Anthony **Bardou**

Postdoctoral Researcher in Machine Learning and Wireless Networks

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Experience

École Polytechnique Fédérale de Lausanne
Lausanne, CH

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, FR

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 pespective, evaluated with an homemade Wi-Fi network simulator.

Keywords: Online Learning, Multi-Armed Bandit, Spatial Reuse

Université Claude Bernard Lyon I
Lyon, FR

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, FR

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, FR

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
- **Award**: GDR RSD/ASF Best Ph.D. Thesis
- 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, FR

M.S. in Data Science — *Sep. 2018 - Sep. 2020*

- Rank: 1 / 47
- Highest Honors

Université de Perpignan Via Domitia
Perpignan, FR

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

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.*

Ph.D. Thesis

Anthony Bardou. Online Learning for the Black-Box Optimization of Wireless Networks. *École Normale Supérieure de Lyon. France. Sep. 2023.* **GDR RSD/ASF Best Ph.D. Thesis Award.**

Talks

Invited Speaker @ INRIA Maracas	Jun. 2024	*Lyon, FR*
Invited Speaker @ INDY, EPFL	May 2023	*Lausanne, CH*
Invited Speaker @ INRIA Maracas, INSA Lyon	Jul. 2022	*Lyon, FR*
Invited Speaker @ INRIA Ockham, ENS Lyon	Dec. 2021	*Lyon, FR*
Invited Speaker @ INRIA Maracas, INSA Lyon	May 2021	*Lyon, FR*
Invited Speaker @ PEVA for Networks	Nov. 2020	*Lyon, FR*
Invited Speaker @ LIRMM, Univ. Perpignan	Jul. 2018	*Perpignan, FR*

Reviews

International Conference on Learning Representations	International Conference	*2024*
Uncertainty in Artificial Intelligence	International Conference	*2024*
Computer Networks	Elsevier Journal	*2024*
Advances in Neural Information Processing Systems	International Conference	*Since 2023*
Computer Communication	Elsevier Journal	*Since 2023*
International Symposium on Information Theory	IEEE International Conference	*2023*

Teachings

Stochastic Modeling for Telecommunications	30 hrs	B.S. of Computer Science	Fall 2024	*EPFL (CH)*
Preparation to the *agrégation* of C.S.	32 hrs	M.S. of Computer Science	Spring 2023	*ENS Lyon (FR)*
Numerical Analysis	15 hrs	B.S. of Computer Science	Spring 2022	*UCBL (FR)*
Optimization	15 hrs	B.S. of Computer Science	Spring 2022	*UCBL (FR)*
Basics of Artificial Intelligence	12 hrs	M.S. of Computer Science	Fall 2021	*UCBL (FR)*
Optimization & Operations Research	18 hrs	M.S. of Computer Science	Fall 2021	*UCBL (FR)*

Supervision

Aryan AHADINIA	M.S. of Computer Science	École Polytechnique Fédérale de Lausanne (CH)	*Sep. 2024 - Jan. 2025*
Nahuel PLOMB VEUVE	B.S. of Computer Science	École Polytechnique Fédérale de Lausanne (CH)	*Sep. 2024 - Jan. 2025*
Emanuele MENGOLI	M.S. of Computer Science	École Polytechnique (FR)	*Apr. 2024 - Oct. 2024*
Giovanni RANIERI	B.S. of Computer Science	École Polytechnique Fédérale de Lausanne (CH)	*Feb. 2024 - Jun. 2024*
Hugo MARTEL	B.S. of Computer Science	École Normale Supérieure de Lyon (FR)	*Jun. 2023 - Jul. 2023*

Schools

Spring School of Theoretical Computer Science on Machine Learning (EPIT'22) *Luminy, FR*
Centre International de Recontres Mathématiques (CIRM) *May 2022*

Mentions

L'optimisation bayésienne au service des performances du WiFi Apr. 2023 *INS2I (CNRS)*

Open-Source Repositories

W-DBO: Wasserstein Distance-Based Dynamic Bayesian Optimization May 2024 *WDBO-ALGORITHM/wdbo_algo*
DuMBO: High-Dimensional, No-Regret Bayesian Optimization Feb. 2023 *abardou/dumbo*