

## Work Experience

### Télécom SudParis, Institut Polytechnique de Paris

PROFESSOR

Palaiseau, France

Sep. 2018 - ...

### École Polytechnique, Institut Polytechnique de Paris

PROFESSEUR CHARGÉ DE COURS

Palaiseau, France

Sept. 2015 - ...

### Laboratoire de Mathématique d'Orsay, UMR8628

CNRS ASSOCIATE SCIENTIST

Orsay, France

Sept. 2013 - ...

- On leave since September 2018.

### University of Warwick, CRISM

RESEARCH FELLOW

Coventry, UK

Sept. 2012 - Sept. 2013

- Supervised by Gareth O. Roberts and Krzysztof Latuszynski.
- Exact simulation of diffusion processes.
- Optimal scaling of Markov Chain Monte Carlo algorithms.

### Laboratoire de Mathématique d'Orsay, UMR8628

HABILITATION À DIRIGER DES RECHERCHES

Orsay, France

June 2018

- Latent data models. Nonparametric and high dimensional contributions.
- *Advisors*: Élisabeth Gassiat, Arnaud Doucet, Alexandros Beskos.
- *Committee*: Adeline Leclercq-Samson, Jean-Yves Tournet, Jean-Michel Marin, Pierre Pudlo.

### Télécom Paris, LTCI

PH.D.

Paris, France

Sep. 2012

- Sequential Monte Carlo methods. Application to simultaneous localization and mapping.
- Supervised by Éric Moulines and Gersende Fort.
- *Advisors*: Arnaud Doucet and Gilles Pagès.
- *Committee*: Élisabeth Gassiat, Jean-Michel Marin, Éric Moulines and Gersende Fort.

## Scientific duties

- 2021 **#1 Hi! PARIS Workshop**, co-organizer of the first edition focused on "AI bias and Data Privacy" IP Paris
- 2020 - ... **Hi! Paris**, member of the academic operating committee of the AI center IP Paris
- #1 Data sharing winter school**, organizer and member of the scientific committee. *Data sharing in the manufacturing industry - deepening knowledge to build data spaces* Virtual event, December 2nd to 4th.
- 2020 Event co-organized with Technische Universität Dortmund, International Data Spaces Association, the German-French Academy for the Industry of the Future and the Université franco-allemande. IMT
- <https://www.internationaldataspaces.org/winter-school-learn-from-the-experts/>
- 2019 - 2022 **ANR Program AI@IP Paris**, scientific committee - selection of Ph.D. candidates to be funded IP Paris
- 2019 - 2022 **ANR Program AI@IMT**, scientific committee - selection of Ph.D. candidates to be funded IMT
- 2018 - 2022 **ANR program ABSINT**, member, Principal Investigator: Christian Robert IP Paris
- 2019 - 2023 **GdR ISIS**, coordinator of the program "Simulation pour les problèmes de grande taille" IP Paris
- 2019-... **Statistical seminar**, co-organizer of the monthly seminar "All about that Bayes" Agro ParisTech
- 2019 **Conference**, co-chair of the Junior Conference on Data Science and Engineering Centrale Supélec
- 2017-2018 **Statistical seminar**, co-organizer of the weekly seminar IMO, Orsay
- 2016-2018 **CCSU**, substitute member IMO, Orsay
- 2014 **Workshop**, co-organizer of the workshop "Computational methods for jump processes" CRISM, Warwick

## Fundings

### Devoteam

150 k€

CHAIR BETWEEN DEVOTEAM AND TÉLÉCOM SUDPARIS

2020 - 2023

- Interpretable AI for mission critical applications.

## CIRM

FUNDING FOR THE ORGANIZATION OF A CIRM RESEARCH SCHOOL

- End-to-end Bayesian Learning Methods.
- Co-chair with Julien Stoeck & Pierre Gloaguen.

18 k€

2021

## VeePee

CHAIR BETWEEN VEEPEE, TÉLÉCOM AND TÉLÉCOM SUDPARIS

- Co-chair with Pascal Bianchi.

120 k€

2019 - 2022

## 2019 Paris Region Ph.D.

FUNDING PROVIDED BY THE RÉGION ÎLE DE FRANCE, WITH THE DIM MATH'INNOV

- Funding for the Ph.D. thesis of Max Cohen.
- Metamodels and Bayesian deep learning for partially observed dynamical systems.

100 k€

2019 - 2023

## Oze Énergies

CONTRACT TO DEVELOP MODELS TO OPTIMIZE ENERGY CONSUMPTIONS AND CONFORT IN BIG BUILDINGS

30 k€

2019 - 2023

# Supervision (Ph.D. students, Postdoctoral fellows)

## Mathis Chagneux

TÉLÉCOM SUDPARIS AND AGROPARISTECH

- Co-supervised with Pierre Gloaguen (AgroParisTech) and Charles Ollion (CMAP, École Polytechnique).
- Computer vision and statistical models for the detection and tracking of plastic wastes.

EDMH

Nov. 2020 - ...

