Aurélien Garivier



Born 1979.09.24 in Annecy (74), France

ADMINISTRATIVE SITUATION

Full Professor of Mathematics and Computer Science
École Normale Supérieure de Lyon
Unité de Mathématiques Pures et Appliquées (UMPA) UMR CNRS 5669
associated to Laboratoire de l'Informatique du Parallélisme (LIP) UMR CNRS 5668
46, allée d'Italie 69364 Lyon Cedex 07 tél: +33 4 72 72 81 08
aurelien.garivier@ens-lyon.fr http://perso.ens-lyon.fr/aurelien.garivier/

CAREER PROGRESSION

- 1999-2003 : **Elève normalien** at ENS Cachan
  magistère (double cursus) mathematics / computer science, agrégation de mathématiques
- 2003-2006 : **PhD** (Allocataire-Moniteur) at Université Paris Sud Orsay, defended 2006.11.23
- 2006-2007 : **Junior research and teaching position** (ATER) à l'ENS Cachan
- 2007-2012 : **Junior Researcher at CNRS at** LTCI (Telecom ParisTech)
  Habilitation à diriger des recherches 2011/11/28
- 2012-2018 : **Full Professor** at Université Paul Sabatier, Institut de Mathématiques de Toulouse
- 2018- : Full Professor at **ENS Lyon**, UMPA and LIP

Laureate of PES/PEDR (2010: CNRS, 2013, 2017: UPS, 2021, 2025 : ENSL)

RESEARCH TOPICS

Statistical Learning, Reinforcement Learning: dynamic resource allocation, sequential decision theory, bandit problems, MDPs, risk-aware planning and learning
Model Selection: Minimum Description Length (MDL), oracle inequalities, BIC criterion
Markov Model: particule filters for hidden Markov Models,Variable Length Markov Chains (VLMC), estimation, perfect simulation
Information Theory: source coding, universal coding, non-parametrics, pattern coding

Main grants:
ANR SPADRO (120k€, PI, 2013-2017), ANR ALICIA (1M€, partner leader with 87k€, 2013-2017), IDEX Impulsion (PI, 70k€, 2019-2021), Fonds Recherche Attractivité (PI, 90k€, 2019-2022), chaire IA SeqALO (450k€, 2020-2025), PEPR IA (400k€, 2023-2027)

SOME SCIENTIFIC AND ADMINISTRATIVE RESPONSIBILITIES

- 2021-2025 : **deputy head of Laboratory UMPA**, **head of the Master** of Computer Science at ENSL
- **Animator** of the AILyS research projet (2023-)
- **Associate Editor** for the journals JMLR (2021-) and Stochastics (2016-2025), **PC member** of many ML conferences
- local chair of **COLT'26**, PC **co-chair of ALT'2019** in Chicago, etc.
- 2019: **President of the Scientific Committee** of the Journées de Statistiques of SFDS
- 2016-2018 **Director of the Maths (teaching) Department at Université Paul Sabatier**

- 2016-2018: **Founder and Head of the Project-team AOC (Apprentissage, Optimisation, Complexité)** a research group of circa 20 researchers in labex CIMI
- 2013-2017: **PI and responsible of the ANR projet Spadro** (Statistique semi-Paramétrique pour l'Allocation Dynamique de Ressources et l'Optimisaition, aap blanc)
- 2014-2016 Member of the **Labex CIMI Executive Committee**
- 2013-2017: **Local responsible for IMT o**f the **ANR Project Alicia** (aap CONTINT)
- 2014- : Deputy Director of the **CNRS GDR MaDICS**
- 2014: Main organizer of the **Journées MAS** in Toulouse (227 participants)
- 2012-: Member of the executive committee of the **SMAI group MAS**
- 2012-2016: Responsible for the **Cursus de Master en Ingénierie Statistique et Informatique Décisionnelle** (bachelor + master of data science) at UPS
- 2009-2012: Mathematics Coordinator **jury of admission at Ecole Normale Supérieure de la rue d'Ulm voie** BL, written and orale examinations

