

# STÉPHANE D'ASCOLI

Ph.D. student in deep learning

@stephane.dascoli@gmail.com  
sdascoli.github.io

+33 6 87 52 39 29  
@sdascoli

8 rue Radiguey, 92120 Montrouge, France  
stephane\_dascoli  
sdascoli



## EXPERIENCE

Ph.D. student & Teacher Assistant

École Normale Supérieure (ENS) & Facebook AI Research (FAIR)

📅 Sep 2018 – Present 📍 Paris

- Main research topics: theory of overparametrization and applications of transformers for vision and symbolic mathematics.
- Published 13 papers in top-tier conferences and scientific journals, including 10 as first author (full record on Google Scholar [↗](#)).
- Open-sourced several deep learning codebases [↗](#) and demos [↗](#).
- Gave many talks, including an interview with Yannic Kilcher [↗](#).
- Teacher assistant of Marc Lelarge, Giulio Biroli and Francis Bach for graduate courses at ENS.

AI research intern

Snips.ai

📅 Feb 2020 – Aug 2020 📍 Paris

Developed an open-source deep learning codebase to generate text for data-privacy focused vocal assistants [↗](#).

Visiting scholar

NASA Goddard & Rochester Institute of Technology

📅 Feb 2017 – Aug 2017 📍 Rochester, NY

Built a large-scale computational simulation of the light coming from a binary black hole [↗](#) and produced an explanatory video [↗](#).

"Classe préparatoire" examiner

Lycées Henri-4, Saint-Louis, Michelet

📅 Sep 2016 – Sep 2019 📍 Paris

Oral examinations for undergraduate students in top institutions.

## OUTSIDE WORK

Science outreach

- Wrote several science books [↗](#), all published by First Editions. Some were adapted to audio book and translated abroad.
- Spoke on radio and TV (France Culture with Etienne Klein [↗](#), France Bleu with Sidonie Bonnec [↗](#), France Info [↗](#), ...).

Music

- Obtained a final Conservatoire diploma in clarinet, and earned first and second prizes in international competitions.
- Performed in solo, chamber music and orchestra concerts. See my YouTube channel for some videos [↗](#).
- Managed an orchestra [↗](#) for a year.

## EDUCATION

M.Sc. in Theoretical Physics

École Normale Supérieure, Paris

📅 Sep 2016 – Sep 2018

First class honours.

B.Sc. in Physics

École Normale Supérieure, Paris

📅 Sep 2015 – Sep 2016

First class honours.

"Classe préparatoire"

Lycée Thiers, Marseille

📅 Sep 2013 – Sep 2015

Entered ENS Paris (ranked 6th nation-wide).

Prior to this, obtained a scientific baccalaureate (average grade: 19.63/20).

## SKILLS

Programming: Python Pytorch

C/C++

Tools: Git Unix Slurm Mathematica

Other: Driving license

## LANGUAGES

English (native) ●●●●●

French (native) ●●●●●

German ●●●●●

Spanish ●●●●●

# PUBLICATIONS

---

## Conference Proceedings

- d'Ascoli, Stéphane, Gabrié, M., Sagun, L., & Biroli, G. (2021). On the interplay between loss function and data structure in classification problems. In *NeurIPS*.
  - d'Ascoli, Stéphane, Touvron, H., Leavitt, M., Morcos, A., Biroli, G., & Sagun, L. (2021). Convit: Improving vision transformers with soft convolutional inductive biases. In *ICML*.
  - d'Ascoli, Stéphane, Coucke, A., Caltagirone, F., Caulier, A., & Lelarge, M. (2020). Conditioned text generation with transfer for closed-domain dialogue systems. In *SLSP*.
  - d'Ascoli, Stéphane, Refinetti, M., Biroli, G., & Krzakala, F. (2020). Double trouble in double descent: Bias and variance (s) in the lazy regime. In *ICML*.
  - d'Ascoli, Stéphane, Refinetti, M., Ohana, R., & Goldt, S. (2020). The dynamics of learning with feedback alignment. In *ICML*.
  - d'Ascoli, Stéphane, Sagun, L., & Biroli, G. (2020). Triple descent and the two kinds of overfitting: Where and why do they appear? In *NeurIPS*.
  - d'Ascoli, Stéphane, Sagun, L., Biroli, G., & Bruna, J. (2019). Finding the needle in the haystack with convolutions: On the benefits of architectural bias. In *NeurIPS*.
- 

