Elvis Dohmatob

PhD student

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Date of birth: 27 April 1987

Education

Oct 2014 – present **PhD Student, Computer Science**, *Parietal Team, INRIA / CEA, Université Paris-Saclay*.
Graduation date: End of 2017.
Supervisors: Bertrand THIRION and Gael VAROQUAUX
Topic: The object of this thesis is to invent data-driven techniques for learning inter-subject functional variability, the ultimate goal being the enhancement of human brain functional connectome charting. This at the intersection of machine learning, convex optimization, and neuroscience.

2010 – 2011 **MSc. Cryptology and Information Security**, *University of Bordeaux 1*.
Pentesting for telecom and VoIP-like protocols like SS7, SIGTRAN, SIP, GTP.

2009 – 2010 **Maîtrise ès Mathématiques**, *University of Bordeaux 1*.
On explicit constructions of "good" LDPC QECCs (*Low-Density Parity-Check Quantum Error-Correcting Codes*). Supervised by Gilles ZEMOR.

2005 – 2008 **BSc. Mathematics and Computer Science**, *University of Buea*.

Selected scientific publications

Summary from Google scholar: Total citations ≥ 95; total papers ≥ 15; h index ≥ 3; 110 index ≥ 3.
Full information available at: https://scholar.google.fr/citations?user=FDWgJY8AAAAJ&hl=fr

2016
- *Learning brain regions via large-scale online structured sparse dictionary learning*. Advanced Neural Information Processing Systems – NIPS conference. https://hal.inria.fr/hal-01369134v3
- *A simple algorithm for computing Nash-equilibria in incomplete information games*. NIPS OPT2016 workshop. https://arxiv.org/abs/1507.07901

2015
- *Local Q-Linear Convergence and Finite-time Active Set Identification of ADMM on a Class of Penalized Regression Problems*. ICASSP - 41st International Conference on Acoustics, Speech and Signal Processing (*IEEE*). https://hal.archives-ouvertes.fr/hal-01265372/file/paper.pdf
- *Integrating Multi-modal Priors in Predictive Models for the Functional Characterization of Alzheimer's Disease*. MICCAI – 18th International Conference on Medical Image Computing and Computer Assisted Intervention. https://hal.archives-ouvertes.fr/hal-01174636/file/paper983.pdf

2014
- *Region segmentation for sparse decompositions: better brain parcellations from rest fMRI*. http://stmi2014.ece.cornell.edu/papers/STMI-P-9.pdf
- *Which fMRI clustering gives good brain parcellations?*. Frontiers in Neuroinformatics. http://journal.frontiersin.org/Journal/10.3389/fnins.2014.00167/abstract
- *Benchmarking solvers for TV-ℓ_1 least-squares and logistic regression in brain imaging*. PRNI - Pattern Recognition in Neuro-Imaging (*IEEE*). http://hal.inria.fr/hal-00991743

2013 ◦ *Extracting brain regions from rest fMRI with Total-Variation constrained dictionary learning*. MICCAI - 16th International Conference on Medical Image Computing and Computer Assisted Intervention. http://hal.inria.fr/hal-00853242

Scientific reviewing

2016 NIPS –Advanced Neural Information Processing Systems– 2016

Scientific talks & ans Symposia

2016
- Nilearn (machine learning in neuroimaging) workshop at BrainHack, Lausanne, Switzerland.
- Nilearn workshop at OHBM, Geneva, Switzerland.
- Invited workshop on Python programming and machine learning, at Psychiatry department, RWTH, Aachen, Germany.
- Poster presentation on"*Inter-subject highres EPI-to-EPI direct nonlinear registration outperforms classical T1-based method* ", OHBM, Geneva, Switzerland.

2015
- Oral + poster presentation on"*SpaceNet: Multivariate brain decoding and segmentation*", OHBM, Honolulu, Hawaii, USA
- Oral presentation on"*Speeding-up model selection in GraphNet via early-stopping and feature-screening*", Stanford, USA

2014
- At the PRNI –Pattern Recognition in Neuro-Imaging– IEEE conference that took place 3rd – 6th June 2014 (Max-Planck Institute for Intelligent Systems, Tuebingen – Germany), I presented my work, "*Benchmarking solvers for TV-ℓ_1 least-squares and logistic regression in brain imaging*"

Some contributions to open-source software projects

Data science & AI scikit-learn http://scikit-learn.org/stable/

Neuro-Imaging nilearn http://nilearn.github.io, nipy http://nipy.org, pypreprocess https://github.com/neurospin/pypreprocess

Complete list See complete list on my github profile at https://github.com/dohmatob

Hackathon experience

2013 – present BrainHack Lausanne (2016); BrainHack Paris (2016); scikit-learn coding sprint Paris (2015); PyData Paris (2015); Google Hash Code Paris (2014); BrainHack Paris (2013)

Awards and scholarships

2014 Honourable Mention (2ND price) awarded to the paper "*Benchmarking solvers for TV-ℓ_1 least-squares and logistic regression in brain imaging*" (http://hal.inria.fr/hal-00991743), presented at the 4th international workshop on Pattern Recognition in Neuro-imaging (PRNI 2014), Max-Planck Institute for Intelligent Systems, Tuebingen – Germany

2009 - 2011 Erasmus Mundus, ALGANT, Université de Bordeaux 1

Professional experience

Oct 2014 – present **Part-time research engineer**, *Parietal Team – INRIA / CEA, Neurospin Saclay*.

Oct 2012 – Oct 2014 **Research engineer**, *Parietal Team – INRIA / CEA, Neurospin, Saclay*.
Structured priors for brain data; optimization; preprocessing and statistical analysis of fMRI data; registration algorithms; machine learning on fMRI data; software engineering

Sep 2011 – Oct 2012 **Freelancer and Open-Source**, *Various employers*.
Simulations for CR (Cognitive Radio) research; Windows system programming (DLLs, user-space root-kits, etc.); implementation of Machine Learning algorithms

Mar 2011 – Aug 2011 **Cryptology and Security intern**, *P1 Security*, Paris, France.
Implementation of an event-driven pentesting framework for telecom protocols

Business experience

2016 Participated in "Doctoriales 2016 projet innovant" in which I collaborated with a team of 7 other participants to build a start-up in 24 hours.

Languages

Bilingual English (fluent), French (fluent)

IT and computing skills

See my github profile at `https://github.com/dohmatob`

Programming Languages: Python (including Numpy/Scipy, Maplotlib, Seaborn), bash, C, Matlab, Emacs-Lisp, Latex

Data science & AI: solid mastery of convex optimization (theory and practice), LibSVM, scikit-learn, pandas, keras

Neuro-imaging: nilearn, SPM, FSL, ANTS, nipype, Mango

Software Engineering: OOP, TDD, version control (git, github), continuous integration (travis, circle-ci), parallel computing (xargs, joblib)

Operating Systems: GNU/Linux, Windows

Interests

Research: data science & AI, convex optimization, human connectome mapping, game theory

Hobbies: programming, dancing, ping-pong, arcade games