

Thomas Mesnard

Research Assistant at DeepMind and PhD student
at École Polytechnique

75009, Paris, France
✉ thomas.mesnard@gmail.com
🏠 [Homepage](#)
🔍 [Google Scholar](#)
📄 [thomas-mesnard](#)

Education

- 2019 – 2021 **École Polytechnique**, Palaiseau, France.
PhD Student in Applied Mathematics and Computer Science.
- 2015 – 2016 **École Normale Supérieure**, Paris, France.
MSc in Applied Mathematics, Machine Learning, Computer Vision (a.k.a Master MVA).
Supervisor: Francis Bach. Completed with honors.
- 2013 – 2016 **École Normale Supérieure**, Paris, France.
MSc in Computer Science, Neuroscience and Chemistry.
- 2011 – 2013 **Lycée René Cassin**, "Classes préparatoires PC*", Bayonne, France.
Two-year program in Mathematics and Physics for competitive entrance to top French engineering schools. Completed summa cum laude.

Work Experience

- Since 2019 **DeepMind**, *Research Assistant*, Paris, France.
- 2018-2019 **DeepMind**, *Research Intern*, London, UK.
5 months Supervisor: **Rémi Munos**.
- 2017-2018 **Montreal Institute of Learning Algorithms**, *Research Intern*, Montreal, Canada.
1 year Supervisors: **Blake Richards**, **Yoshua Bengio**.
- 2016 **EPFL**, *Research Intern*, Switzerland.
4 months Supervisors: **Johanni Brea**, **Wulfram Gerstner**.
- 2015 **Montreal Institute of Learning Algorithms**, *Research Intern*, Montreal, Canada.
5 months Supervisor: **Yoshua Bengio**.

Publications

- [1] Anna Harutyunyan, Will Dabney, **Thomas Mesnard**, Mohammad Gheshlaghi Azar, Bilal Piot, Nicolas Heess, Hado P van Hasselt, Gregory Wayne, Satinder Singh, Doina Precup, et al. "[Hindsight Credit Assignment](#)". In: *Advances in Neural Information Processing Systems*. 2019, pp. 12467–12476.
- [2] **Thomas Mesnard**, Gaëtan Vignoud, Joao Sacramento, Walter Senn, and Yoshua Bengio. "[Ghost Units Yield Biologically Plausible Backprop in Deep Neural Networks](#)". In: *Cognitive Computational Neuroscience* (2018).
- [3] Benjamin Scellier, Anirudh Goyal, Jonathan Binas, **Thomas Mesnard**, and Yoshua Bengio. "[Generalization of equilibrium propagation to vector field dynamics](#)". In: *International Conference on Learning Representations. Workshop*. (2018).
- [4] Yoshua Bengio, **Thomas Mesnard**, Asja Fischer, Saizheng Zhang, and Yuhuai Wu. "[STDP-Compatible Approximation of Backpropagation in an Energy-Based Model](#)". In: *Neural computation* 29 (2017), pp. 555–577.
- [5] **Thomas Mesnard**, Wulfram Gerstner, and Johanni Brea. "[Towards deep learning with spiking neurons in energy based models with contrastive Hebbian plasticity](#)". In: *Proceedings of the 29th Neural Information Processing Systems. Computing with Spikes Workshop*. With Oral Presentation and [Poster](#). 2016.
- [6] Yoshua Bengio, Asja Fischer, **Thomas Mesnard**, Saizheng Zhang, and Yuhuai Wu. "[From STDP towards Biologically Plausible Deep Learning](#)". In: *Proceedings of the 32th international conference on Machine learning*. Deep Learning Workshop. 2015.

- [7] Yoshua Bengio, Dong-Hyun Lee, Jorg Bornschein, **Thomas Mesnard**, and Zhouhan Lin. “Towards biologically plausible deep learning”. In: *arXiv preprint:1502.04156v3* (2015).

Computer Skills and Languages

- IT Skills**
- General: Python, Julia, Matlab, Octave, Git, Unix, L^AT_EX
 - Deep Learning: Tensorflow, PyTorch, Theano
 - Machine Learning: Numpy, Scikit-learn
- Languages**
- French: Native
 - English: Fluent
 - Spanish: Intermediate

Implementations

Teaching Machines to Read and Comprehend, by Karl Moritz Hermann and al. from Google DeepMind. [Code](#). [Report](#).

With Alex Auvolat and Étienne Simon.

CTC: Labelling Unsegmented Sequence Data with RNN, by Alex Graves and al. from Google DeepMind. [Code](#). [Report](#). [Poster](#).

With Alex Auvolat.

Predictive models for transaction volumes in financial markets, in response to a competition proposed by Capital Fund Management. [Code](#). [Report](#).

Teaching and Academic Awards

- 2018 **Student at the Beg Rohu Summer School**, Quiberon, France.
[Deep Learning and Statistical Physics](#)
- 2015 **École Normale Supérieure**, Paris, France.
Talk about Deep Learning
- 2014 **Louis Le Grand and Stanislas High Schools**, Paris, France.
Delivered lectures during the National Olympiad
- 2014 **Saint Louis High School**, Paris, France.
Examiner in "Classes Préparatoires" for nationwide competitive entrance to top French engineering schools
- 2013 – 2014 **École Normale Supérieure**, Paris, France.
Delivered lectures during the International Olympiad
- 2012 Selected for the French final of the International Olympiad, 3rd out of 310
- 2011 Selected for the final of the National Olympiad, 21st out of 2,000

Interests and Activities

- Music** ○ Cello, 12 years
- Arts** ○ Performed concerts alone or in an orchestra
○ Photography, 8 years
- Sports** ○ Athletics
○ Surf
○ Trekking
- Travel** ○ Many road trips around Asia, America, Africa, Europe