

Thomas Mesnard

Graduate Student in Applied Mathematics and
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Education

- 2015 – 2016 **École Normale Supérieure**, Paris, France.
MSc in Applied Mathematics, Machine Learning, Computer Vision (a.k.a Master MVA).
Supervisor: Francis Bach. Completed summa cum laude.
- 2013 – 2016 **École Normale Supérieure**, Paris, France.
MSc in Computer Science and Neuroscience.
- 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

- 2016 **EPFL**, *Research Intern*, Switzerland. Supervisors: **Wulfram Gerstner**, **Johanni Brea**.
4 months
 - Exploring deep learning techniques with spiking neurons in energy based models
 - Investigating backpropagation with random feedback weights in deep neural networks⇒ See publication below
- 2015 **Montreal Institute of Learning Algorithms**, *Research Intern*, Montreal, Canada.
5 months Supervisor: **Yoshua Bengio**.
 - Focusing on new biologically plausible deep learning algorithms
 - Exploring new versions of RNNs/Clockwork RNNs using LSTM and GRU⇒ See publications below
- 2014 **Institut Curie**, *Research Intern*, Paris, France. Supervisor: **Filippo Del Bene**.
2 months
 - ZebraFish visual system mapping using data-analysis and machine learning

Publications

- [1] [STDP-Compatible Approximation of Backpropagation in an Energy-Based Model](#). *Neural Computation*. 29:3, 555-577. 2017.
Yoshua Bengio, **Thomas Mesnard**, Asja Fischer, Saizheng Zhang, and Yuhuai Wu.
- [2] [Towards deep learning with spiking neurons in energy based models with contrastive Hebbian plasticity](#). *NIPS*. Computing with Spikes Workshop. With Oral Presentation, Poster. 2016.
Thomas Mesnard, Wulfram Gerstner, and Johanni Brea.
- [3] [From STDP towards Biologically Plausible Deep Learning](#). *ICML*. Deep Learning Workshop. With Oral Presentation. 2015.
Yoshua Bengio, Asja Fischer, **Thomas Mesnard**, Saizheng Zhang, and Yuhuai Wu.
- [4] [Towards biologically plausible deep learning](#). *ArXiv* Preprint:1502.04156v3. 2015.
Yoshua Bengio, Dong-Hyun Lee, Jorg Bornschein, **Thomas Mesnard**, and Zhouhan Lin.

Computer Skills and Languages

- IT Skills**
- General: Python, Julia, Matlab, Octave, Git, Unix, L^AT_EX
 - Deep Learning: Tensorflow, Theano, Torch
 - 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

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