

Pierre Gaillard

Curriculum Vitæ

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Born 10th Mai 1988,
Paris, France

Research interests

- Online learning (prediction of individual sequences, multi-armed bandits)
- Industrial applications of machine learning : electricity consumption (EDF), on-line advertising (AlephD)

Administrative status

- Jan. 2016 – ... **INRIA Junior Researcher (CR2)**.
SIERRA project-team, Computer Science Department at Ecole Normale Supérieure, Paris
- Oct. – Dec. 2016 **Post-doctoral researcher**, *Telecom Paris-Tech*, France.
- 2015 – 2016 **Post-doctoral researcher**, *Copenhagen University*, Denmark.
Under the supervision of Olivier Wintenberger.
- 2012 – 2015 **Ph.D. fellow**, *EDF R&D, Clamart and Paris-Sud University, Orsay, France*.
Subject: Forecasting the electricity consumption by aggregating expert advice.
Advisor: Gilles Stoltz (HEC Paris) Industrial advisor: Yannig Goude.
- 2008 – 2012 **Student (as a civil servant)**, *École Normale Supérieure*, Paris.

Education

- 2011 **M.Sc. in machine learning and computer vision**, *École Normale Supérieure, Cachan*,
summa cum laude.
- 2009 **B.Sc. in mathematics**, *Paris-Diderot University, Paris*, summa cum laude.

Research experiences

- 2012 **Research internship** with Shie Mannor, *Technion University, Haifa, Israel*.
Subject: Study of a large dataset of individual electric loads.
- 2011 **Research internship** with Yannig Goude and Gilles Stoltz, *EDF R&D, Clamart, École Normale Supérieure, Paris*.
Subject: Forecasting the electricity consumption by aggregation of specialized experts.
- 2010 **Research internship** with Devavrat Shah, *MIT, Cambridge, USA*.
Subject: Inversion of sparse matrices with GaBP (Gaussian Belief Propagation).
- 2009 **B.Sc. thesis** with Sylvain Arlot, *École Normale Supérieure, Paris*.
Subject: The Lasso: how to choose among a large number of variables with few observations.

Distinctions

- Dec. 2016 **Ph.D. dissertation award AMIES**, *on industrial mathematics*.
- Oct. 2016 **Ph.D. dissertation award Paul Caseau**.
Awarded by the French Academy of Technologies and EDF.
- Aug – Dec 2014 **GEFCom2014, Crowdanalytix Competition**.
Rank 1 in two challenges (electricity load and price forecasting).

Publications

Articles in journals

- [1] P. Gaillard, Y. Goude and R. Nedellec, “Semi-parametric models and robust aggregation for GEFCom2014 probabilistic electric load and electricity price forecasting”, *International Journal of Forecasting*, **2016**, in press, ISSN: 0169-2070.
- [2] M. Devaine, P. Gaillard, Y. Goude and G. Stoltz, “Forecasting the electricity consumption by aggregating specialized experts; application to Slovakian and French country-wide (half-)hourly predictions”, *Machine Learning*, vol. 90, no. 2, pp. 231–260, **2013**.

Book chapters

- [3] P. Gaillard and Y. Goude, “Forecasting electricity consumption by aggregating experts; how to design a good set of experts”, in *Modeling and Stochastic Learning for Forecasting in High Dimensions*, ser. Lecture Notes in Statistics, A. Antoniadis, X. Brossat and J.-M. Poggi, Eds., vol. 217, Springer, **2015**, pp. 95–115.

Articles in proceedings of international conferences

- [4] P. Gaillard and S. Gerchinovitz, “A chaining algorithm for online nonparametric regression”, in *COLT’15*, vol. 40, JMLR: Workshop and Conference Proceedings, **2015**, pp. 764–796.
- [5] P. Gaillard, G. Stoltz and T. van Erven, “A second-order bound with excess losses”, in *COLT’14*, vol. 35, JMLR: Workshop and Conference Proceedings, **2014**, pp. 176–196, **best student paper finalist**.
- [6] N. Cesa-Bianchi, P. Gaillard, G. Lugosi and G. Stoltz, “Mirror descent meets fixed share (and feels no regret)”, in *NIPS’12*, **2012**, pp. 989–997.

