Renaud GAUCHER
2nd year PhD student
in optimization for machine learning

French nationality
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EDUCATION

2023-now	**École polytechnique, Applied Maths Department**, *PhD Student.* Decentralized first order optimization robust to adversarial agents. Supervised by Aymeric Dieuleveut (École polytechnique) and Hadrien Hendrikx (Inria).	Palaiseau, France
2022-2023	**Paris-Saclay University**, *MSc in probability, statistics and machine learning.* › Statistical learning, high-dimensional statistics, concentration inequalities, stochastic calculus. › First order optimization, random matrices, optimal transport, fairness. Highest honors received.	Orsay, France
2019-2023	**École polytechnique**, *MSc & BSc in applied maths.* 4-Year program in the n°1 ranked French Grande École providing a thorough multidisciplinary scientific education. › 3rd Year : Specialization in applied mathematics (statistics, machine learning, probability). › 2nd Year : Multidisciplinary teaching (applied mathematics, fundamental mathematics, fundamental physics, computer science). › 1st Year : Common core curriculum (applied mathematics, fundamental mathematics, quantum physics, computer science, economics).	Palaiseau, France
2017-2019	**Lycée Hoche**, *MPSI-MP*.* Followed a two-year intensive program in Maths, Physics and Computer Science to prepare for highly competitive nationwide exams.	Versailles, France

EXPERIENCE

April to Sep. 2023	**Research intern** , *École polytechnique.* Decentralized first order optimization robust to adversarial agents. Supervised by Aymeric Dieuleveut (École polytechnique) and Hadrien Hendrikx (Inria).	Palaiseau, France
April to July 2022	**Research intern**, *Technical University of Munich.* Computer vision approaches for thyroid registration with anatomical prior. Supervised by Benjamin Busan and Lennart Bastian. Congratulations of the École polytechnique's Applied Maths Department.	Munich, Germany
July to Aug. 2021	**Study Engineer**, *Consulting Department, ONHYS.* Definition of inputs and outputs in a crowd simulation software and market research of business partner	Sophia-Antipolis, France
Nov. to March 2020	**French Military Coordinator**, *French Embassy in Accra.* Managed 5 French learning centers with the Ghanaian Army in a French and English-speaking environment.	Accra, Ghana

PUBLICATIONS

2024	**R. Gaucher**, A. Dieuleveut and H. Hendrikx, Achieving Optimal Breakdown for Byzantine Robust Gossip, *arXiv 2410.10418.*
2024	**R. Gaucher**, A. Dieuleveut and H. Hendrikx, Byzantine-Robust Gossip : Insights from a Dual Approach, *arXiv 2405.03449.*

Teaching

2023-now	**Teaching assistant in applied maths**, *École polytechnique*.	Palaiseau, France

Courses (64 hours each year) :
- Statistics (MSc 1st year),
- Monte Carlo methods (MSc 1st year),
- Optimization and Deep Learning (MSc 2nd year),
- Randomness (BSc 3rd year).

Community services

2023-now	**Organizer and co-founder**, *Aymeric Dieuleveut's weekly group meetings.*
2023-now	**Member**, *Sustainable Developpment committee, Center for Applied Mathematics - École polytechnique.*

Talks in seminars and workshops

Oct. 2024	Toth Inria team seminar.
Sep. 2024	REDEEM project seminar.
March. 2024	SIMPAS team seminar.
March. 2024	REDEEM project workshop.
Sep. 2023	REDEEM project workshop.

Pre-PhD Scientific Projects

2021-2022	**Modeling random phenomena in biology** Study of cancer mutation dynamics via two-population branching models. Supervised by Vincent Bansaye.
2020-2021	**Asymptotic behaviors in the Racetrack game** Study of optimal trajectories in the case of a car circuit with discrete positions. Supervised by Lucas Gerin.
2018-2019	**Crowd movement modeling** Study of crowd movements with a model based on Uzawa algorithm. Supervised by Bertrand Maury and Sylvain Faure.

Miscellaneous

Computer science	> Python, > Knowledge in Java, C++ and Ocaml.
Languages	> French (native), > English (fluent), > German (proficient).
Sport	Climbing, Running, Hiking, Sailing.