## Yazid El Janati

TÉLÉCOM SUDPARIS

- Co-supervised with Yohan Petetin (Télécom SudParis).
- On the combination of deep learning models and Monte Carlo Methods.

EDMH

Oct. 2020 - ...

## Max Cohen

TÉLÉCOM SUDPARIS AND OZE ÉNERGIES

- Co-supervised with Marius Preda (Télécom SudParis).
- Metamodels and Bayesian deep learning for partially observed dynamical systems.

EDMH

Feb. 2020 - ...

## Alice Martin

ÉCOLE POLYTECHNIQUE AND TÉLÉCOM SUDPARIS

- Co-supervised with Olivier Pietquin (Google Brain).
- Deep reinforcement learning for natural language processing. Application to goal-oriented visual question generation.

EDMH

Apr. 2019 - ...

## Pierre Gloaguen

AGRO PARISTECH

- Co-supervised with Marie-Pierre Étienne (IRMAR).
- Exact sampling of stochastic differential equations with applications to movement ecology.

Postdoct.

March 2016 - March 2017

## JOURNALS

- 2020 **Submitted**, ArXiv:2006.14226, *Deconvolution with unknown noise distribution is possible for multivariate signals*, É. Gassiat, S. Le Corff and L. Lehéricy
- 2020 **Bernoulli**, 26(4) :2670–2698, *Learning the distribution of latent variables in paired comparison models*, R. Diel, S. Le Corff, and M.Lerasle
- 2020 **Journal of Machine Learning Research**, 21(115) :1–40, *Identifiability and consistent estimation of nonparametric translation hidden Markov models with general state space*, É. Gassiat, S. Le Corff and L. Lehéricy
- 2019 **Submitted**, ArXiv:1908.07254, *Online pseudo Marginal Sequential Monte Carlo smoother for general state spaces. Application to recursive maximum likelihood estimation of stochastic differential equations*, P. Gloaguen, S. Le Corff and J. Olsson
- 2019 **Submitted**, ArXiv:1808.08104, *A Bayesian nonparametric approach for generalized Bradley-Terry models in random environment*, S. Le Corff, M. Lerasle, É Vernet
- 2018 **EURASIP Journal on Advances in Signal Processing**, 9, *Online Sequential Monte Carlo smoother for partially observed stochastic differential equations*, P. Gloaguen, M.-P. Étienne, and S. Le Corff
- 2018 **Journal of the Royal Statistical Society : Series C**, 67(3) :599–619, *Stochastic differential equation based on a multimodal potential to model movement data in ecology*, P. Gloaguen, S. Le Corff, and M.-P. Étienne
- 2018 **Advances in Applied Probability**, 50(1), *On the two-filter approximations of marginal smoothing distributions in general state space models*, T.N.M. Nguyen, S. Le Corff, and É. Moulines.
- 2017 **IEEE Transactions on Information Theory**, 63(8) :4758–4777, *Consistent estimation of the filtering and marginal smoothing distributions in nonparametric hidden Markov models*, Y. de Castro, É. Gassiat, and S. Le Corff
- 2017 **Statistics**, 51 :61–83, *Statistical inference for oscillation processes*, R. Dalhaus, T. Dumont, S. Le Corff, and J.C. Neddermeyer
- 2017 **Bernoulli**, 23(2) :990–1021, *Nonparametric regression on hidden  $\Phi$ -mixing variables : identifiability and consistency of a pseudo-likelihood based estimation procedure*, T. Dumont and S. Le Corff
- 2017 **Journal of Applied Probability**, 54(4) :1233–1260, *Optimal Scaling of the Random Walk Metropolis algorithm under  $L_p$  mean differentiability*, A. Durmus, S. Le Corff, É. Moulines, and G.O. Roberts
- 2017 **EURASIP Journal on Advances in Signal Processing**, 54, *Particle rejuvenation of Rao-Blackwellized Sequential Monte Carlo smoothers for Conditionally Linear and Gaussian models*, T.N.M. Nguyen, S. Le Corff, and É. Moulines.
- 2015 **IEEE Journal of Selected topics in Signal Processing**, 10(2) :366 – 375, *A shrinkage-thresholding metropolis adjusted langevin algorithm for bayesian variable selection*, A. Schreck, G. Fort, S. Le Corff, and É. Moulines
- 2014 **Signal Processing**, 101 :192–203, *Simultaneous localization and mapping problem in wireless sensor networks*, T. Dumont and S. Le Corff
- 2013 **Bernoulli**, 19(5B) :2222–2249, *Nonasymptotic deviation inequalities for smoothed additive functionals in nonlinear state-space models*, C. Dufay and S. Le Corff
- 2013 **ACM : Transactions on Modeling and Computer Simulation**, Special Issue on Monte Carlo Methods in Statistics, 23(1) :1–22, *Convergence of a particle-based approximation of the block online Expectation Maximization algorithm*, S. Le Corff and G. Fort
- 2013 **Electronic Journal of Statistics**, 7 :763–792, *Online Expectation Maximization based algorithms for inference in hidden Markov models*, S. Le Corff and G. Fort

