Mathurin MASSIAS

Tenured researcher in Machine Learning

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EXPERIENCE

NOV. 2021 – PRESENT	INRIA (ENS Lyon, France): Tenured researcher (*chargé de recherche*). OCKHAM Team. Generative models, efficient and frugal machine learning Selected publications: [12, 1, 5, 6, 7, 8]
SEP. 2024 – PRESENT	ECOLE POLYTECHNIQUE (Paris, France): Part-time lecturer (64 h/year). Classes: Python for datascience, Statistical modelling
JAN. 2020 – OCT. 2021 (2 YEARS)	UNIVERSITÀ DI GENOVA (Genova, Italy): Post-doctoral researcher with L. Rosasco and S. Villa. Statistical learning and optimisation, designing new implicit regularization methods machine learning and inverse problems Selected publications: [2, 3]
SEP. 2016 – DEC. 2019 (3 YEARS)	INRIA (Université Paris-Saclay, France): PhD, supervised by A. Gramfort and J. Salmon. *"High dimensional sparse regression with heteroscedastic noise: application to neural source localization"*, obtained Summa cum laude. Keywords: optimisation, neuro-imaging, inverse problems, sparsity, high dimension Selected publications: [4, 9, 10, 11]
FEB. 2019 – MAY 2019 (3 MONTHS)	U. of Tokyo/RIKEN (Japan), Deep Learning Theory team: intern, supervised by T. Suzuki. Work on gradient Langevin dynamics for non-convex regression in RKHS Keywords: stochastic differential equations

EDUCATION

SEP. 2014 – APR. 2015	**ENS Cachan** (Cachan, France): MSc in Machine Learning (MVA)
SEP. 2011 – APR. 2015	**Ecole Centrale Paris** (Paris, France): Major in Applied Mathematics and Data Science

REPRESENTATIVE PUBLICATIONS

Full publication list at https://scholar.google.com/citations?user=kaTDZS0AAAAJ

Journal publications

[1] A. Gagneux, M. Massias, E. Soubies, and R Gribonval. Convexity in ReLU neural networks: beyond ICNNs? *JMIV*, 2025.

[2] C. Molinari, M. Massias, L. Rosasco, and S. Villa. Iterative regularization for low-complexity regularizers. *Numerische Mathematik*, 2023.

[3] Q. Bertrand, Q. Klopfenstein, M. Massias, M. Blondel, S. Vaiter, A. Gramfort, and J. Salmon. Implicit differentiation for fast hyperparameter selection in non-smooth convex learning. *Journal of Machine Learning Research*, 2022.

[4] M. Massias, S. Vaiter, A. Gramfort, and J. Salmon. Dual extrapolation for sparse Generalized Linear Models. *Journal of Machine Learning Research*, 21(234):1–33, 2020.

Proceedings of international conferences

[5] Q. Bertrand, A. Gagneux, M. Massias, and R. Emonet. On the closed-form of flow matching: generalization does not arise from target stochasticity. In *NeurIPS*, 2025.

[6] C. Pouliquen, M. Massias, and T. Vayer. Schur's positive-definite network: deep learning in the SPD cone with structure. In *ICLR*, 2025.

[7] T. Moreau, M. Massias, A. Gramfort, P. Ablin, P.-A. Bannier, B. Charlier, M. Dagréou, T. Dupré la Tour, G. Durif, C. Dantas, Q. Klopfenstein, et al. Benchopt: reproducible, efficient and collaborative optimization benchmarks. In *NeuRIPS*, 2022.

[8] Q. Bertrand, Q. Klopfenstein, P.-A. Bannier, G. Gidel, and M. Massias. Beyond l1: faster and better sparse models with skglm. In *NeurIPS*, 2022.

[9] P. Ablin, T. Moreau, M. Massias, and A. Gramfort. Learning step sizes for unfolded sparse coding. In *NeurIPS*, 2019.

[10] Q. Bertrand*, M. Massias*, A. Gramfort, and J. Salmon. Concomitant Lasso with repetitions: beyond averaging multiple realizations of heteroscedastic noise. In *NeurIPS*, 2019.

[11] M. Massias, A. Gramfort, and J. Salmon. Celer: a fast solver for the Lasso with dual extrapolation. In *ICML*, 2018.

Preprints

[12] A. Gagneux, S. Martin, R. Gribonval, and M. Massias. The generation phases of flow matching: a denoising perspective. 2025.

