



# Guillaume Garrigos

## Curriculum Vitae

### Personal information and contact

- 👤 Born in Toulouse (France), May 8th 1989.
- ✉ Université Paris Cité, Place Aurélie Nemours, 75013 Paris, France.
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### Current position (2018– )

- position **Maître de conférences** at Université Paris Cité
- affiliation Laboratoire de Probabilités, Statistique et Modélisation
- research optimization, statistical machine learning, inverse problems, image and signal processing, algorithms and continuous dynamical systems, tame optimization.
- interests

### Previous positions (2012–2018)

- 2017–2018 **Post-doc**, *École Normale Supérieure*, Paris, France.  
Main collaborator : Gabriel Peyré (ENS, CNRS, INRIA)  
Research themes : inverse problems, signal and image processing, optimization
- 2015–2017 **Post-doc**, *Istituto Italiano di Tecnologia*, Genoa, Italy.  
Main collaborators : Lorenzo Rosasco (IIT, MIT) and Silvia Villa (IIT)  
Research themes : optimization and regularization methods for machine learning.
- 2012–2015 **Ph.D.**, *Université de Montpellier & Universidad Santa Maria*, France & Chile.  
Supervisors : Hedy Attouch (UM) and Juan Peypouquet (USM)  
Subject : Dynamical systems for tame optimization and multi-objective problems 📄

### Education and Degrees

- 2013 **Agrégation de Mathématiques**, ranked 147/323.
- 2010–2012 **Master**, *Université de Montpellier*, Mathématiques, Statistiques et Applications.
- 2007–2010 **Licence**, *Université de Montpellier*, Mathématiques Fondamentales et Appliquées.
- 2007 **Baccalauréat**, *Lycée Diderot*, Narbonne.

## Publications







### Publications in international specialized journals.

- G. Garrigos, L. Rosasco and S. Villa. *Accelerated iterative regularization via dual diagonal descent*, SIAM Journal on Optimization, Vol. 31, No. 1, pp. 754–784, 2021. [📄](#)
- G. Garrigos, L. Rosasco and S. Villa. *Thresholding gradient methods in Hilbert spaces: support identification and linear convergence*, ESAIM: Control, Optimisation and Calculus of Variations, Vol. 26 (28), 2020. [📄](#)
- G. Garrigos, L. Rosasco and S. Villa. *Iterative regularization via dual diagonal descent*, Journal of Mathematical Imaging and Vision, Vol. 60, No. 2, pp. 189–215, 2018. [📄](#)
- G. Garrigos, L. Rosasco and S. Villa. *Convergence of the Forward-Backward algorithm: beyond the worst case with geometry*, Mathematical Programming, Vol. 198, pp. 937–996, 2023. [📄](#)
- H. Attouch, G. Garrigos and X. Goudou. *A dynamic gradient approach to Pareto optimization with nonsmooth convex objective functions*, Journal of Mathematical Analysis and Applications, Vol. 422, No. 1, pp. 741–771, 2015. [📄](#)
- P. Frankel, G. Garrigos and J. Peypouquet. *Splitting methods with variable metric for KL functions and general convergence rates*, Journal of Optimization Theory and Applications, Vol. 165, No. 3, pp. 874–900, 2015. [📄](#)

### Publications in international conferences.

- M. Hihat, S. Gaïffas, G. Garrigos and S. Bussy. *Online Inventory Problems: Beyond the i.i.d. Setting with Online Convex Optimization*, Advances in Neural Information Processing Systems, Vol. 36, 2024. [📄](#)
- J. Domke, G. Garrigos and R. M. Gower. *Provable convergence guarantees for black-box variational inference*, Advances in Neural Information Processing Systems, Vol. 36, 2024. [📄](#)
- J. Chen, R. Yuan, G. Garrigos and R. M. Gower. *SAN: Stochastic Average Newton Algorithm for Minimizing Finite Sums*, 25th International Conference on Artificial Intelligence and Statistics (AISTATS), PMLR, Vol. 151, pp. 279–318, 2022. [📄](#)
- G. Garrigos, L. Rosasco and S. Villa. *Sparse Multiple Kernel Learning: Support Identification via Mirror Stratifiability*, IEEE 26th European Signal Processing Conference (EUSIPCO), pp. 1077–1081, 2018. [📄](#)
- J. Fadili, G. Garrigos, J. Malick and G. Peyré. *Model Consistency for Learning with Mirror-Stratifiable Regularizers*, 22nd International Conference on Artificial Intelligence and Statistics (AISTATS), PMLR, Vol. 89, pp. 1236–1244, 2019. [📄](#)
- G. Garrigos, L. Rosasco and S. Villa. *Iterative regularization via a dual diagonal descent method*, 9th NIPS Workshop on Optimization for Machine Learning, 2016. [📄](#)

## Preprints.

- M. Hihat, G. Garrigos, A. Fermanian and S. Bussy. *Multivariate Online Linear Regression for Hierarchical Forecasting*. Preprint on arXiv:2402.14578. 
- G. Garrigos, R. M. Gower, U. Simsekli and F. Schaipp. *SGD with Clipping is Secretly Estimating the Median Gradient*. Preprint on arXiv:2402.12828. 
- G. Garrigos, R. M. Gower and F. Schaipp. *Function Value Learning: Adaptive Learning Rates Based on the Polyak Stepsize and Function Splitting in ERM*. Preprint on arXiv:2307.14528. 
- G. Garrigos and R. M. Gower. *Handbook of Convergence Theorems for (Stochastic) Gradient Methods*. Preprint on arXiv:2301.11235. 
- G. Garrigos. *Square distance functions are Polyak-Łojasiewicz and vice-versa*. Preprint on arXiv:2301.10332. 
- H. Attouch and G. Garrigos. *Multiobjective optimization : an inertial dynamical approach to Pareto optima*. Preprint on arXiv:1506.02823. 

## Miscellaneous

- 2021 Idex grant for a pedagogical project funded by Université Paris Cité, 20k EUR.
- 2019 PEPS grant funded by INSMI (CNRS), 3,5k EUR.
- 2017 SMAI-MODE Dodu Prize for the best young researcher talk: *Structured sparsity in inverse problems and support recovery with mirror-stratifiable functions.*

## Responsibilities

### Student supervision

- 2023-2026 Lucas Ketels. PhD thesis.
- 2023 Julien Marie-Anne. Undergrad project.
- 2023 Lucas Ketels. Undergrad thesis.
- 2021-2024 Massil Hihat. PhD thesis.

### Seminars, Events

- 2019 Co-organizer of the workshop "*Regularisation for Inverse Problems and Machine Learning*", in Paris 🇫🇷
- 2018 Co-organizer of the session "*Dimensionality reduction tools for learning: A sketchy session*" for the International Symposium on Mathematical Programming (ISMP)
- 2017 Organizer of the NORIA group meeting at ENS
- 2017 Co-organizer of the Machine Learning summer school RegML 2017, in Oslo 🇳🇴
- 2015–2017 Organizer of the Machine Learning Tutorials, between the LCSL groups at IIT (Genova) and MIT (Boston)