

Personal Information

Date of birth:	December 19th, 1995
Place of birth:	Lourdes (Hautes-Pyrénées), France
Nationality :	French
Professional Address :	CMAP, École Polytechnique Route de Saclay, 91128 Palaiseau, France
E-mail :	gilles.bareilles@polytechnique.edu
Webpage :	gbareilles.fr

Current position

From 11/25	Post-Doc	École Polytechnique
	Palaiseau (Fr.)	SIMPAS team, with El Mahdi El Mhamdi

Former position

01/23 - 09/25	Post-Doc	Czech Technical University in Prague
	Prague (CZ)	AIC, with Jakub Marecek

Diplomas

Dec. 2022	Ph.D. degree	Laboratoire Jean Kuntzmann, Univ. Grenoble Alpes
	Dir. : F. Iutzeler & J. Malick	<i>Structured nonsmooth optimization: proximal identification, fast local convergence, and applications</i>
	Defense : Dec. 2nd, 2022	Jury: N. Brauner (UGA, President), J. Fadili (ENSI Caen, Reviewer), C. Sagastizábal (Unicamp, Reviewer), J.-Ch. Gilbert (Inria Paris), M. Massias (Inria Lyon), C. Lemaréchal (Invited)
2019	Engineer degree	ENSTA Paris
2019	M.Sc.	ENS Cachan

Awards

2022	SMAI MODE	“Prix Dodu” For the best oral presentation of a young researcher ¹
------	-----------	---

Research

Themes

My current research themes articulate around two themes.

► One theme revolves around numerical optimization, with applications to machine learning problems. I'm interested in applying results from tame geometry to provide guarantees for optimization methods on general nonsmooth nonconvex methods, as they appear in the training of deep neural networks. Preprints [2], Journal & Conf. [1], Int. Confs. [1, 2].

► The other theme focuses the theory of preference learning from comparisons. This field is a key component of current AI Alignment methods, such as the finetuning of large language models. My aims are to provide this field, at this time mostly empirical, with a theoretical framework, and to study the brittleness of current preference learning methods to adversarial attacks. Preprint [1,3], Journal & Conf. [2].

Publications

Preprints

- [1] Gilles Bareilles*, Julien Fageot*, Wassim Bouaziz*, and El-Mahdi El-Mhamdi. *Byzantine Machine Learning: MultiKrum and an optimal notion of robustness*. Tech. rep. 2026.
- [2] Gilles Bareilles, Allen Gehret, Johannes Aspman, Jana Lepšová, and Jakub Mareček. *Deep Learning as the Disciplined Construction of Tame Objects*. Sept. 2025.
- [3] Gilles Bareilles*, Julien Fageot*, Lê Nguyễn Hoang*, Peva Blanchard', Wassim Bouaziz', Sadegh Farhadkhani', Sébastien Rouault', and El-Mahdi El-Mhamdi. *On Monotonicity in AI Alignment*. Tech. rep. 2025.

Journal articles & Neurips / ICML / ICLR Conferences

- [1] Andrii Kliachkin*, Jana Lepšová*, Gilles Bareilles*, and Jakub Marecek. "Benchmarking Stochastic Approximation Algorithms for Fairness-Constrained Training of Deep Neural Networks". In: *ICLR*. 2026.
- [2] Julien Fageot*, Peva Blanchard*, Gilles Bareilles, and Lê Nguyễn Hoang. "Generalizing while preserving monotonicity in comparison-based preference learning models". In: *Advances in Neural Information Processing Systems*. 2025.
- [3] Gilles Bareilles, Franck Iutzeler, and Jérôme Malick. "Harnessing Structure in Composite Nonsmooth Minimization". In: *SIAM Journal on Optimization* (Sept. 2023), pp. 2222–2247.
- [4] Gilles Bareilles, Franck Iutzeler, and Jérôme Malick. "Newton Acceleration on Manifolds Identified by Proximal Gradient Methods". In: *Mathematical Programming* (Aug. 2022).
- [5] Gilles Bareilles and Franck Iutzeler. "On the Interplay between Acceleration and Identification for the Proximal Gradient Algorithm". In: *Computational Optimization and Applications* 77.2 (Nov. 2020), pp. 351–378.

