Florentin GUTH

Postdoctoral researcher in science of deep learning

✉ florentin.guth@nyu.edu   📍 New York City   🌐 florentinguth.github.io

Last updated: November 28, 2025

💼 Experience

Research Fellow	📅 September 2023–Present
Center for Computational Neuroscience, Flatiron Institute	📍 New York, USA

Faculty Fellow	📅 September 2023–Present
Center for Data Science, New York University	📍 New York, USA

Research Intern	📅 May–August 2022
Center for Computational Neuroscience, Flatiron Institute	📍 New York, USA

We developed a multi-scale local conditional probability model of images. **Advisor: Prof. Eero Simoncelli.**

Research Intern	📅 March–August 2018
Facebook AI Research	📍 New York, USA and Paris, France

I developed an AI module for tactical unit movement in the *StarCraft: Brood War* bot *CherryPi/TorchCraft*.

Advisors: Gabriel Synnaeve and Nicolas Usunier.

🎓 Education

Ph.D. in Computer Science	📅 2019–2023
École Normale Supérieure	📍 Paris, France

Thesis title: *Towards a Mathematical Understanding of Deep CNNs*. **Advisor: Prof. Stéphane Mallat.**

M.Sc. in Maths, CV and ML (MVA)	📅 2018–2019
École Normale Supérieure Paris-Saclay	📍 Paris, France

Advanced courses in mathematics, computer vision and machine learning.

With highest honors, GPA 4.00 (18.27/20).

ENS Diploma	📅 2016–2019
École Normale Supérieure	📍 Paris, France

Bachelor- and Master-level courses in computer science and mathematics.

With highest honors, GPA 4.00 (18.17/20).

Classe Préparatoire	📅 2014–2016
Lycée du Parc	📍 Lyon, France

Intensive undergraduate courses in mathematics, physics, and computer science. **With highest honors.**

National rank: 6th at ENS and 16th at École Polytechnique.

📄 Publications

- Guy Ohayon, Pierre-Étienne Fiquet, **Florentin Guth**, Jona Ballé, Eero Simoncelli. *Learning a distance measure from the information-geometry of data*. Preprint.
- **Florentin Guth**, Zahra Kadkhodaie, Eero Simoncelli. *Learning normalized image densities via dual score matching*. In **NeurIPS, 2025**.
- Louis Thiry, **Florentin Guth**. *Classification-denoising networks*. Preprint.
- **Florentin Guth**, Brice Ménard. *On the universality of neural encodings in CNNs*. In **Re-Align workshop, ICLR, 2024**.
- Zahra Kadkhodaie, **Florentin Guth**, Eero Simoncelli, Stéphane Mallat. *Generalization in diffusion models arises from geometry-adaptive harmonic representations*. In **ICLR, 2024**. *Outstanding Paper Award*.
- **Florentin Guth**, Brice Ménard, Gaspar Rochette, Stéphane Mallat. *A Rainbow in Deep Network Black Boxes*. In **JMLR, 2024**.
- **Florentin Guth***, Etienne Lempereur*, Joan Bruna, Stéphane Mallat. *Conditionally Strongly Log-Concave Generative Models*. In **ICML, 2023**.
- Zahra Kadkhodaie, **Florentin Guth**, Stéphane Mallat, Eero Simoncelli. *Learning Multi-Scale Local Conditional Probability Models of Images*. In **ICLR, 2023**. *"Top 25%"*.
- **Florentin Guth**, Simon Coste, Valentin De Bortoli, Stéphane Mallat. *Wavelet Score-Based Generative Modeling*. In **NeurIPS, 2022**.
- **Florentin Guth**, John Zarka, and Stéphane Mallat. *Phase Collapse in Neural Networks*. In **ICLR, 2022**.
- John Zarka, **Florentin Guth**, and Stéphane Mallat. *Separation and Concentration in Deep Networks*. In **ICLR, 2021**.

