Batiste Le Bars
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Professional experience

August 2024 –	**Research Scientist (ISFP)**, *Magnet team*, Inria Lille
2023 – 2024	**Postdoc**, *Argo team*, Inria Paris
2021 – 2023	**Postdoc**, *Magnet team*, Inria Lille
Jan-Mar 2021	**Postdoc**, *Centre Borelli*, ENS Paris-Saclay
Apr 2017 – Jan 2021	**Ph.D. Candidate**, *Sigfox and Centre Borelli*, Paris and Cachan
Apr - Sep 2016	**Intern**, *Sigfox*, Paris, 6 months

Education & Diplomas

2022	**Qualification** to teach as an Associate Professor (MCF) in sections 26 (applied mathematics) and 27 (computer science) of French universities
2017 – 2020	**Ph.D. in Applied Mathematics**, *Centre Borelli*, ENS Paris-Saclay
Title	*Event detection and structure inference for graph vectors.*
Supervisors	Nicolas Vayatis, Argyris Kalogeratos.
Description	Development of a Learning method for graph inference in the context of Graph Signal Processing. Statistical approach for change-point detection in time-varying Markov Random Fields. Development of machine learning techniques for anomaly detection in communication networks. Application to Sigfox IoT network (CIFRE Ph.D.).
2015 – 2016	**Master 2**, *Mathematics, Vision, Learning (MVA)*, Ecole Normale Supérieur Paris-Saclay, Graduated with highest honors
2014 – 2015	**Master 1**, *Applied Mathematics, Economics and Finance*, Université Paris 1 - Panthéon-Sorbonne, Graduated with highest honors, valedictorian
2011 – 2014	**License**, *Applied Mathematics and Social Sciences*, Université Paris 1 - Panthéon-Sorbonne, Graduated with highest honors, valedictorian

Teaching

Fall 2021-2022	**Data analysis in Python**, *Teacher*, License 2 MIASHS, University of Lille
Fall 2020	**Introduction to Statistical Learning Theory**, *Teacher assistant*, Master MVA, ENS Paris-Saclay, Prof: Nicolas Vayatis
	Statistics, *Teacher assistant*, License 3 in Economics, Université Paris 2 - Panthéon-Assas, Prof: Lisa Morhaim

Publications and Preprints

2024

Marginal and Training-Conditional Guarantees in One-Shot Federated Conformal Prediction

Humbert, Pierre: Le Bars, Batiste; Bellet, Aurélien; Arlot, Sylvain.

Preprint.

Improved Stability and Generalization Guarantees of the Decentralized SGD Algorithm

Le Bars, Batiste; Bellet, Aurélien; Tommasi, Marc; Scaman, Kevin; Neglia, Giovanni.

In *International Conference on Machine Learning (ICML)*.

Minimax Excess Risk of First-Order Methods for Statistical Learning with Data-Dependent Oracles

Scaman, Kevin; Even, Mathieu; Le Bars, Batiste; Massoulié, Laurent.

In *International Conference on Artificial Intelligence and Statistics (AISTATS).*

2023 **One-Shot Federated Conformal Prediction**

Humbert, Pierre; Le Bars, Batiste; Bellet, Aurélien and Arlot, Sylvain.

In *International Conference on Machine Learning (ICML).*

Refined Convergence and Topology Learning for Decentralized SGD with Heterogeneous Data

Le Bars, Batiste; Bellet, Aurélien; Tommasi, Marc; Lavoie, Erick; Kermarrec, Anne-Marie.

In *International Conference on Artificial Intelligence and Statistics (AISTATS).*

2022 **Robust Kernel Density Estimation with Median-of-Means principle**

Humbert, Pierre*; Le Bars, Batiste* and Minvielle, Ludovic.

In *International Conference on Machine Learning (ICML).*

2021 **Learning Laplacian Matrix from Graph Signals with Sparse Spectral Representation**

Humbert, Pierre*; Le Bars, Batiste*; Oudre, Laurent; Kalogeratos, Argyris; Vayatis, Nicolas.

In *Journal of Machine Learning Reasearch (JMLR) 2021.*

2020 **Learning the piece-wise constant graph structure of a varying Ising model**

Le Bars, Batiste; Humbert, Pierre; Kalogeratos, Argyris and Vayatis, Nicolas.

In *International Conference on Machine Learning (ICML).*

2019 **Learning Laplacian Matrix from Bandlimited Graph Signals**

Le Bars, Batiste; Humbert, Pierre; Oudre, Laurent and Kalogeratos, Argyris.

In *International Conference on Acoustics, Speech, and Signal Processing (ICASSP).*

A Probabilistic Framework to Node-level Anomaly Detection in Communication Networks

Le Bars, Batiste and Kalogeratos, Argyris.

In *International Conference on Computer Communications (INFOCOM).*

Supervision

Master intern Khaled Larbi (M2 MVA-Ensae). Inférence du modèle d'Ising sous contrainte de confidentialité différentielle locale. 2022.

Ismail Labiad (3rd year Ecole polytechnique). Fairness in fully decentralized federated learning. 2023.

Mathis Allard (M2 Data Science - Univ. Lille). Online graph inference for decentralized learning with Heterogeneous data. 2023.

Selected talks and presentations

2024 **Generalization of D-SGD: A Stability Analysis**, *FedMalin seminar (Online), JDS (Bordeaux), ICML (Vienne, Poster)*

Federated Conformal Prediction: Marginal and Training-Conditional Validity, *PreMedicaL seminar (Inria Montpellier), JDS (Bordeaux), Probability and Statistics Seminar (LAMA laboratory, Gustave Eiffel University)*

2023 **One-shot Federated Conformal Prediction** , *FedMalin plenary meeting (Inria Sophia-Antipolis), ARGO seminar (Inria Paris), CAp (Strasbourg)*

Impact and choice of the topology for decentralized federated learning, *FedMalin seminar (Online)*

2022 **Refined Convergence and Topology Learning for Decentralized SGD with Heterogeneous Data**, *MILES seminar (Dauphine university), ARGO seminar (Inria Paris), Workshop Inria-EPFL, Learning and Optimization in Luminy (CIRM, Poster), Conférence en Apprentissage (CAp, Vannes)*

Robust Kernel Density Estimation with Median-of-Means principle, *ICML (Baltimore)*, Poster

Contributions to graph learning and change point detection, *MAGNET Seminar (Inria Lille)*

2020 **Change-point detection in a time-varying Ising model**, *ICML (Online), French-German Summer School on Transfer Learning (Online)*

2019 **Learning Laplacian Matrix from Bandlimited Graph Signals**, *MLMDA seminar (ENS Cachan)*

A Probabilistic framework to Node-level Anomaly Detection in Communication Networks, *INFOCOM (Paris)*

2018 **Node-level Anomaly Detection in Communication Networks**, *MLMDA seminar (ENS Cachan), Graph Signal Processing workshop (EPFL, Lausanne, Poster)*

2016 **Machine learning techniques for geolocating Sigfox devices**, *LTCI lab seminar (Telecom Paris)*

Reviewing service

CAp 2023, 2024, **ICML** 2023, 2024, **AISTATS** 2020, 2021, 2022, 2023, **IEEE Transactions on Signal and Information Processing over Networks** 2022, 2023, **SIAM Journal of Optimization** 2024.

Computer skills

Programming Python, R
Tools Git, LaTeX, Office

Languages

French Native speaker
English Fluent
Spanish Beginner
Japanese Beginner

Miscellaneous

Sports Climbing – Running – Surfing