Xavier Loizeau | PhD, MIMA

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Professional experiences

NPL (National Physical Laboratory) **Teddington, England**
Higher Research Scientist 21^{st} of January 2019 – present

- **Research:** mathematical modelling for physical, chemical and biological processes, developing statistical estimators and study their theoretical and empirical properties, providing software for data analysis and machine learning, deriving mathematically founded, data-driven conclusions and decisions;
- **Software quality:** developing git templates, Slurm templates, audited by TickIT+, developing LaTeX and Beamer templates;
- **Management:** co-supervising PhD students, organising problem sharing meeting,
- **Strategy:** preparing grant proposals (internal, national, and European levels), creating opportunities by supporting other departments in their data analysis, contributing to company policies and Stonewall application as a member of the LGBTQ+ committee, interviewing candidates for recruitment

Ruprecht-Karls-Universität, Institute of applied mathematics, **Heidelberg, Germany**
Philosophiæ doctor (PhD) student in Mathematic 2015–2018
Hierarchical Bayes and frequentist aggregation in inverse problems: proved oracle and minimax optimal contraction rates for posterior distribution from hierarchical sieve priors, and oracle and minimax optimal convergence rate for aggregated projection estimators in the context of statistical linear inverse problems where the operator is unknown;

ONERA (National Agency of Study and Research in Aerospace) **Palaiseau, France**
Internship 2015
Building a multi-fidelity surrogate model for Infra-Red emission by space-rocket engines.

CREST (Research Center for Economics and Statistics) **Rennes, France**
Internship 2014
Studied, implemented and compared two methods for illumination bias removal on electronic microscope images.

Relevant technical skills

Applications: Multidisciplinary projects (communication, adaptable to new science areas), satellite imaging, satellite altimetry, pathology, sensor design, mass spectrometry imaging, image processing.
Mathematics: statistical ill-posed inverse problems, non-parametric Bayesian and frequentist statistics, Fourier analysis, minimax theory, point processes, functional data analysis, stochastic processes, time series, probability theory, approximation algorithms, uncertainty quantification in sparse models, Optimal Transport based methods, MCMC methods;
Computer science: Python (advanced), R (advanced), C++ (intermediate), MatLab (intermediate), git with GitHub/GitLab (advanced), IDEs (emacs, visual studio, ...), Unix environment.

Projects references

Digital pathology (several papers in preparation), Global mean sea level (technical leadership, paper in preparation), Remeshing and uncertainty quantification (technical leadership, paper in preparation), TRUTHS (contributing to sensor design), CRUK Rosetta Grand challenge (contribution in data analysis), Minimax-optimal convergence rate of aggregation estimators for probability density deconvolution (work done during PhD), Spatial resolution in MSI (co-author).

Education

ENSAI - National School for Statistics and Information Analysis — **Rennes, France**
MSc in Advanced Statistical Engineering; 2012–2015

University of Rennes 1, department of mathematics — **Rennes, France**
MSc in Mathematical Statistics; 2015

University of Rennes 1, department of mathematics — **Rennes, France**
BSc in Mathematics; 2012

Lycée Clemenceau — **Nantes, France**
Post secondary classes préparatoires Specialisation in Mathematic and Physics 2010–2012
undergraduate-level courses required in preparation for competitive entrance exams into top graduate and engineering schools (France's grandes écoles).

Online lectures (certificates available on request)

Unreal engine and C++ (currently following), Initiation à la théorie des distributions (Coursera, École Polytechnique), Approximation Algorithms Part I (Coursera, École Normale Supérieure), Introduction to Complex Analysis (Coursera, Wesleyan University)

Languages

French (native), English (fluent), German (basic), Spanish (basic).

Interests

Music (Guitar, singing, composition), **dancing** (pole and ballet, performing), **sport** (sport climbing, bouldering, cycling), **reading** (fictions, philosophy, sociology, technological surveillance).