Tom DupreLaTour

PhD student

Télécom ParisTech, Université Paris-Saclay

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- 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

MS 2010-2013
École Polytechnique, Palaiseau, France
Engineer degree: Cross-curricular formation, with Mathematics, Physics and Informatics.

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

Experience

Positions

TPT 2015 (5 months)
Research developer, working on scikit-learn, an open source machine learning library in Python.
Development of new solvers for linear models, and non-negative matrix factorization.
Télécom ParisTech, Paris, France

BSPP 2011 (7 months)
Full time first responder, leading a first aiders unit.
Paris Fire Brigade, Paris, France

Internships

DxO 2014 (6 months)
Research intern, working on motion deblurring, i.e. blind deconvolution.
Literature review, prototyping on Matlab, state of the art improvement (not published).
DxO Labs, Boulogne-Billancourt, France

IEF 2013 (3 months)
Research intern, working on a calculus paradigm using stochastic binary signals.
Matlab simulations, and Cadence implementation with analog CMOS circuits.
Institut d'Électronique Fondamentale, Orsay, France

Teaching assistantships

Data camp Winter 2016
One week data camp on practical data-science
Université Paris-Saclay (M2), Palaiseau, France

SIGMA202a Winter 2016
Linear time series
Télécom ParisTech (M1), Paris, France

PACT 2016 - 2017
Advisor for a year-long innovative team project
Télécom ParisTech (L3), Paris, France

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 package for performing machine learning in Python. I have contributed most notably in adding a stochastic average gradient (SAG) solver to linear models, and both a coordinate descent solver and a multiplicative update solver to non-negative matrix factorization (NMF).

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

Languages

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

Conferences

Talks

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

Publications

Under review

[1] L. Grabot, T. W. Kononowicz, T. Dupré la Tour, A. Gramfort, V. Doyère, V. van Wassenhove. *Oscillatory multiplexing indexes precision.* eLife

Published

[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

[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, 4301–4305, 2017