

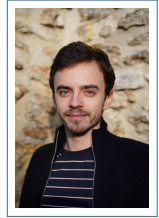
Guillaume Lauga

PhD in Optimization and Imaging

* June 17, 1998

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🌐 <https://laugaguillaume.github.io>



PhD (2021–2024)

- Title** *Multilevel Proximal Gradient Algorithms for Image Restoration* at ENS de Lyon, under the supervision of Elisa Riccietti, Nelly Pustelnik and Paulo Gonçalves.
- Description** Our goal was to study **multilevel** strategies in the context of **non-smooth optimization** to provide acceleration to the standard methods. We provide algorithms with strong convergence guarantees and demonstrate their performances on large scale optimization problems. I defended on December 17th 2024.

Publications and talks

- Ongoing work**
- G. L., L. Briceño-Arias, E. Riccietti, N. Pustelnik, P. Gonçalves, *A flexible block-coordinate forward-backward algorithm for non-smooth and non-convex optimization*, to appear
 - G. L., M. Chaumette, E. Desainte-Maréville, É. Lasalle, A. Lebeurrer. *A multilevel approach to accelerate the training of Transformers*, to appear
 - G. L., C. Pouliquen, *Block-coordinate forward-backward for composite minimization problem. Application to non-convex estimation of sparse precision matrices*. to appear
- Publications**
- G. L., A. Repetti, E. Riccietti, N. Pustelnik, P. Gonçalves, Y. Wiaux, *A multilevel framework for accelerating uSARA in radio-interferometric imaging*, EUSIPCO 2024 (PDF)
 - G. L., E. Riccietti, N. Pustelnik, P. Gonçalves, *IML FISTA: A Multilevel Framework for Inexact and Inertial Forward-Backward. Application to Image Restoration*, SIAM Journal on Imaging Sciences 17 (3), 1347-1376, 2024 (PDF)
 - G. L., E. Riccietti, N. Pustelnik, P. Gonçalves, *Méthodes multi-niveaux pour la restauration d'images hyperspectrales*, GRETSI 2023 (PDF)
 - A. Gonon, L. Zheng, C. Lalanne, Q.-T. Le, G. L., C. Pouliquen, *Sparsity in neural networks can improve their privacy*, GRETSI 2023 (PDF)
 - G. L., E. Riccietti, N. Pustelnik, P. Gonçalves, *Multilevel FISTA for image restoration*, ICASSP 2023 (PDF)
 - G. L., E. Riccietti, N. Pustelnik, P. Gonçalves, *Méthodes proximales multi-niveaux pour la restauration d'images*, GRETSI 2022 (PDF)
- Talks** *Multilevel Proximal Methods for Image Restoration*. At: EURO, Copenhagen, July 2024; SIAM Linear Algebra, Paris, May 2024; Insa Rouen, April 2024; SMAI MODE, Lyon, March 2024; Workshop on Optimization, Berlin, June 2023; Optimization and Control in Burgundy, Dijon, May 2023; Institut de Mathématiques de Bordeaux, 4 Mai 2023; SIAM CSE, Amsterdam, March 2023.

Education

- 2017–2021 **Master's and Bachelor's Degree**, École Centrale de Lyon, Applied Mathematics
- 2020–2021 **Master's Degree**, Université Lyon 1, Master 2 Applied Mathematics, Statistics

Teaching

- 2023–2024 **Teaching assistant**, ENS de Lyon
Optimization and Approximation (M1), 28h. Machine Learning Fundamentals (M1), 10h.
- 2022–2023 **T.A.**, École Centrale de Lyon
Optimization, integration and differential equations (L3), 40h.
- 2021–2022 **T.A.**, Université Lyon 1
Mathematics Fundamentals 1, Year 1 of Bachelor, 45h + 19h of oral examinations.