

# Mathurin MASSIAS

## Machine Learning researcher

---

EMAIL: [mathurin.massias@gmail.com](mailto:mathurin.massias@gmail.com)  
WEBSITE: <https://mathurinm.github.io>

### RESEARCH EXPERIENCE

---

- NOV. 2021 – PRESENT      INRIA (Lyon, France): Tenured researcher (*chargé de recherche*). OCKHAM Team.  
Efficient and frugal machine learning  
Publications: [3, 4, 5]
- 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  
Publications: [1, 6, 7]
- 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  
Publications: [2, 8, 9, 10, 11, 12]
- 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  
Publications: [13]

### EDUCATION

---

- SEP. 2014 – APR. 2015      **ENS Cachan** (Cachan, France): MSc in Machine Learning (MVA)  
Summa cum laude (average grade: 16.8/20)
- SEP. 2011 – APR. 2015      **Ecole Centrale Paris** (Paris, France): Engineering degree  
Major in Applied Mathematics and Data Science (average grade: 16.3/20)

### PUBLICATIONS

---

#### Journal publications

- [1] 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.
- [2] 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

- [3] J. Larsson, Q. Klopfenstein, M. Massias, and J. Wallin. Coordinate descent for SLOPE. In *AISTATS*, 2023.
- [4] T. Moreau, M. Massias, A. Gramfort, P. Ablin, P.-A. Bannier, B. Charlier, M. Dagr  ou, T. Dupr   la Tour, G. Durif, C. Dantas, Q. Klopfenstein, et al. Benchopt: reproducible, efficient and collaborative optimization benchmarks. In *NeurIPS*, 2022.
- [5] Q. Bertrand, Q. Klopfenstein, P.-A. Bannier, G. Gidel, and M. Massias. Beyond l1: faster and better sparse models with skglm. In *NeurIPS*, 2022.
- [6] C. Molinari, M. Massias, L. Rosasco, and S. Villa. Iterative regularization for convex regularizers. In *AISTATS*, 2021.
- [7] Q. Bertrand and M. Massias. Anderson acceleration of coordinate descent. In *AISTATS*, 2021.
- [8] M. Massias\*, Q. Bertrand\*, A. Gramfort, and J. Salmon. Support recovery and sup-norm convergence rates for sparse pivotal estimation. In *AISTATS*, 2020.
- [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.
- [12] M. Massias, O. Fercoq, A. Gramfort, and J. Salmon. Heteroscedastic multitask concomitant Lasso for sparse multimodal regression. In *AISTATS*, 2018.
- [13] B. Muzellec, K. Sato, M. Massias, and T. Suzuki. Dimension-free convergence rates for gradient Langevin dynamics in RKHS. In *COLT*, 2022.

## TEACHING

---

2023 (6 h)	OLISSIPO Winter school (Lisbon): Dimensionality reduction.
2022 (10 h)	CNRS Formation entreprise: Fondements et pratique du machine learning et du deep learning.
2022 – 2024 (2 × 32 h)	École Normale Supérieure de Lyon: Optimization for large scale machine & deep learning.
Jul. 2022 (6 h)	Wroclaw University of Science and Technology: Linear regression and convex optimization.
Dec. 2021 (30 h)	EMINES Marrakech: Teacher for the one week <i>Data Science</i> class.
2020 – 2022 (100 h)	École Polytechnique Executive Education: Teacher for the <i>Data Science Starter Program</i> .
2019 – 2023 (4 × 42 h)	École Polytechnique/HEC “Data Science for Business” Master: Teacher for the <i>Python for Data Science</i> class.
2017 – 2019 (2 × 40 h)	Université Paris-Saclay “Data Science” Master: Teaching assistant and partial lecturer for the <i>Optimization for Data Science</i> class.

## 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): lead developer
- benchopt (automatic benchmarking of optimization packages on standard ML tasks): core developer
- scikit-learn (machine learning in python): contributor
- sparse-ho (hyperparameter tuning for sparse machine learning models): core developer
- MNE-python (brain imaging with magneto and electro-encephalographic modalities): contributor

## COMMUNITY SERVICE

---

- Associate Editor for *Computo*
- Conference reviewer for NeurIPS since 2018 (2018 Top 800 reviewers, 2019 Top 400, 2020 Top 10 %), ICML since 2019, AISTATS since 2020, SPARS 2019, ACML 2019, 2018
- Journal reviewer JMLR, SIAM Journal on Optimization, OJMO, IEEE TSP, Signal Processing and others.
- Member of PhD defense committee for Gilles Bareilles (Université Grenoble Alpes, 12/22), Florent Bascou (Université Montpellier, 09/22).

## GRANTS AND AWARDS

---

- 2021: 5000 € from ENS Lyon for starting researcher support.
- 2019: Best PhD prize of Programme Gaspard Monge Optimisation (PGMO)
- 2019: Best PhD prize of Télécom Paris
- 2018: 1500 € from the GdR ISIS to fund a 1 month visit to the University of Washington (Seattle, USA)
- 2018: 1000 € from the STIC doctoral school to fund SPARS 2017 conference and summer school attendance
- 2017: Best presentation award at JDSE conference (Orsay, France)