## CONFERENCE PROCEEDINGS

- 2020 **Submitted**, ArXiv:2007.08620, *The Monte Carlo Transformer: a stochastic self-attention model for sequence prediction*, A. Martin, C. Ollion, F. Strub, S. Le Corff and O. Pietquin
- 2020 **Submitted**, ArXiv:2006.12390, *End-to-end deep metamodeling to calibrate and optimize energy loads*, M. Cohen, M. Charbit, S. Le Corff, M. Preda and G. Nozière
- 2020 **Submitted**, ArXiv:2002.05438, *Backward importance sampling for partially observed stochastic differential equations*, M.-P. Étienne, P. Gloaguen, S. Le Corff and J. Olsson
- 2018 **IEEE Data Science Workshop (DSW)**, *Optimizing thermal comfort and energy consumption in a large building without renovation work*, S. Le Corff, A. Champagne, C. Charbit, G. Nozière, and É. Moulines
- 2013 **IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)**, *Online EM for indoor simultaneous localization and mapping*, T. Dumont and S. Le Corff
- 2012 **Latent Variable Analysis and Signal Separation (LVA/ICA)**, 131-138, *New online EM algorithms for general hidden Markov models. Application to the SLAM problem*, S. Le Corff, G. Fort, and É. Moulines
- 2011 **IEEE Workshop on Statistical Signal Processing (SSP)**, 197-200, *Fast computation of smoothed additive functionals in general state space models*, C. Dubarry and S. Le Corff
- 2011 **IEEE Workshop on Statistical Signal Processing (SSP)**, 225-228, *Online Expectation Maximization to solve the SLAM problem*, S. Le Corff and G. Fort

## Talks

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### INVITATIONS

- ISNPS2020 - International symposium on nonparametric statistics, Paphos, Cyprus (06/20).
- MHC2020 - Mixtures, Hidden Markov Models and Clustering Workshop, Institut de mathématique d'Orsay, France (06/20).
- Data Science and Finance conference, Siem Reap, Cambodia (03-19).
- École de statistiques bayésiennes, CIRM, Marseille, France (10/18).
- Advances in Finite Mixture and Other Non-regular Models, Guilin, Guangxi, China (08/18).
- International conference on Monte Carlo techniques, Paris, France (07/16).
- NIPS Workshop "Advances in Variational Inference", Montréal, Canada (12/14).
- Rencontres statistiques de Rochebrune, Rochebrune, France (04/14).

### OTHER TALKS

- Rencontres statistiques de Rochebrune, Rochebrune, France (03/20).
  - Séminaire de Probabilités et Statistique, Nice, France (12/19).
  - 2018 IEEE Data Science Workshop, Lausanne, Switzerland, (06/18).
  - Séminaire de statistiques du CMLA, ENS Paris-Saclay, France (05/18).
  - Rencontres statistiques de Rochebrune, Rochebrune, France (03/18).
  - European Meeting of Statisticians (EMS), Helsinki, Finland (07/17).
  - Scalable statistical inference, Isaac Newton Institute, Cambridge, UK (07/17).
  - 49èmes Journées de Statistique (JdS), Avignon, France (06/17).
  - Séminaire parisien de statistiques, Paris, France (04/16).
  - Séminaire de statistiques du laboratoire Jean Kuntzmann, Grenoble, France (04/16).
  - Sequential Monte Carlo workshop (SMC2015), Paris, France (08/15).
  - European Meeting of Statisticians (EMS), Amsterdam, Netherlands (07/15).
  - Young Statisticians and Probabilists seminar, IHP, Paris, France (09/14).
  - SuStaln Workshop "High-dimensional Stochastic Simulation and Optimisation in Image Processing", Bristol, UK (08/14).
  - Séminaire parisien de statistiques, Paris, France (10/13).
  - Séminaire Méthodes de Monte Carlo en Grande Dimension (BigMC), Paris, France (10/13).
  - 36th Conference on Stochastic Processes and Their Applications, Boulder, Colorado (08/13).
  - 5th Greek Stochastics (Jump processes), Kalamata, Greece (07/13).
  - 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Vancouver, Canada (05/13).
  - Séminaire de statistiques AgroParisTech, Paris, France (03/13).
  - Algorithms and Computationally Intensive Inference Seminar, Warwick, UK (11/12).
  - Statistics, Applied Probability and Operational Research Seminar, Oxford, UK (11/12).
  - Recent Advances in Sequential Monte Carlo, Warwick, UK (09/12).
  - 8th World Congress in Probability and Statistics, Istanbul, Turkey (07/12).
  - 10ème Colloque "Jeunes Probabilistes et Statisticiens", Marseille, France (04/12).
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- Séminaire Méthodes de Monte Carlo en Grande Dimension (BigMC), Paris, France (12/11).
  - Statistical Machine Learning in Paris (SMILE), Paris, France (10/10).
  - 28th European Meeting of Statisticians (EMS), Athens, Greece (08/10).