

# Anthony Bardou

POSTDOCTORAL RESEARCHER IN MACHINE LEARNING

☎ +33 669 302 564 | ✉ anthony.bardou@epfl.ch | 🌐 <https://abardou.github.io/> | 🐦 abardou\_

## Experience

### École Polytechnique Fédérale de Lausanne

Lausanne, Switzerland

POSTDOCTORAL RESEARCHER @ INDY LAB

Oct. 2023 - Now

- **Collaboration:** Prof. Patrick THIRAN
  - Researched theoretical guarantees of Bayesian optimization algorithms in several contexts.
- Keywords:** Online Learning, Decentralized Algorithm, Bayesian Optimization

### École Normale Supérieure de Lyon

Lyon, France

RESEARCH INTERN @ LIP/DANTE

Apr. 2020 - Sep. 2020

- **Subject:** Machine Learning for the Spatial Reuse of Wi-Fi Networks.
  - **Supervision:** Prof. Thomas BEGIN, Prof. Anthony BUSSON
  - Problem addressed from a centralized, reinforcement learning perspective, evaluated with an homemade Wi-Fi network simulator.
- Keywords:** Online Learning, Multi-Armed Bandit, Spatial Reuse

### Université Claude Bernard Lyon I

Lyon, France

RESEARCH INTERN @ LIRIS/SyCoSMA AND ELICO

Dec. 2018 - Jun. 2019

- **Subject:** Automatic Characterization of Citation Intentions in Scientific Publications.
  - **Supervision:** Prof. Frédéric ARMETTA, Prof. Marc BERTIN
  - Researched and contributed to attention and embedding techniques adapted to citations.
- Keywords:** Natural Language Processing, Embedding, Attention, Deep Learning, PyTorch

### Université de Perpignan Via Domitia

Perpignan, France

UNDERGRADUATE RESEARCH INTERN @ LIRMM/DALI

Apr. 2018 - Jun. 2018

- **Subject:** Study the Robustness of a Non Intrusive System Capable of Measuring the Human Respiratory Volume.
  - **Supervision:** Assistant Prof. David PARELLO, Prof. Henri MÉRIC
  - Produced a robustness analysis and performed a computational complexity reduction through combinatorial optimization.
- Keywords:** Combinatorial Optimization, Robustness Analysis, Image Processing

## Education

### École Normale Supérieure de Lyon

Lyon, France

PHD IN MACHINE LEARNING AND WIRELESS NETWORKS

Oct. 2020 - Sep. 2023

- **Subject:** Online Learning for the Optimization of Wireless Networks and Beyond.
- **Supervision:** Prof. Thomas BEGIN
- Researched zeroth-order optimization algorithms to optimize high-dimensional noisy black-box functions in a variety of applications, with a strong focus on wireless networks.

### Université Claude Bernard Lyon I

Lyon, France

M.S. IN DATA SCIENCE

Sep. 2018 - Sep. 2020

- Rank: 1 / 47
- Highest Honors

### Université de Perpignan Via Domitia

Perpignan, France

B.S. IN COMPUTER SCIENCE AND MATHEMATICS

Sep. 2015 - Jul. 2018

- Rank: 1 / 16
- Highest Honors

## Skills

**Data Science** Machine Learning, Data Mining, Big Data, Probabilistic Graphical Models

**Applied Math.** Bayesian Inference, Optimization, Statistics, Performance Evaluation, Operations Research

**Programming** Python, C/C++, Java, JavaScript

**Languages** French, English, Spanish (notions), German (notions)

## Publications

### PEER-REVIEWED JOURNALS

**ANTHONY BARDOU**, THOMAS BEGIN. Analysis of a decentralized Bayesian optimization algorithm for improving spatial reuse in dense WLANs. *Computer Communications, ACM MSWiM 2022 Special Issue*. Jun. 2023. 10.1016/j.comcom.2023.06.004

**ANTHONY BARDOU**, THOMAS BEGIN, ANTHONY BUSSON. Mitigating Starvation in Dense WLANs: A Multi-Armed Bandit Solution. *Ad Hoc Networks*, Vol. 138. Jan. 2023. 10.1016/j.adhoc.2022.103015

**ANTHONY BARDOU**, THOMAS BEGIN, ANTHONY BUSSON. Analysis of a Multi-Armed Bandit Solution for Improving the Spatial Reuse of New Generation WLANs. *Computer Communications, ACM MSWiM 2021 Special Issue, Pages 279-292*. Sep. 2022. 10.1016/j.comcom.2022.07.015

