Batiste Le Bars

Postdoc at Inria Lille and EPFL

3 rue Paul Lafargue
59000 Lille
+33(0)6 32 85 62 05
batiste.le-bars@inria.fr

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.*

Supervisor 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

Oct 2021 – Today **Postdoc**, *Magnet team*, Inria.

- Supervisor: Prof. Marc Tommasi (Lille university and Inria), Dr. Aurelien Bellet (Inria) and Prof. Anne-Marie Kermarrec (EPFL).
- Grant: Inria-Epfl international lab postdoctoral fellowship.
- Subject: Optimal graph topology for decentralized federated learning with non identically distributed samples.

Jan – Apr 2021 **Postdoc**, *Centre Borelli*, ENS Paris-Saclay.

2017 – 2020 **Ph.D. Candidate**, *Sigfox and Centre Borelli*, Paris and Cachan.

Apr – Sept. 2016 **Intern**, *Sigfox*, Paris.

- Geolocation techniques in the framework of Sigfox's ultra narrow band technology.
- Bibliographic review on machine learning methods for geolocation.

Teaching

Fall 2021 **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

2022 **Yes, Topology Matters in Decentralized Optimization: Refined Convergence and Topology Learning under Heterogeneous Data**.

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

ArXiv Preprint.

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 **Robust Kernel Density Estimation with Median-of-Means principle**.
Le Bars, Batiste; Humbert, Pierre; Minvielle, Ludovic and Vayatis, Nicolas.
ArXiv Preprint.

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)*.

Talks and presentations

2022 **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, *Poster session, EPFL Lausanne*.
Node-level Anomaly Detection in Communication Networks.

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

Reviewing service

2021 **AISTATS**.

2020 **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