, Sorbonne Université), and Benoît Cadre (Professor, Université Rennes 2).
- 2017-2018 **Master of science in statistics**, *ETH*, Zürich, Switzerland.
- 2014-2016 **Engineering degree**, *CentraleSupélec*, Châtenay-Malabry, France.
- 2012-2014 **Intensive 2-year university level preparation in maths and physics**, *Lycée Henri IV*, Paris, France.

Experience

- June 2018 - **Master thesis**, *LPSM - Sorbonne Université*, Paris, France.
- October 2018 Topic: *The signature method in machine learning*. Supervised by Gérard Biau (Professor, Sorbonne Université), Benoît Cadre (Professor, Université Rennes 2), and Peter Bühlmann (Professor, ETH Zürich)
- February 2017 - **Graduate researcher**, *Inria - Wolfgang Pauli Institute*, Vienna, Austria.
July 2017 Topic: *Deterministic and stochastic models of division of bacteria*. Supervised by Marie Doumic (Research Scientist, INRIA).
- August 2016 - **Data Scientist**, *Multiposting group - SAP*, Paris, France.
- January 2017 *Development of machine learning algorithms for salary prediction using a database of millions of job ads.*

Publications

Preprints

- 2021 **Framing RNN as a kernel method: A neural ODE approach**, *Fermanian, A., Marion, P., Vert, J.P., Biau, G.*, Arxiv.
- 2020 **Linear functional regression with truncated signatures**, *Fermanian, A.*, Arxiv.
- 2020 **A Generalised Signature Method for Time Series**, *Morrill, J., Fermanian, A., Kidger, P., Lyons, T.*, Arxiv.

Journal articles

- 2021 **Embedding and learning with signatures**, *Fermanian, A.*, Computational Statistics & Data Analysis, Vol. 157, 107148.

Conference proceedings and miscellaneous

- 2020 **Learning with signatures**, *Biau, G. and Fermanian, A.*, Functional and High-Dimensional Statistics and Related Fields, pp. 19-26, Springer, Cham..

Teaching experience

Teaching

- 2020-2021
- Linear models (Master 1, ISUP, exercice classes).
 - Return to graduate studies diploma for exiles.
- 2019-2020
- Linear models (Master 1, ISUP, exercice classes).
 - Mathematical Statistics (Master 1 *Mathématiques et Applications*, Sorbonne Université, computer labs).
 - Inferential Statistics (Bachelor 3, ISUP, exercice classes).
 - Return to graduate studies diploma for exiles.
- 2018-2019
- Mathematical Statistics (Master 1 *Mathématiques et Applications*, Sorbonne Université, computer labs).
 - Inferential Statistics (Bachelor 3, ISUP, exercice classes).
 - Return to graduate studies diploma for exiles.

Students

- May-July 2021 **Co-supervision of the master thesis of Nathan Doumèche (Ecole Normale Supérieure)**, with Gérard Biau (Professor, Sorbonne Université) and Pierre Marion (PhD student, Sorbonne Université).
- June-July 2020 **Co-supervision of the master thesis of Linus Bleistein (Ecole Normale Supérieure)**, with Gérard Biau (Professor, Sorbonne Université) and Claire Boyer (Assistant Professor, Sorbonne Université). Topic: *SiGANtures: Generating Times Series Using Wasserstein-Generative Adversarial Nets and the Signature Transform*.

Communications

International conferences and workshops

- March 2021 **Pathwise Stochastic Analysis and Applications**, *Centre International de Rencontres Mathématiques (CIRM)*, Marseille, France.
- December 2020 **Workshop New Directions in Rough Path Theory**, *Mathematical Research Institute of Oberwolfach*, Oberwolfach, Germany .
- September 2020 **Second Symposium on Machine Learning and Dynamical Systems**, *The Fields Institute for Research in Mathematical Sciences*, Toronto, Canada .
- August 2020 **Geometry of curves in time series and shape analysis**, *Max Planck Institute for Mathematics in the Sciences*, Leipzig, Germany .
- December 2019 **12th Oxford-Berlin Young Researchers Meeting on Applied Stochastic Analysis**, *University of Oxford*, Oxford, United Kingdom.
- October 2019 **Conférence du GDR TRAG 2019**, Nancy, France.
- June 2019 **51es Journées de Statistique**, Nancy, France.

Seminars

- May 2021 **Séminaire MODAL'X**, *Université Paris Nanterre*, Paris, France.
- May 2021 **CRiSM (Center for Research in Statistical Methodology) seminar series**, *Department of Statistics, University of Warwick*, Warwick, United Kingdom.
- February 2021 **Séminaire du SAMM (Statistique, Analyse et Modélisation Multidisciplinaire)**, *Université Paris 1 Panthéon-Sorbonne*, Paris, France.

- January 2021 **Rough Path Interest Group**, *Alan Turing Institute*, London, United Kingdom.
- January 2021 **Séminaire de Probabilités et Statistique**, *Laboratoire J.A. Dieudonné*, Université Côte d'Azur, Nice, France.
- October 2020 **Algebraic and combinatorial perspectives in the mathematical sciences (ACPMS)**, *virtual*.
- June 2020 **Séminaire online du LPSM**, *Sorbonne Université*, Paris, France .
- April 2020 **DataSig Seminar Series**, *Alan Turing Institute*, London, United Kingdom .
- February 2020 **Seminar of the Institut Denis Poisson**, *Université d'Orléans*, Orléans, France.
- January 2020 **Post Graduate seminar of the Chair for Mathematics of Information Processing**, *RWTH Aachen University*, Aachen, Germany.
- May 2019 **PhD students seminar of the LPSM**, *Sorbonne Université*, Paris, France.
- April 2019 **Rencontre des Jeunes Statisticiens**, Porquerolles, France.

Scientific activities

- Novembre 2020 - Present **Co-organizer of a *Statistics and machine learning reading group***, *Sorbonne Université*, Paris, France.
- 2019 - 2021 **Co-organizer of *InfoMaths***, a seminar about informatic tools for mathematicians., *Sorbonne Université*, Paris, France.
- 2019 - 2020 **Co-organizer of the PhD students seminar**, *LPSM, Sorbonne Université*, Paris, France.
- 2018 - 2019 **Co-organizer of a reading group on rough paths.**, *LPSM, Sorbonne Université*, Paris, France.
- 2018 - **Reviewer:** Journal of Multivariate Analysis, Comptes Rendus - Mathématique, Statistics & Probability Letters.

Computer skills

Languages Python (PyTorch, scikit-learn, pandas, django), R.

Language skills

French	Mother tongue	English	Fluent (C1, TOEFL IBT : 106/120)
German	Intermediate (B1-B2)	Spanish	Elementary (A2)

Personal interests and volunteer experience

- 2020-2021 Activities to defend gender equality in religions: responsible for the communication of the association *Comité de la Jupe*, organization of conferences.
- 2015 **President of the artistic student association at Centrale Paris:** organized an artistic festival with a budget of 15000 €, managed a 30-persons team.
- July - August 2015 **Assistant head of a food distribution center for the association *Août Secours Alimentaire*:** supervised a food distribution center for people living in precarious conditions. Managed a team of 20 volunteers, including disabled workers.

2002-2012 Municipal Conservatory of Music in Paris 9: piano, solfeggio, and choral singing.
Performed many concerts.