- [6] Gilles Bareilles, Yassine Laguel, Dmitry Grishchenko, Franck Iutzeler, and Jérôme Malick. “Randomized Progressive Hedging Methods for Multi-Stage Stochastic Programming”. In: *Annals of Operations Research* 295.2 (Dec. 2020), pp. 535–560.

International Conferences

- [1] Gilles Bareilles, Johannes Aspman, Jiri Nemecek, and Jakub Marecek. “Piecewise Polynomial Regression of Tame Functions via Integer Programming”. In: *ICLR XAI4Science 2025 Workshop*. 2025.
- [2] Andrii Kliachkin, Jana Lepšová, Gilles Bareilles, and Jakub Mareček. “Humancompatible.Train: Implementing Optimization Algorithms for Stochastically-Constrained Stochastic Optimization Problems”. In: *Accepted at Neurips CoML 2025 Workshop*. Sept. 2025.

Technical reports

- [1] Johannes Aspman, Gilles Bareilles, Vyacheslav Kungurtsev, Jakub Marecek, and Martin Takáč. *Hybrid Methods in Polynomial Optimisation*. Sept. 2023. arXiv: [2305.16122](https://arxiv.org/abs/2305.16122) [math].

Service

Reviewing

- Learning conferences: AISTATS (2023), iclr (2025).
- Optimization journals: Siopt (2021–now), Math. Prog. (2023), JOTA (2023), MOR (2026).

Local Responsibilities

- Elected member of the LJK laboratory council – 2021-2022
- Organizer of the [GORGeous](#) seminar (Grenoble Optimization Reading Group) – 2021-2022

Seminars and Oral communications

- Dec. 2024: Towards a priori guarantees: tameness and global optimization, *AutoFair meeting, Prague*
- Feb. 2024: Towards a priori guarantees: tameness and global optimization, *AutoFair meeting, Prague*
- Feb. 2024: Towards a priori guarantees: tameness and global optimization, *AutoFair meeting, Prague*
- Jan. 2024: Stratifications of nonsmooth nonconvex functions, *GORGeous DAO seminar, LJK, Grenoble*
- June 2023: Hybrid Methods for global optimization of large-scale polynomials, *FoCM conference poster, Paris*
- Dec. 2022: Newton methods for structured nonsmooth optimization, *Inria Mind seminar, Saclay (online)*
- Nov. 2022: Newton methods for structured nonsmooth optimization, *Optim & ML seminar, Rutgers (online)*
- Oct. 2022: Newton methods for structured nonsmooth optimization, *Inria MLSP seminar, Lyon*
- Oct. 2022: Newton methods for nonsmooth composite optimization, *Journées MOA, Nice*

- June 2022: Conjuguer Newton et gradient proximal pour l'optimisation non lisse, *CANUM, Evian*
- June 2022: Newton methods for nonsmooth composite optimization, *Journées MODE, Limoges*
- Dec. 2020: Harnessing Structure in Optimization for Large-scale Learning, *LJK PhD day, Grenoble*
- Sept. 2020: On the Interplay between Acceleration and Identification for the Proximal Gradient algorithm, *Journées MODE, (virtual)*
- Feb. 2020: Randomized Progressive Hedging methods for Multi-stage Stochastic Programming, *ROADEF, Montpellier*

Teaching activities

Teaching assistant at Universite Grenoble Alpes.

- Numerical Optimization – M1 – 2019-2022
Tutorials and Labs – 22h/year
- Advanced methods for Operations Research – M2 – 2019-2022
Course and Tutorials – 6h/year
- Statistics for biology – L2 biology – 2019-2022
Course and Tutorials – 24h/year
- Refresher course on Python – M2 – 2020-2022
Course and Tutorials and Labs – 3h in 2020, 12h in 2021