

Elvis Dohmatob

PhD student

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📄 dohmatob.github.io

Date of birth: 27 April 1987

Education

- Oct 2014 – present **PhD Student, Computer Science, Parietal Team, INRIA / CEA, Université Paris-Saclay, France.**
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 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.**
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

Selected scientific publications

Summary from Google scholar: Total citations ≥ 100 ; total papers ≥ 15 ; h index ≥ 3 ; i10 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://stm2014.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>, pyprocess <https://github.com/neurospin/pyprocess>
- 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, Matplotlib, Seaborn), bash, Latex, Emacs, Matlab, C

Data science & AI solid mastery of convex optimization, scikit-learn, pandas, keras

Neuro-imaging nilearn, SPM, FSL, ANTS, nipy, 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