

# Anthony Bardou

POSTDOCTORAL RESEARCHER IN MACHINE LEARNING AND WIRELESS NETWORKS

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## Experience

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### 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

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### 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

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**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

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### PEER-REVIEWED JOURNALS

SAMIR SI-MOHAMMED, **ANTHONY BARDOU**, THOMAS BEGIN, ISABELLE GUÉRIN-LASSOUS, PASCALE VICAT-BLANC. NS+ NDT: Smart Integration of Network Simulation in Network Digital Twin, Application to IoT Networks. *Future Generation Computer Systems*. Mar. 2024.

**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**, PATRICK THIRAN, THOMAS BEGIN. Relaxing the Additivity Constraints in Decentralized No-Regret High-Dimensional Bayesian Optimization. *Proc. ICLR'24. Vienna, Austria*. May 2024.

**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

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

## Reviews

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<b>Uncertainty in Artificial Intelligence</b>	International Conference	<i>2024</i>
<b>Computer Networks</b>	Elsevier Journal	<i>2024</i>
<b>Advances in Neural Information Processing Systems</b>	International Conference	<i>2023</i>
<b>Computer Communication</b>	Elsevier Journal	<i>2023</i>
<b>International Symposium on Information Theory</b>	IEEE International Conference	<i>2023</i>

## Teachings

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

## Supervision

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<b>Emanuele MENGOLI</b>	M.S. of Computer Science	École Polytechnique (FR)	<i>Apr. 2024 - Oct. 2024</i>
<b>Giovanni RANIERI</b>	B.S. of Computer Science	École Polytechnique Fédérale de Lausanne (CH)	<i>Feb. 2024 - Jun. 2024</i>
<b>Hugo MARTEL</b>	B.S. of Computer Science	École Normale Supérieure de Lyon (FR)	<i>Jun. 2023 - Jul. 2023</i>

## Schools

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

## Mentions

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<b>L'optimisation bayésienne au service des performances du WiFi</b>	Apr. 2023	<i>INS2I (CNRS)</i>
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## Open-Source Repositories

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<b>DuMBO: High-Dimensional, No-Regret Bayesian Optimization</b>	Feb. 2023	<i>abardou/dumbo</i>
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