Louis Allain

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PhD student Safran/ENSAI on kernel methods for uncertainty quantification

Experiences

Apr. '24 - Oct. '24 — **Research internship, Safran Tech, Paris**

- Bibliography on recent kernel methods as alternative to conformal prediction.
- Extension of these methods for practical use : reformulation of optimization problem to reduce computation time, more robust calibration method and new estimation method of kernel hyperparameters for better adaptivity.
- Extensive numerical studies on several representative datasets.

Jun. '23 - Sep. '23 — **Research internship, Orange Innovation, Paris**

- Conducted cross-disciplinary research on targeted marketing.
- Actively assisted researchers with their work on higher-order graph models (e.g., hyper graphs).
- Performed high-dimensional graph analysis using unsupervised learning, applied to social networks.
- Visualized the resulting data structures using Gephi.
- Conducted spatial data examination utilizing advanced techniques such as kriging and spatial autocorrelation.
- Enhanced Python and R code, for improved readability and usability, facilitating seamless transition for an incoming PhD student.

Social Network Analysis | Geographical Data Analysis

Jan. '23 - Jun. '23 — **Statistics Project, Faculty of Pharmacy, Paris**

Study of the distribution of the number of transcripts in droplets

Analysed DNA droplets to isolate single cells with complex mixture models.
Parallel implementation of advanced optimization solver.

Complex Mixture Models | Parallel processing

Education

Sep. '21 - EGT '24 — **MS in Statistics | National School for Statistics and Data Analysis (ENSAI), Rennes, France**

- Theoretical and practical extensive course on machine learning, deep learning, reinforcement learning and natural language processing.
- Advanced topics in extreme value theory, bayesian statistics and complex time series.
- Several team projects, including a complete IT project from design to commissioning.

Machine Learning | Deep Learning | Reinforcement Learning | NLP

Sep. '21 - Jun. '22 — **BS in Applied Maths | University of Rennes 1, Rennes, France**

In parallel of ENSAI, additionnal course in probability, statistics, linear algebra and numerical analysis.

Probability | Statistics | Linear algebra | Numerical analysis

Jul. '21 - Sep. '18 — **Two year undergraduate intensive course, Lycée Chaptal, Paris**

French "classes préparatoires" MPSI/MP ; major in maths and physics, minor in computer science.

Maths | Computer Science | Work ethic

2018 — **A-levels, Lycée La Bruyère, Versailles**

Languages

- **French** - Mother tongue
- **English** - CEFR C2 (TOEIC 990/990)

Programming skills

- Python
- C++
- SAS
- R
- Spark
- SQL

Strengths

- Curious
- Outgoing
- Flexible
- Honest
- Open-minded