Anthony **Bardou**

PhD Student in Machine Learning and Wireless Networks

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Experience

École Polytechnique Fédérale de Lausanne

Lausanne, Switzerland

Visting PhD Student @ INDY Lab — *Sep. 2022 - Dec. 2022*

- **Supervision**: Patrick THIRAN
- Created a new decentralized Bayesian optimization algorithm with competitive performance on a variety of applications.

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**: Thomas BEGIN, 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, France

Research Intern @ LIRIS/SyCoSMA and ELICO — *Dec. 2018 - Jun. 2019*

- **Subject**: Automatic Characterization of Citation Intentions in Scientific Publications.
- **Supervision**: Frédéric ARMETTA, 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**: David PARELLO, 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**: 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

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

Reviews

Advances in Neural Information Processing Systems	International Conference	*2023*
Computer Communication	Elsevier Journal	*2023*
International Symposium on Information Theory	IEEE International Conference	*2023*

Teachings

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

Supervision

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

Schools

Spring School of Theoretical Computer Science on Machine Learning (EPIT'22) *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