DOHMATOB Elvis D.

PhD Student, Computer Science

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Education

2014 – present **PhD Student, Computer Science**, *Université Paris-XI / Parietal – INRIA*.
Nonlinear inter-subject registration of noisy BOLD images, the ultimate scientific goal being the enhancement of human functional connectome charting. The underlying problem can be seen as optimization on a high-dimensional exotic Lie group of diffeomorphisms. Supervisors: Bertrand THIRION and Gael VAROQUAUX

2010 – 2011 **MSc. Cryptology and Information Security**, *University of Bordeaux 1*.
Pentesting for telecom and VoIP-like protocols including 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 2012 – Oct 2014 **Research engineer**, *PARIETAL – INRIA, Neurospin CEA, Saclay*.
Non-smooth convex 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 and VoIP-like protocols

IT and Computing Skills

Programming Languages	Python, ASM x86, C/C++, MATLAB, R, PARI/GP, Emacs-Lisp, javascript
Maching Learning	LibSVM, scikit-learn, pandas
Neuro-imaging	nilearn, SPM, FSL, nipy, nipype, freesurfer, mayavi, pypreprocess
Software Engineering	OOP, TDD, EDD, version control (git, github), continuous integration (travis), parallel computing
Operating Systems	Linux, Windows (including shell scripting and system programming skills)
Cryptology	Number Theory, Elliptic Curves, Smart Cards, Asymmetric Cryptography (RSA), Symmetric Cryptography (PKI, DH, DES, AES)
Security tools	Snort, Wireshark, Nmap, METASPLOIT, OllyDbg, Immunity Debugger, IDA Pro, SPIKE
My *github profile*	`https://github.com/dohmatob`

Scientific Publications (journal and conference papers)

2014
- A. ABRAHAM, E. DOHMATOB, B. THIRION, D. SAMARAS, G. VAROQUAUX, "*Region segmentation for sparse decompositions: better brain parcellations from rest fMRI*". http://stmi2014.ece.cornell.edu/papers/STMI-P-9.pdf
- B. THIRION, G. Varoquaux, E. DOHMATOB, J.-B. POLINE, "*Which fMRI clustering gives good brain parcellations?*". Frontiers in Neuroinformatics. http://journal.frontiersin.org/Journal/10.3389/fnins.2014.00167/abstract
- E. DOHMATOB, A. Gramfort, B. THIRION, G. Varoquaux "*Benchmarking solvers for TV-ℓ_1 least-squares and logistic regression in brain imaging*". Pattern Recoginition in Neuroimaging (PRNI), *IEEE*. http://hal.inria.fr/hal-00991743

2013
- A. ABRAHAM, E. DOHMATOB, B. THIRION, D. SAMARAS, and G. VAROQUAUX, "*Extracting brain regions from rest fMRI with Total-Variation constrained dictionary learning*". MICCAI - 16th International Conference on Medical Image Computing and Computer Assisted Intervention - 2013 (2013). http://hal.inria.fr/hal-00853242

Contributions to open-source software projects

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

Personal projects — See complete list on my github profile: https://github.com/dohmatob

My *Open Source Report Card* — Tentatively, an impartial automatically generated statistical summary of my "contributions heat map" can be found at http://osrc.dfm.io/dohmatob/

Scientific Talks

PRNI 2014 — At the PRNI (Pattern Recoginition in Neuroimaging) 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*" (http://hal.inria.fr/hal-00991743).

Hackathon Experience

Parietal retreat, 6th – 8th April 2014 — Virgile FRITSCH and I did VBM (Voxel-Based Morphometry) on a public dataset (Oasis database). The outcome of this sprint is summarized here https://github.com/Parietal-INRIA/parietal-python/wiki/VBM-dataset-for-nilearn

Google Hash Code Paris, 4th – 5th Apr 2014 — In this competition, I teamed with 2 other members to realize the task of implementing a street-viewer for Paris. The underlying problem can formulated as a multi-objective TSP. Our algorithm was a Monte-Carlo (random walks on a roadmap of Paris).

Brainhack Paris, 23rd – 26th Oct 2013 — With Alexandre Gramfort, I worked on the preprocessing and statistical analysis (second-level GLM) of Henson's multi-modal (fMRI, EEG/MEG, DTI) faces vs objects dataset.

Languages

Bilingual — English (fluent), French (fluent)

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*", by E. DOHMATOB, A. GRAMFORT, B. THIRION, G. VAROQUAUX (http://hal.inria.fr/hal-00991743), presented at the 4th international workshop on Pattern Recognition in NeuroImaging (PRNI 2014), Max-Planck Institute for Intelligent Systems, Tuebingen – Germany

2009 - 2011 Erasmus Mundus, University of Bordeaux 1

Interests

Research convex optimization, differential geometry, nonlinear registration, human connectome mapping, game theory

Hobbies Reading, dancing, running