TOM DUPRELATOUR

PhD student

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- I am a PhD student at Télécom ParisTech in France, advised by Alexandre Gramfort and Yves Grenier. I will defend my PhD thesis on November 26th, 2018. My work focuses on neural oscillations modeling, signal processing, and machine learning.

EDUCATION

PhD 2015-2018 — **Télécom ParisTech**, Paris, France
Thesis: *Non-linear models for neurophysiological time series.*
Advised by Alexandre Gramfort and Yves Grenier

MS 2013-2015 — **École Polytechnique Fédérale de Lausanne (EPFL)**, Lausanne, Switzerland
Master degree in Information Technology: Machine Learning, Signal Processing, Image Processing, Distributed Information Systems, Wireless Communications, ...

MS 2010-2013 — **École Polytechnique**, Palaiseau, France
Engineer degree in top engineering school: Cross-curricular formation with Mathematics, Physics and Computer Science, specialization in Electrical Engineering.

CPGE 2008-2010 — **Lycée Saint Louis**, Paris, France
A 2-year intensive undergraduate program for admission to France's top engineering schools.
Linear Algebra, Calculus, Physics

EXPERIENCE

Internships

Research engineer 2015 (5 months) — **Télécom ParisTech**, Paris, France
Working on scikit-learn, a machine learning library in Python.
Implementation of new solvers for linear models, and non-negative matrix factorization.

Research intern 2014 (6 months) — **DxO Labs**, Boulogne-Billancourt, France
Working on motion deblurring, i.e. blind deconvolution.
Matlab implementation, state of the art improvement (confidential).

Research intern 2013 (3 months) — **Institut d'Électronique Fondamentale**, Orsay, France
Working on a calculus paradigm using stochastic binary signals.
Matlab implementation, Cadence implementation with analog CMOS circuits.
Summa cum laude from Ecole polytechnique (top 10%).

First responder 2011 (7 months) — **Paris Fire Brigade**, Paris, France
Leading a first aiders unit (full time).
Decision making in critical situations (childbirth, cardiac arrests, strokes, ...).

Teaching assistantships

Data camp 2016 - 2017 — Université Paris-Saclay, Palaiseau, France
One week data camp on practical data-science (second year of master).

SIGMA202a 2016 - 2017 — Télécom ParisTech, Paris, France
Linear time series (first year of master).

PACT 2016 - 2017 — Télécom ParisTech, Paris, France
Advisor for a year-long innovative team project (last year of bachelor).

updated October 2018

Computing

I am an active developer, maintainer, and contributor to several scientific packages in the Python community. See my GitHub profile (http://github.com/tomdlt) for more details.

Skills

- Experienced in Python, Cython, some knowledge in Matlab, Java, C++
- Experienced in a variety of tools, including LateX, MS Office, Adobe Photoshop

Software

scikit-learn 2015–Present — I am a core developer of scikit-learn, a popular Python package for performing machine learning.

pactools 2016-Present — I am the author of pactools, a Python package to analyze phase-amplitude-coupling (PAC) in neural time series.

alphacsc 2017-Present — I am the author of alphascsc, a Python package to perform convolutional dictionary learning with time series.

Languages

- *French*: Native proficiency
- *English*: Professional working proficiency
- *Spanish*: Limited working proficiency

Publications

Published

[1] T. Dupré la Tour, T. Moreau, M. Jas, A. Gramfort.
Multivariate convolutional sparse coding for electromagnetic brain signals.
NIPS, 2018

[2] T. Dupré la Tour, Y. Grenier, A. Gramfort.
Driver estimation in non-linear autoregressive models.
ICASSP, 2018

[3] T. Dupré la Tour, L. Tallot, L. Grabot, V. Doyère, V. van Wassenhove, Y. Grenier, A. Gramfort.
Non-linear auto-regressive models for cross-frequency coupling in neural time series.
PLOS Computational biology, 2017

[4] M. Jas, T. Dupré la Tour, U. Simsekli, A. Gramfort.
Learning the morphology of brain signals using alpha-stable convolutional sparse coding.
NIPS, 2017

[5] T. Dupré la Tour, Y. Grenier, A. Gramfort.
Parametric estimation of spectrum driven by an exogenous signal.
ICASSP, 2017

Preprints

[6] L. Grabot, T. W. Kononowicz, T. Dupré la Tour, A. Gramfort, V. Doyère, V. van Wassenhove.
Oscillatory multiplexing indexes precision.
bioRxiv preprint, 2017

Conferences

Talks

June 2018 — *Nearest neighbors in scikit-learn estimators, API challenges*
PyData meetup, Paris

September 2017 — *Non-linear auto-regressive models for cross-frequency coupling in neural time series*
C3S 2017, Cologne

June 2016 — *Training with open-source*
PyData Paris 2016, Paris

Posters

December 2018 *Multivariate convolutional sparse coding for electromagnetic brain signals*
NIPS 2018, Montreal

August 2018 *Non-linear auto-regressive models for cross-frequency coupling in neural time series*
BIOMAG 2018, Philadelphia

April 2018 *Driver estimation in non-linear autoregressive models*
ICASSP 2018, Calgary

December 2017 *Learning the morphology of brain signals using alpha-stable convolutional sparse coding*
NIPS 2017, Long Beach

June 2017 *Parametric models of phase-amplitude coupling*
OHBM 2017, Vancouver

March 2017 *Parametric estimation of spectrum driven by an exogenous signal*
ICASSP 2017, New Orleans

February 2017 *Parametric models of phase-amplitude coupling in neural time series*
BASP workshop 2017, Villars-sur-Ollon