

DOHMATOB Elvis D.

PhD Student, Computer Science

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📄 <https://team.inria.fr/parietal/elvis/>

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, nipytype, 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 Recognition 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>, pyprocess <https://github.com/neurospin/pyprocess>

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

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

Scientific Talks

PRNI 2014 At the PRNI (Pattern Recognition 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>).

Forum STIC 2014 Poster presentation for PRNI2014 paper at STIC, Paris-Saclay, France.

OHBM 2015 Oral + poster presentation on “SpaceNet: Multivariate brain decoding and segmentation”, Honolulu, Hawaii, USA

Hackathon Experience

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 be 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. DOHMA-TOB, 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