Tom DupreLaTour

PhD student

Télécom ParisTech, Université Paris-Saclay

Nationality: French
+33 6 28 25 26 56
tdupre@enst.fr
tomdlt.github.io

- I am a PhD student at Télécom ParisTech in France, advised by Alexandre Gramfort and Yves Grenier. I graduated from Ecole polytechnique in 2013 and EPFL in 2015. My work focuses on neural oscillations modeling, signal processing, and machine learning.

Education

PhD 2015-2018
Télécom ParisTech, Paris, France
Thesis: *Non-linear auto-regressive models for cross-frequency coupling in neural 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, ...

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

Positions

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.

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, ...).

Internships

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%).

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 June 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 alpha-stable noise models.

Languages

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

Publications

Preprints

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

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

Published

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

[4] 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

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

[6] T. Dupré la Tour, Y. Grenier, A. Gramfort. *Parametric estimation of spectrum driven by an exogenous signal.* ICASSP, 4301–4305, 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

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