SUPERVISION

- 2007-2010: **Sarah Filippi**, PhD with Orange Labs on Optimistic Strategies in Reinforcement Learning, with Olivier Cappé et Eric Moulines. Sarah is now Lecturer in the Faculty of Medicine and School of Public Health at Imperial College (UK).
- 2010-2014: **Emilie Kaufmann**, PhD on the analysis of Bayesian and frequentist strategies for sequential resource allocation, with Olivier Cappé and Rémi Munos. Emilie is now Researcher at CNRS (Lille).
- 2013-2016: **Jonathan Louëdëc**, PhD on the adaptive modelling of visual exploration systems for information flows, with Josiane Mothe and Max Chevallier. Jonathan is now researcher at Cdiscount (Bordeaux).
- 2013-2016: **Wenjuan Wang**, PhD on optimization for statistical learning with uncertain data, with Nicolas Couellan et Kerstin Bystricky. Wenjuan is now Postdoc at King's College London (UK) .
- 2014-2017: **Tatiana Labopin-Richard**, PhD on statistical and machine learning methods for the validation of stochastic computer experiment with applications to renewable energy, with Fabrice Gamboa and Bertrand Iooss. Tatiana is now a teacher in Classes Préparatoires.
- 2015-2018 : **Pierre Ménard**, PhD on the notion of optimality in the stochastic multi-armed bandit problems, with Gilles Stoltz. Pierre is now PostDoc at INRIA Lille.
- 2016-2019: **Léonard Torossian**, PhD with INRA on metamodels and robust optimization with application to the design of ideotypes under climate uncertainty, with Robert Faivre and Victor Picheny.
- 2016-2019: **Mastane Achab**, Phd on extreme-based risk measures and bandit problems, with Stéphan Clémençon and Anne Sabourin.
- 2017: **Pascal Dkengne Sielenou**, 1 year postdoc for Project ALICIA, in collaboration with AlephD. Pascal is now Postdoc at Université de Grenoble.
- 2019-2021: **Tomas Kocak**, Postdoc on sequential decision theory with graphs.
- 2019-2022: **Juliette Achdou**, PhD at 1000Merci on bandit strategies for targeted online marketing, with Olivier Cappé.
- 2020-2023 : **Antoine Barrier**, Ph.D on sequential learning for optimization, co-supervised by Gilles Stoltz. Postdoc at GIN Grenoble.
- 2020-2023 **Aadil Oufkir**, Ph.D. on adaptivity in classical and quantum learning, co-supervised by Omar Fawzi and Nicolas Flammarion. Postdoc at RWTH Aachen with Mario Berta.
- 2020-2023 **Clément Lalanne** Ph.D on compromises in learning under privacy constraints, co-supervised by Rémi Gribonval. Postdoc at TSE with Jérôme Bolte and Sébastien Gadat.
- 2020-2023 **Aymen Al Marjani** Ph.D on the complexity of sequential and reinforcement learning, co-supervised by Emilie Kaufmann. Researcher at Amazon Luxembourg.
- 2021-2024 **Hugues Van Assel** Ph.D on dimensionality reduction and representation learning, co-supervised by Titouan Vayer. Post-doc at Genentech (San Francisco).

- 2022-2026 **Alexandra Marthe** Ph.D on risk-aware reinforcement learning, co-supervised by Claire Vernade.
- 2025- J**uliet Bringas Miranda** Ph.D on the distributional reinforcement learning, co-supervised by Olivier Cappé.

SELECTION OF JOURNAL PUBLICATIONS

- On Sparsity and Sub-Gaussianity in the Johnson-Lindenstrauss Lemma
  Aurélien Garivier and Emmanuel Pilliat
  Transactions on Machine Learning Research Oct. 2025
- On Adaptivity in Quantum Testing
  Aadil Oufkir, Omar Fawzi, Nicolas Flammarion, Aurélien Garivier
  Transactions on Machine Learning Research Sep. 2023
- On the Statistical Complexity of Estimation and Testing under Privacy Constraints
  Clément Lalanne, Aurélien Garivier, Rémi Gribonval
  Transactions on Machine Learning Research Apr. 2023
- Explore First, Exploit Next: The True Shape of Regret in Bandit Problems
  Aurélien Garivier, Pierre Ménard, Gilles Stoltz
  Mathematics of Operations Research vol 44(2), May 2019, pp.377-399
- Kullback-Leibler Upper Confidence Bounds for Optimal Sequential Allocation
  Olivier Cappé, Aurélien Garivier, Odalric-Ambrym Maillard, Rémi Munos, Gilles Stoltz
  Annals of Statistics vol.41(3), Jun. 2013, pp.1516-1541
- Optimal discovery with probabilistic expert advice: finite time analysis and macroscopic optimality
  S. Bubeck, D. Ernst, A. Garivier
  Journal of Machine Learning Research vol.14, Feb. 2013, pp.601-623
- Sequential Monte Carlo smoothing for general state space Hidden Markov Models
  Randal Douc, Aurélien Garivier, Eric Moulines, Jimmy Olsson
  Annals of Applied Probability vol.21(6), Dec. 2011, pp.2109-2145
- Context Tree Selection: A Unifying View
  Aurélien Garivier, Florencia Leonardi
  Stochastic Processes and their Applications vol.121(11), Nov. 2011, pp.2488-2506
- Coding on countably infinite alphabets
  S. Boucheron, A. Garivier, E. Gassiat
  IEEE-Transactions on Information Theory vol. 55(1), Jan. 2009, pp.358-373

SELECTION OF CONFERENCE PUBLICATIONS

- Sequential Learning of the Pareto Front for Multi-objective Bandits
  Elise Crépon, Aurélien Garivier, Wouter M Koolen
  27th **International Conference on Artificial Intelligence and Statistics** Apr. 2024
- Beyond Average Return in Markov Decision Processes
  Alexandre Marthe, Aurélien Garivier, Claire Vernade
  Neural Information Processing Systems 2023
- Sequential Test for the Lowest Mean: From Thompson to Murphy Sampling
  Emilie Kaufmann, Wouter M. Koolen, Aurélien Garivier
  Neural Information Processing Systems n°32, Dec. 2018
- Optimization of a SSP's Header Bidding Strategy using Thompson Sampling
  Grégoire Jauvion, Nicolas Grislain, Pascal Dkengne Sielenou, Aurélien Garivier, Sébastien Gerchinovitz
  Special Interest Group on Knowledge Discovery and Data Mining 2018
- On Explore-Then-Commit Strategies

Aurélien Garivier, Emilie Kaufmann, Tor Lattimore
Neural Information Processing Systems n°30, Dec. 2016

- Optimal Best Arm Identification with Fixed Confidence
  Aurélien Garivier, Emilie Kaufmann
  Conference On Learning Theory n°29, Jun. 2016, pp.998-1 027
- The KL-UCB Algorithm for Bounded Stochastic Bandits and Beyond
  Aurélien Garivier, Olivier Cappé
  Conference On Learning Theory n°24, Jul. 2011, pp.359-376