Batiste Le Bars

Postdoc at Inria Lille

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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.

Professional experience

June 2023 – **Postdoc**, *Dyogene team*, Inria Paris.

2021 – 2023 **Postdoc**, *Magnet team*, Inria Lille.

2017 – 2021 **Ph.D. Candidate**, *Sigfox and Centre Borelli*, Paris and Cachan.

2016 **Intern**, *Sigfox*, Paris, 6 months.

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

2023 **Improved Stability and Generalization Analysis of the D-SGD Algorithm**.

Le Bars, Batiste; Bellet, Aurélien; Tommasi, Marc.

Preprint.

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

2023 **FedMalin seminar**, *Online*.

Impact and choice of the topology for decentralized federated learning.

2022 **MILES seminar**, *Dauphine university, Paris*.

ARGO seminar, *Inria, Paris*.

Workshop Inria-EPFL 2022, *EPFL, Lausanne*.

Learning and Optimization in Luminy (LOL), *CIRM*, Poster.

Refined Convergence and Topology Learning for Decentralized SGD with Heterogeneous Data.

International Conference on Machine Learning (ICML), *Baltimore*, Poster.

Robust Kernel Density Estimation with Median-of-Means principle.

Conférence en Apprentissage (CAp), *Vannes*.

Refined Convergence and Topology Learning for Decentralized SGD with Heterogeneous Data.

MAGNET seminar, *Inria Lille*.

Contributions to graph learning and change point detection.

2020 **International Conference on Machine Learning (ICML)**, *Online*.

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

French-German Summer School on Transfer Learning, *Online*.

Change-point detection in a time-varying Ising model.

2019 **MLMDA seminar**, *ENS Cachan*.

Learning Laplacian Matrix from Bandlimited Graph Signals.

IEEE International Conference on Computer Communications (INFOCOM), *Paris*, Best in-session presentation.

A Probabilistic framework to Node-level Anomaly Detection in Communication Networks.

2018 **MLMDA seminar**, *ENS Cachan*.
Node-level Anomaly Detection in Communication Networks.
Graph Signal Processing workshop, *EPFL Lausanne*, Poster.
Node-level Anomaly Detection in Communication Networks.
2016 **LTCI lab seminar**, *Telecom Paris*.
Machine learning techniques for geolocating Sigfox devices.

Reviewing service

2023 **ICML, CAp**.
2022 **IEEE**, *Transactions on Signal and Information Processing over Networks*.
2021-2022 **AISTATS**.

Computer skills

Programming Python, R, C/C++
Tools Git, LaTeX, Office

Languages

French Native speaker
English Fluent
Spanish Beginner
Japanese Beginner

Miscellaneous

Sports Climbing – Surfing – Skateboarding