## Journal Articles

- d'Ascoli, Stéphane, Refinetti, M., Ohana, R., & Goldt, S. (2022). The dynamics of learning with feedback alignment. *J. Phys. A (special issue)*.
  - d'Ascoli, Stéphane, Sagun, L., & Biroli, G. (2022). Triple descent and the two kinds of overfitting: Where and why do they appear? *J. Stat. Mech (special issue)*.
  - Geiger, M., Jacot, A., Spigler, S., Gabriel, F., Sagun, L., d'Ascoli, Stéphane, ... Wyart, M. (2020). Scaling description of generalization with number of parameters in deep learning. *J. Stat. Mech*.
  - Geiger, M., Spigler, S., d'Ascoli, Stéphane, Sagun, L., Baity-Jesi, M., Biroli, G., & Wyart, M. (2019). Jamming transition as a paradigm to understand the loss landscape of deep neural networks. *Phys. Rev. E*.
  - Spigler, S., Geiger, M., d'Ascoli, Stéphane, Sagun, L., Biroli, G., & Wyart, M. (2019). A jamming transition from under-to over-parametrization affects generalization in deep learning. *J. Phys. A*.
  - d'Ascoli, Stéphane, Noble, S. C., Bowen, D. B., Campanelli, M., Krolik, J. H., & Mewes, V. (2018). Electromagnetic emission from supermassive binary black holes approaching merger. *The Astrophysical Journal*.
- 

## Preprints

- d'Ascoli, Stéphane, Kamienny, P.-A., Lample, G., & Charton, F. (2022a). Deep symbolic regression for recurrent sequences.
  - d'Ascoli, Stéphane, Kamienny, P.-A., Lample, G., & Charton, F. (2022b). End-to-end symbolic regression with transformers.
  - d'Ascoli, Stéphane, Refinetti, M., & Biroli, G. (2022). On the optimal learning rate schedule in non-convex optimization landscapes.
  - d'Ascoli, Stéphane, Sagun, L., Biroli, G., & Morcos, A. (2021). Transformed cnns: Recasting pre-trained convolutional layers with self-attention.
- 

## Books

- d'Ascoli, Stéphane, & Bouscal, A. (2022). *Voyage au coeur de l'atome*. **First**.
- d'Ascoli, Stéphane, & Jaspers, J.-M. (2022). *Petit livret tricolore sur l'intelligence artificielle*. **First**.
- d'Ascoli, Stéphane, & Touati, A. (2021). *Voyage au coeur de l'espace-temps*. **First**.
- d'Ascoli, Stéphane. (2020a). *Comprendre la révolution de l'intelligence artificielle*. **First**.
- d'Ascoli, Stéphane. (2020b). *L'intelligence artificielle en 5 minutes par jour*. **First**.

# COMMUNITY SERVICE

---

Co-organizer of the Data Science seminar at ENS Paris [↗](#).

---

Reviewed for:

- **Journals:** Nature Communications, Information and Inference, Journal of Physics A, IEEE Transactions.
- **Conferences:** ICML, NeurIPS, ICLR.

## AWARDS

---

Fellowships:

- ENS scholar fellowship: 4-year fellowship covering studies at ENS
- ENS Ph.D. fellowship: 4-year fellowship covering Ph.D. thesis
- EPFL AI4Science fellowship: fellowship covering an independent research contract in collaboration with a board of faculty members [↗](#)

## TALKS

---

Invited talks in 2019:

- Machine Learning Seminar - Snips, Paris
  - Inria Summer School on Deep Learning - University Pierre et Marie Curie, Paris
  - Theoretical Advances in Deep Learning - Center for Mathematical Sciences, Istanbul
  - NeurIPS 2019 - Conference Center, Montreal
- 

Invited talks in 2020:

- Youth in High-dimensions Conference - Abdus Salam International Centre for Theoretical Physics, Trieste
  - Summer School on Statistical Physics and Machine Learning - Les Houches Summer School, Les Houches
  - DeepMath Conference - Online
  - Spotlight at ICML 2020 - Online
  - Spotlight at NeurIPS 2020 - Online
- 

Invited talks in 2021:

- Machine Learning Seminar - GResearch, London
  - Machine Learning Seminar - Research Institutes of Sweden, Gothenburg
  - FAIR Conference - Online
  - Spotlight at ICML 2021 - Online
  - Spotlight at NeurIPS 2021 - Online
- 

Invited talks in 2022:

- Yannic Kilcher interview - YouTube
- Statistical Physics Colloquium - Ecole Normale Supérieure, Paris
- Random Matrix Theory Workshop - Ecole Normale Supérieure, Paris
- PSL intensive weeks - Ecole Normale Supérieure, Paris
- Centre Européen de Calcul Atomique et Moléculaire - EPFL, Lausanne