### INTERNATIONAL CONFERENCES

**ANTHONY BARDOU**, THOMAS BEGIN. INSPIRE: Distributed Bayesian Optimization for Improving SPAtial REuse in Dense WLANs. *Proc. MSWiM'22. Montréal, Canada (QC)*. Oct. 2022. 10.1145/3551659.3559050. **BEST PAPER AWARD.**

**ANTHONY BARDOU**, THOMAS BEGIN, ANTHONY BUSSON. Improving the Spatial Reuse in IEEE 802.11ax WLANs: A Multi-Armed Bandit Approach. *Proc. MSWiM'21. Alicante, Spain*. Nov. 2021. 10.1145/3479239.3485715.

### NATIONAL CONFERENCES

**A. BARDOU**, T. BEGIN. INSPIRE : Optimisation Bayésienne Distribuée pour l'Amélioration de la Réutilisation Spatiale des WLANs Denses. *Proc. AlgoTel'22. Saint-Rémy-Lès-Chevreuse, France*. Jun. 2022. **BEST PAPER AWARD.**

**A. BARDOU**, T. BEGIN, A. BUSSON. Algorithme de Multi-Armed Bandit pour la Réutilisation Spatiale des WLANs : Réduire le nombre de Stations en Famine. *Proc. ROADEF'22. Lyon, France*. Feb. 2022.

## Talks

<b>Invited Speaker @ INDY, EPFL</b>	May 2023	Lausanne, Switzerland
<b>Invited Speaker @ INRIA Maracas, INSA Lyon</b>	Jul. 2022	Lyon, France
<b>Invited Speaker @ INRIA Ockham, ENS Lyon</b>	Dec. 2021	Lyon, France
<b>Invited Speaker @ INRIA Maracas, INSA Lyon</b>	May 2021	Lyon, France
<b>Invited Speaker @ PEVA for Networks</b>	Nov. 2020	Lyon, France
<b>Invited Speaker @ LIRMM, Univ. Perpignan</b>	Jul. 2018	Perpignan, France

## Reviews

<b>Advances in Neural Information Processing Systems</b>	International Conference	2023
<b>Computer Communication</b>	Elsevier Journal	2023
<b>International Symposium on Information Theory</b>	IEEE International Conference	2023

## Teachings

<b>Preparation to the <i>agrégation</i> of C.S.</b>	32 hrs	M.S. of Computer Science	Spring 2023	École Normale Supérieure de Lyon
<b>Numerical Analysis</b>	15 hrs	B.S. of Computer Science	Spring 2022	Université Claude Bernard Lyon I
<b>Optimization</b>	15 hrs	B.S. of Computer Science	Spring 2022	Université Claude Bernard Lyon I
<b>Basics of Artificial Intelligence</b>	12 hrs	M.S. of Computer Science	Fall 2021	Université Claude Bernard Lyon I
<b>Optimization &amp; Operations Research</b>	18 hrs	M.S. of Computer Science	Fall 2021	Université Claude Bernard Lyon I

## Supervision

<b>Hugo MARTEL</b>	B.S. of Computer Science (Internship)	École Normale Supérieure de Lyon	Jun. 2023 - Jul. 2023
--------------------	---------------------------------------	----------------------------------	-----------------------

## Schools

<b>Spring School of Theoretical Computer Science on Machine Learning (EPIT'22)</b>	Luminy, France
CENTRE INTERNATIONAL DE RECONTRES MATHÉMATIQUES (CIRM)	May 2022

## Mentions

---

**L'optimisation bayésienne au service des performances du WiFi**

Apr. 2023

*INS2I (CNRS)*

## Projects

---

### **Prediction of air pollution levels for the Lyon Metropole**

- Predicted levels of pollution with meteorological data and road traffic data collected in real time through collaboration with the Grand Lyon.

**Keywords:** Machine Learning, Kafka, SparkML

### **Visualization of smartphone usage behaviors**

- Developed to support future User Behaviors Analytics (UBA) projects.
- Used to explore times of use, sequences and switches of applications according to the geographical position and time of day.

**Keywords:** NodeJS, VueJS, D3JS

### **Unsupervised identification of individuals through keyboard use**

- Developed a method for detecting different profiles in an unlabelled base of samples, for real-time matching of one of the profiles with a user typing freely on the keyboard.

**Keywords:** Clustering, Scikit-Learn