Arthur Mensch

Ph.D. candidate in machine learning

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July 17, 1992

Education

9/2015 – 9/2018 **Ph.D. candidate**, *Inria Parietal*, Saclay, France.
Large-scale optimization and modelling for functional brain imaging.
Supervised by Pr. G. Varoquaux, Pr. J. Mairal and Pr. B. Thirion.

2014 – 2015 **École Normale Supérieure**, *Master of Science*, Cachan, France.
Master MVA : Mathematics for vision and machine learning. *Highest honors.*

2014 – 2015 **Télécom ParisTech**, *Engineer Degree*, Paris, France.
Computer Science, Applied Mathematics.

2011 – 2015 **École Polytechnique**, *Master of Science, Engineer Degree*, Palaiseau, France.
Applied Mathematics, Computer Science, Biology, Mechanics, Physics.

2009 – 2011 **Preparatory school**, *Lycée Hoche*, Versailles, France.
Mathematics, Physics, Computer Science.

2009 **Baccalauréat International**, *Lycée Jean-Pierre Vernant*, Sèvres, France.

Publications

A. Mensch, J. Mairal, B. Thirion, and G. Varoquaux. Stochastic subsampling for factorizing huge matrices. *IEEE Transactions on Signal Processing*, 2018.

Arthur Mensch and Mathieu Blondel. Differentiable dynamic programming for structured prediction and attention. *arXiv preprint arXiv:1802.03676*, 2018.

A. Mensch, J. Mairal, D. Bzdok, B. Thirion, and G. Varoquaux. Learning neural representations of human cognition across many fMRI studies. In *Advances in Neural Information Processing Systems*, 2017.

A. Mensch, J. Mairal, B. Thirion, and G. Varoquaux. Dictionary learning for massive matrix factorization. In *Proceedings of the International Conference on Machine Learning*, 2016a.

E. Dohmatob, A. Mensch, G. Varoquaux, and B. Thirion. Learning brain regions via large-scale online structured sparse dictionary learning. In *Advances in Neural Information Processing Systems*, 2016.

A. Mensch, G. Varoquaux, and B. Thirion. Compressed online dictionary learning for fast fMRI decomposition. In *IEEE International Symposium on Biomedical Imaging*, 2016b.

A. Mensch, J. Mairal, B. Thirion, and G. Varoquaux. Subsampled online matrix factorization with convergence guarantees. In *NIPS Workshop on Optimization for Machine Learning*, 2016c.

A. Mensch, E. Piuze, L. Lehnert, A.J. Bakermans, J. Sporring, G.J. Strijkers, and K. Siddiqi. Connection forms for beating the heart. In *MICCAI Workshop on Statistical Atlases and Computational Modelling of the Heart*, 2014.

Software development

Open-source development

Scikit-learn, *Machine learning library in Python.*
Performance of decomposition methods, packaging and CI, SAGA algorithm, linear models, reviews.

Nilearn, *Python library for machine learning in neuro-imaging.*
Decomposition module, documentation, plotting, reviews.

Languages Python, C, C++, Java, Bash, JS

System Unix, Docker, GCloud, MongoDB

Long research visits

9/2017 – 12/2017 **NTT Communication Laboratories**, *Intern researcher*, Kyoto, Japan.
Differentiable dynamic progamming — collaboration with Dr. M. Blondel.

5/2015 – 9/2015 **Inria Parietal**, *Intern researcher*, Saclay, France.
Improvement of dictionary learning techniques for brain imaging — under Pr. B. Thirion supervision.

4/2014 – 7/2014 **McGill University, School of Computer Science**, *Intern researcher*, Montréal, Canada.
Analysis and modelling of heart dynamics and geometry – under Pr. K. Siddiqi supervision.
High rewards from the Department of Applied Mathematics at École Polytechnique.

Selected talks

04/2018 **Université Aix-Marseille**, Marseille, France.
Stochastic subsampling for factorizing huge matrices — organized by Pr. C. Chaux-Moulin

03/2018 **Deep Learning Meet-Up**, Paris, France.
Differentiable dynamic programming for structured prediction and attention

12/2017 **École Normale Supérieure**, Paris, France.
Stochastic subsampling for factorizing huge matrices — organized by Pr. F. Krzakala.

11/2017 **Advanced Telecommunications Research Institute**, Kyoto, Japan.
Learning neural representations of human cognition — invited by Pr. Okito Y.

7/2017 **World Statistics Congress**, Marrakech, Morocco.
Massive matrix factorization for resting-state fMRI decomposition — invited by Pr. D. Degras.

10/2016 **RecSys FR**, Paris, France.
Massive matrix factorization: application to collaborative filtering — invited by Dr. V. Michel.

6/2016 **International Conference on Machine Learning**, New York, USA.
Dictionary learning for massive matrix factorization.

Teaching

2018 **Deep learning**, *Master of Data Science*, Université Paris-Saclay, France.
Supervising practical sessions for 2nd year master students — lectures given by O. Grisel and C. Ollion.

2018 **Numerical analysis/optimization**, *ENSAE*, Saclay, France.
Tutorials for 3rd year undergraduate students in mathematics.

2012 – 2015 **Analysis/algebra**, *Lycée Pasteur, Lycée Hoche*, Neuilly sur Seine – Versailles, France.
Oral exercises for 2nd year undergraduate students in physics/mathematics.

Community

2017 – **Conference reviewer**.
Neural Information Processing Systems, International Conference in Machine Learning.

2017 – **Ad-hoc journal reviewer**.
Journal of Machine Learning Research, Elsevier Neuroimage, IEEE Transactions on Biomedical Engineering

Work experience

7/2013 – 8/2013 **Option**, *Intern web developer*, Santiago du Chili, Chili.
Developed backend tools for administering targeted web advertisement.

12/2011 – 4/2012 **1er Régiment d'Hélicoptères de Combat**, *Deputy platoon leader*, Phalsbourg, France.
Commandeered a platoon of 30 people during their general military training in the French Army.

Languages

French	Native	
English	Fluent – C2	*Working language, baccalauréat international*
Spanish	Working level – C1	*Experience in Latin America*
Japanese	Basic level – training	*Experience in Japan*

Hobbies

Classic guitar, badminton, running — *Marathon 3'28, Half 1'23*