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, France*.
Graduation date: September 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. More details on my blog at http:dohmatob.github.io.

2010 – 2011 **MSc. Cryptology and Information Security**, *University of Bordeaux 1*.
Pentesting 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*.

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*.
software engineering; implementation of structured priors for brain data; optimization; preprocessing and statistical analysis of fMRI data; registration algorithms; machine learning on fMRI data

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

Selected scientific publications

Summary from Google scholar: Total citations $\geq$ 103; total papers $\geq$ 15; h index $\geq$ 3; 110 index $\geq$ 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 & and 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)

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, Latex, C++, Emacs, Matlab

Data science & AI solid mastery of convex optimization, 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

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

Interests

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

Hobbies programming, dancing, ping-pong, arcade games