TEACHING

Since 2019	École Polytechnique & HEC: Python for Data Science (42 h/year).
Since 2022	ENS de Lyon: Generative models, with Q. Bertrand and R. Emonet (M2, 2×32 h). Computational optimal transport, with Q. Bertrand and T. Vayer (M2, 2×32 h). Optimization for huge scale machine & deep learning (M2, 2×32h). Fundamentals of Machine Learning (L3, 32 h). Nonlinear optimization (M1, 14 h).
Feb. 2023	OLISSIPO Winter school (Lisbon): Dimensionality reduction (6 h).
Since 2022	CNRS Formation: Fondements et pratique du machine learning et du deep learning. (15 h/year)
Jul. 2022	Wroclaw University of Science and Technology: Linear regression and convex optimization (6 h).
Dec. 2021	EMINES Marrakech: Teacher for the one week *Data Science* class (30 h).
2020–2023	École Polytechnique Executive Education: Teacher for the *Data Science Starter Program* (30 h/year).

STUDENTS AND ALUMNI

- Anne Gagneux, M2 intern and PhD Student. With Emmanuel Soubies and Rémi Gribonval (2023 – 2026)
- Can Pouliquen, PhD Student. With Titouan Vayer and Paulo Gonçalves (2022 – 2025)
- Ilias Bouhss, L3 intern. With Ségolène Martin and Anne Gagneux (June 2025 – July 2025)
- Florian Kozikowski, M1 intern. (April 2025 – July 2025)
- Maël Chaumette, M2 intern, with Rémi Gribonval (Apr. 2024 – Oct. 2024)
- Wassim Mazouz, M1 intern, with Nelly Pustelnik (May 2024 – Aug. 2024)
- Badr Moufad, research engineer (Apr. 2022 – Dec. 2023)

OPEN SOURCE PYTHON SOFTWARE

Summary on my GitHub page: https://github.com/mathurinm

- celer and skglm (state-of-the-art algorithms to solve sparse problems, ≥100k downloads): lead developer
- benchopt (automatic benchmarking of ML methods): core developer
- scikit-learn (machine learning in python): contributor

COMMUNITY SERVICE

- Co-organizer of the Peyresq summer school on Generative models and optimal transport, June 2026.
- Organizer of the *Flow matching, diffusion and their application* GDR IASIS thematic day at ENS Lyon, Octorber 25th 2025, 200 participants.
- Co-organizer of the *Generative models and optimal transport* minisymposium at SMAI, Bordeaux, June 2025.
- Co-organizer of the *Bilevel optimization and hyperparameter tuning* workshop at ENS Lyon, March 25th 2025, 70 participants
- Co-organizer of *Learning and optimization in Luminy (LOL)* at CIRM, 2024 and 2026 editions, 60 participants
- Co-organizer of *SMAI MODE days* in Lyon, 27-29 March 2024, 150 participants
- Co-organizer of *Dimensionality reduction day* at ENS Lyon, November 10th 2023, 50 participants
- Secretary of the SMAI-MODE committee (Optimization section of the French society for Applied and Industrial Mathematics) (member since 2024, secretary since 2025)

- Area Chair for NeurIPS and ICML since 2024, Associate Editor for TMLR, former Associate Editor and Managing Editor for Computo
- Journal reviewer JMLR, TMLR, SIAM OPT, OJMO, IEEE TSP, Signal Processing and others.
- Member of PhD defense committees for Gilles Bareilles (Université Grenoble Alpes, 12/22), Florent Bascou (Université Montpellier, 09/22); member of the CSI of Yu-Han Wu (Sorbonne Université, 2025).
- Member of the 2023 PGMO PhD prize committee.

PROJECTS, GRANTS AND AWARDS

- 2025–2028: Local coordinator of the ANR PRCI *LSD* (PI: Quentin Bertrand)
- 2023–2027: Local coordinator of the ANR TSIA *BenchArk* (PI: Thomas Moreau)
- 2023–2027: Member of the ANR JCJC *EROSION* (PI: Emmanuel Soubiès)
- 2023–2025: 7000 € personal grant from GDR ISIS, *PROSSIMO* project
- 2021: 5000 € personal grant from ENS Lyon for starting researcher support
- 2019: Best PhD prize of Programme Gaspard Monge Optimisation (PGMO) and Best PhD prize of Télécom Paris
- 2017: Best presentation award at JDSE conference (Orsay, France)