🖳 Talks

Weissman Lab, Stanford	📍 Stanford, USA	📅 11/20/25
Columbia ML and AI Seminar	📍 New York City, USA	📅 11/07/25
Yale SDS Seminar	📍 New Haven, USA	📅 10/27/25
Brown CS Theory Seminar	📍 Providence, USA	📅 10/24/25
Johns Hopkins MINDS-CIS Seminar	📍 Baltimore, USA	📅 10/14/25
Princeton Language and Intelligence Seminar	📍 Princeton, USA	📅 10/02/25
Kempner Diffusion Seminar (invited)	📍 Cambridge, USA	📅 09/29/25
Michaeli Lab, Technion (invited)	📍 Online	📅 09/13/25
UniReps Speaker Series (invited)	📍 Online	📅 07/31/25
LemanTH Workshop, EPFL (invited)	📍 Lausanne, Switzerland	📅 05/16/25
LeCun Lab, NYU (invited)	📍 New York City, USA	📅 04/02/25
Pruna AI (invited)	📍 Paris, France	📅 01/23/25
CFM (invited)	📍 Paris, France	📅 09/12/24
Maths and ML Conf., IMSA (invited)	📍 Miami, USA	📅 06/26/24
Youth in High Dimensions, ICTP (invited)	📍 Trieste, Italy	📅 05/23/24
TAG-DS Seminar (invited)	📍 Online	📅 01/30/24
DeepMath Conf.	📍 Baltimore, USA	📅 11/17/23
Keynote and Tutorial, CCN Conf.	📍 Oxford, UK	📅 08/26/23
MALGA Seminar	📍 Genova, Italy	📅 07/17/23
Rough Path Interest Group (invited)	📍 Online	📅 10/05/22
4th IMA Conf. on Big Data	📍 Oxford, UK	📅 09/20/22
Bonner Lab, JHU	📍 Baltimore, USA	📅 07/12/22
MLIA, LIP6, Sorbonne U.	📍 Paris, France	📅 12/09/21
SIERRA, INRIA	📍 Paris, France	📅 11/25/21
3IA Doctoral Workshop	📍 Toulouse, France	📅 11/22/21
DL Theory Seminar, FAIR	📍 Online	📅 11/12/21

🏆 Awards & Honors

- **Outstanding Paper Award**, ICLR 2024.
- **NeurIPS Top Reviewer**, NeurIPS 2023 & 2025.
- **ENS PhD Fellowship** (*CDSN*), 2020–2023.
- **Bridge France Champion** (*under 18, by pairs*), 2013.

🏛 Teaching

CDS Instructor
Center for Data Science, NYU

📅 2023–2026
📍 New York, USA

Taught DS-GA 1014: Computational Linear Algebra and Optimization" (Master's level) for Fall 2023–2025. Also gave invited lectures in Prof Rajesh Ranganath's (graduate) and Prof Joan Bruna's (undergraduate) classes.

Great feedback from students (average satisfaction 4/5).

Maths Teaching Assistant
CPES, PSL

📅 2020–2023
📍 Paris, France

Exercise sessions for undergraduate students.

200h of experience. Great feedback from students.

AI Teacher
Ipesup

📅 2021–2023
📍 Paris, France

I designed and teach a 24-hour-long introductory course on Artificial Intelligence to high-school students. Topics include the history, applications, limitations, ethical concerns, computational and mathematical aspects of AI, as well as practical programming sessions.

Great feedback from students (average satisfaction of 9/10).

Maths and CS Teacher
Optimal Sup-Spé

📅 2019–2021
📍 Paris, France

Classes and exercise sessions for undergraduate students.

More than 200h of experience. Great feedback from students.

🧍 Students

- **Nicolas Zilberstein** (Summer 2025, Graduate internship): Solving inverse problems with anisotropic diffusion energy models.
- **Sixto Cerna Lopez** (Spring 2022, Undergraduate internship): Implementation of machine learning algorithms for real-estate price estimation.

👥 Community

Workshop on Scientific Methods for Understanding Deep Learning
NeurIPS 2024   📍 Vancouver, Canada   📅 12/15/24

Co-lead organizer. Around 100 submissions, estimated 700 unique participants (300 peak), > 300 followers on X/Twitter 🔗 . Website 🔗 and videos 🔗 .

Reviewer

NeurIPS (2023–), ICLR (2024–), JMLR (2024–), ACHA (2025–).

Service

NYU Paris SSAC Committee (2023–), NYU CDS DEI Committee (2024–2025), NYU CDS Master Admissions (2024–), NYU CDS Master Scolarships (2025–).

💬 Outreach

My Personal Experience Doing Research

Collège de France 📍 Paris, France 📅 03/22/21

10-minute-long talk about my research topic, why I love research and my background, given to 100 high-school students from underprivileged areas.

- -

How to Create a Programming Language?

Savoirs Pour Tous, ENS 📍 Paris, France 📅 11/08/18

1-hour-long wide-audience talk on compilation, aimed at high-school students. Video ↗ and slides ↗ (in French). **More than 18k views and 500 likes on YouTube.**