THIBAULT RANDRIANARISOA

GENERAL INFORMATION

Nationality French

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RESEARCH INTERESTS

My research covers the fundamental aspects of machine learning and mathematical statistics, with a particular focus on uncertainty quantification, adaptation and computability.

Broadly: Bayesian nonparametrics, (Deep) Gaussian processes, Uncertainty quantification, Variational Bayes, Differential privacy, Inverse problems, High-dimensional regression.

More specifically:

- Rates of convergence for posteriors and their variational approximations in nonparametric inference;
- adaptive confidence sets for infinite-dimensional models;
- use of Bayesian methods in inverse problems;
- semi- and nonparametric inference under privacy constraints

POSITIONS

Postdoctoral research fellow, ***UTSC, Toronto, Canada*** Aug 2024–

· Affiliated to the Department of Computer & Mathematical Sciences
· Working with Pr. Daniel Roy

Postdoctoral research fellow, ***Bocconi University, Milan, Italy*** Oct 2022–May 2024

· Affiliated to the Bocconi Institute for Data Science and Analytics (BIDSA)
· Working with Pr. Botond Szabó
· Asymptotic analysis of variational inference methods for Gaussian process-based algorithms

EDUCATION

PhD. in Statistics, ***Sorbonne Université, LPSM, Paris (France)*** 2019 - 2022

· Under the supervision of Pr. Ismaël Castillo
· Title: Contributions to the theoretical analysis of statistical learning and uncertainty quantification methods (available here)
· Keywords: Bayesian nonparametrics, Tree-based methods, Uncertainty Quantification, Wasserstein distance, Gaussian processes

MSc. in Statistics and Machine Learning, ***Université Paris-Saclay, Paris (France)*** 2018 - 2019

· Relevant Coursework: Bayesian nonparametrics, Statistical Learning, High-dimensional Statistics, Compressed Sensing, Machine learning and Forecasting Project (GPA 4/4)

MSc. in Statistics and Economics, ***ENSAE Paris, Paris (France)*** 2015 - 2019

· Relevant Coursework: Machine learning and datamining, Simulation and Monte Carlo Methods, Linear Time Series, Bayesian Statistics, High-dimensional statistics, Stochastic Processes, Geometric methods in Machine Learning, Legal Issues in Big Data, Machine Learning in Finance. (GPA 4/4)

PUBLICATIONS

1. Deep Gaussian Processes: scaling for adaptation to smoothness and structure. With Ismaël Castillo. *Submitted.*
2. Variational Gaussian Processes For Linear Inverse Problems. With Botond Szabo. *NeurIPS 2023.*
3. On Adaptive Confidence Sets for the Wasserstein Distances. With Neil Deo. *Bernoulli*, 2023.
4. Optional Pólya trees: posterior rates and uncertainty quantification. With Ismaël Castillo. *Electronic Journal of Statistics*, 2022.
5. Smoothing and adaptation of shifted Pólya Tree ensembles. *Bernoulli*, 2022.

SCIENTIFIC PRESENTATIONS

2nd Vector Institute & RIKEN AIP Joint Symposium on Machine Learning and Artificial Intelligence (Vector Institute, Toronto, Canada) March 2025
Deep Gaussian Processes

Postdoc Day (DoSS, University of Toronto) November 2024
Semiparametric privacy-constrained inference

Brown Bag Seminar (DoSS, University of Toronto) April 2024
Deep Gaussian Processes

International Conference on Computational and Methodological Statistics, Berlin, Germany December 2023
Variational Gaussian processes for linear inverse problems

NeurIPS 2023, New Orleans, US December 2023
Variational Gaussian Processes For Linear Inverse Problems

European Meeting of Statisticians, Warsaw, Poland July 2023
Deep Horseshoe Gaussian processes

BNP 2022 networking workshop, Marseille, France June 2023
Variational Gaussian Processes For Linear Inverse Problems

Workshop on Theory for Scalable, Modern Statistical Methods, Milano, Italy April 2023
Deep Horseshoe Gaussian processes

BNP 2022 networking workshop, Nicosia, Cyprus April 2022
Pólya tree ensembles: smoothing and adaptation

rjs2022: 9ème Rencontre des Jeunes Statisticien-ne·s, Porquerolles, France April 2022
On Adaptive Confidence Sets for the Wasserstein Distances

CREST-ENSAE Statistics, Econometrics and Machine Learning seminar, Paris, France December 2021
On Adaptive Confidence Sets for the Wasserstein Distances

Journées MAS 2020, online August 2021
Optional Pólya trees: vitesses de contraction de la loi a posteriori et quantification de l'erreur

2021 World Meeting of the International Society for Bayesian Analysis, online June 2021
Smoothing and adaptation of shifted Pólya Tree ensembles

Conference on Mathematical and Statistical Challenges in Uncertainty Quantification, Cambridge University July 2020
A toy model of Polya tree ensemble: smoothing and adaptation

AWARDS

Travel Grant - 400 **USD** April 2022
BNP 2022 networking workshop, Nicosia, Cyprus

TEACHING

- **2024-2025 academic year**: Instructor for STAB52 *An Introduction to Probability* (UTSC).
- **2023-2024 academic year**: Co-instructor, with Pr. Botond Szabo, of an undergraduate Mathematical Statistics course (Bocconi University, BSc in Mathematical and Computing Sciences for Artificial Intelligence).
- **2020-2021 academic year**: Teaching assistant for courses on Statistical Modelling, Computational Statistics and Numerical Probabilities (Sorbonne Université, MSc in Applied Mathematics).
- **2019-2020 academic year**: Teaching assistant for courses on Probability Theory (ENSAE Paris), Introductory Statistics, Computational Statistics and Numerical Probabilities (Sorbonne Université, MSc in Applied Mathematics).

SERVICE

Organization of seminars

I co-organized the weekly seminar Groupe de travail des thésards du LPSM which took place in Paris during the Academic year 2020/2021.

Reviewing

I have been a reviewer for the following journals: the *Annals of Statistics*, the *Journal of multivariate analysis*, the *Electronic Journal of Statistics*, *Statistica Neerlandica*, *Information and Inference: A Journal of the IMA*, *Bernoulli*, the *Journal of Nonparametric Statistics* and *Stochastic Processes and their applications*.

SKILLS

Languages	French (native), English (professional working proficiency, TOEIC: 955/990, TOEFL iBT: 103/120), German (intermediary)
Software skills	Python, R, SQL (MySQL), NoSQL (MongoDB), Latex, Git, Shell scripting, Linux, MacOS