Submitted articles

- [7] P. Gaillard and O. Wintenberger, “Sparse accelerated exponential weights”, accepted at AISTAT 2017, **2017**.
- [8] P. Gaillard and P. Baudin, “A consistent deterministic regression tree for non-parametric prediction of time series”, submitted, arXiv:1405.1533, **2015**.

Miscellaneous

- [9] M. Faure, P. Gaillard, B. Gaujal and V. Perchet, “Online learning and game theory. A quick overview with recent results and applications”, in *ESAIM: Proceedings*, A. Garivier et al., Ed., to appear, EDP Sciences, **2015**.
- [10] P. Gaillard, “Contributions à l’agrégation séquentielle robuste d’experts : Travaux sur l’erreur d’approximation et la prévision en loi. applications à la prévision pour les marchés de l’énergie”, PhD thesis, Université Paris-Sud 11, **2015**.

Software

- [11] P. Gaillard, *Opera: Online prediction by experts aggregation*, R package version 0.01, **2015**. [Online]. Available: <https://github.com/Dralliag/opera.git>.

Oral communications and posters

In international conferences

- July 2015 Poster at COLT, Paris.
- June 2014 Talk at COLT, *Barcelona*.
- June 2013 Talk at 2nd Workshop on Industry and Practices for Forecasting (WIPFOR), *EDF, Clamart*.
- Dec. 2012 Poster at NIPS, Lake Tahoe, USA.

In national colloquiums or local seminars

- Nov. 2016 Talk at the local seminar, *Université Paul Sabatier*, Toulouse.
- Dec. 2015 Talk at the local team seminar of SIERRA, *École Normale Supérieure*, Paris.
- Oct. 2015 Talk at the local team seminar, *Copenhagen University*, Copenhagen.
- Janv. 2015 Poster at a training course on electricity prediction at EDF, Clamart.
- Dec. 2014 Talk at Soirées Mathématiques de Lyon, *Lyon*.
- Sep. 2014 Talk at 2èmes Journées Young Statisticians and Probabilists, *Paris*.
- Aug. 2014 Talk at Journées MAS, *Toulouse*.

- June 2014 Talk at 46èmes Journées de Statistique, *Rennes*.
April 2014 Talk at 11ème Colloque Jeunes Probabilistes et Statisticiens, *Forges-les-Eaux*.
June 2013 Talk at STAT Seminar, *Luminy, Marseille*.
May 2013 Talk at 45èmes Journées de Statistique, *Toulouse*.

Teaching experiences at Paris-Sud University

- Probability 2012 – 2015: teaching assistant in probability theory (**B.Sc. level**, $3 \times 20\text{h}$).
Statistics 2012 – 2015: teaching assistant (**B.Sc. level**, 22h) and practical exercises in R for biostatistics (**M.Sc. level**, $3 \times 25\text{h}$).
Machine Learning 2012 – 2015: **lectures** for a data mining project (**M.Sc. level**, $3 \times 6\text{h}$).
Topics: online prediction, regression tree, bagging, and random forests.
Other 2012 – 2013: mentoring of students for the professional project class (**B.Sc. level**, 15h).

Reviewing experiences (one paper unless stated otherwise)

- Journals Journal of Machine Learning Research, Machine Learning, Journal of International Forecasting, Stochastic Processes and their Applications.
Proceedings COLT (6), AISTAT (1), NIPS (3).

Computer skills

- C, C++, Python, OCaml, Matlab, Scilab, R, Maple
- HTML, SQL
- Latex
- OS: Windows, Unix

Languages

- French Native Language
English Proficient
German Proficient