Eleftherios Garyfallidis, PhD

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	Sherbrooke J1H 4P7	E-mail:	garyfallidis@gmail.com	Marital Status:	Single
	Canada	Website:	eleftherios.net	Children:	None

Education

2008 – 2012	**PhD in Diffusion MRI & Tractography**	University of Cambridge, MRC CBU	UK
2004 – 2006	**MSc in Brain & Mind Sciences**	University of Crete and FORTH	GR
1999 – 2003	**BSc in Computer Science**	Technological Institution of Athens	GR

Creator & Head Software Engineer

2009 – Today **Diffusion Imaging in Python** diffusion MRI analysis software library **dipy.org**

Diffusion Imaging in Python (Dipy) is a free and open source software project for the analysis of data from diffusion magnetic resonance imaging (dMRI) experiments. dMRI is an application of MRI that can be used to measure structural connectivity of the brain's white matter. Dipy today has an international team of 30+ contributors, spanning eight different academic institutions in six countries and three continents and still growing.

2010 – 2012 **Free on Shades** medical imaging and network visualization library **fos.me**

A 3D visualization software library using OpenGL and the Python programming language for extremely efficient and interactive experience of tractographies from neuroanatomists.

Research experience

2012 – Today Post-Doctoral Researcher **"Diffusion MRI Methods at the SCIL"** University of Sherbrooke

Working on the development of new exciting methods at the Sherbrooke Connectivity Imaging Lab (SCIL) under the supervision of Professor Maxime Descoteaux.

2008 – 2012 PhD Project "**Towards an accurate brain tractography**" MRC – CBU, University of Cambridge

The objective of this thesis was to improve on the methods for inferring neural tracts from diffusion weighted magnetic resonance imaging (dMRI). Accordingly, I presented advancements to the reconstruction, tracking, segmentation and registration modalities of dMRI analysis. The thesis is available for download at tinyurl.com/eleftherios-phd .

2006 – 2008 Research Project "**Direct source localization using MEG**" DAMTP, University of Cambridge

Investigating the possibility of localizing dipoles using magnetoencephalography with a direct analytical inversion approach.

2005 – 2006 MSc 1st Project "**Automatic shape decomposition**" Foundation for Research and Technology Hellas

The goal of this project was to decompose complex solid shapes, e.g. binary images of human hands, into meaningful parts using machine learning and computer vision approaches.

2005 – 2006 MSc 2nd Project "**Developing fMRI applications**" Foundation for Research and Technology Hellas

The goal of this project was to implement standard visualization algorithms for inpsecting fMRI-based activations.

2002 – 2003 BSc Project "**Classification of OCDs and NCs using ERPs**" Technological Institution of Athens

The purpose of this project was to encode and classify event related potentials of EEG signals between obsessive compulsive disorder patients and normal controls. For this purpose we used neural associative memories.

Journal Publications

1. **Garyfallidis, E.**, M. Brett, B. Amirbekian, A. Rokem, S. Van Der Walt, M. Descoteaux, and I. Nimmo-Smith. "Dipy, a library for the analysis of diffusion MRI data". Frontiers in Neuroinformatics, 1-18, 2014.

2. Daducci, A., E. Canales-Rodriguez, M. Descoteaux, **E. Garyfallidis**, Y. Gur, Y-C. Lin, M. Mani, S. Merlet, M. Paquette, A. Ramirez-Manzanares, M. Reisert, P. Rodrigues, F. Sepehrband, E. Caruyer, J. Choupan, R. Deriche, M. Jacob, G. Menegaz, V. Prckovska, M. Rivera, Y. Wiaux, and J-P. Thiran. "Quantitative comparison of reconstruction methods for intra-voxel fiber recovery from diffusion MRI." Transactions in Medical Imaging, 33 (2): 384-399, 2014.

3. Côté, M-A., G. Girard, A. Boré, **E. Garyfallidis**, J-C. Houde, and M. Descoteaux. "Tractometer: Towards Validation of Tractography Pipelines." Medical Image Analysis, 17 (7): 844-857, 2013.

4. **Garyfallidis, E.**, M. Brett, M. M. Correia , G.B. Williams, I. Nimmo-Smith. "QuickBundles, a method for tractography simplification." Frontiers in Neuroscience, 6-175, 2012.

5. Tsiaras, V., P.G. Simos, R. Rezaie, B.R. Sheth, **E. Garyfallidis**, E.M. Castillo, A.C. Papanicolaou, "Extracting biomarkers of autism from MEG resting-state functional connectivity networks.", Computers in biology and medicine 41(12):1166-77, 2011.

6. Chamberlain S.R., A. Hampshire, L.A. Menzies, **E. Garyfallidis**, J.E. Grant, B.L. Odlaug, K. Craig, N. Fineberg, B.J. Sahakian, "Reduced brain white matter integrity in trichotillomania: a diffusion tensor imaging study.", Archives of General Psychiatry 67(9):965-71, 2010.

Conference Publications

1. **Garyfallidis, E.**, M. Zuchelli, J-C. Houde, and M. Descoteaux. "How to perform best ODF reconstruction from the Human Connectome Project sampling scheme?" Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM). Milan, Italy. 6838, 2014.

2. **Garyfallidis, E.**, A. Rokem, B. Amirbekian, S. van der Walt, M. Zucchelli, J-O. Ocegueda-Gonzalez, S. St-Jean, G. Girard, M. Paquette, I. Nimmo-Smith, M. Brett, and M. Descoteaux. "The new methods available in Dipy 0.7.0+ that you should know about." Proceeding of: Organization of Human Brain Mapping (OHBM). Hamburg, Germany, 2014.

3. Zuchelli, M., **E. Garyfallidis**, M. Paquette, S. Merlet, G. Menegaz, and M. Descoteaux. "Comparison between discrete and continuous propagator indices from Cartesian q-space DSI sampling." Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM). 6762, 2014.

4. **Garyfallidis E.**, S. St-Jean, M. Paquette, P. Coupé, and M. Descoteaux. "Constrained spherical deconvolution on signal and ODF values." Proceeding of: ISBI HARDI Reconstruction Challenge. 16, 2013.

5. **Garyfallidis E.**, S. St-Jean, M. Paquette, P. Coupé, and M. Descoteaux. "Deconvolution enhanced Generalized Q-Sampling 2 and DSI deconvolution." Proceeding of: ISBI HARDI Reconstruction Challenge. 17, 2013.

6. Paquette, M., **E. Garyfallidis**, S. St-Jean, P. Coupé, and M. Descoteaux. "Particle Swarm Optimization in Multi-Tensor Imaging." Proceeding of: ISBI HARDI Reconstruction Challenge. 15, 2013.

7. **Garyfallidis E**, Gerhard S, Avesani P, Nguyen T, Tsiaras V, Nimmo-Smith I, Olivetti E, "*A software application for real-time, clustering-based exploration of tractographies*", 18th Annual Meeting of the Organization for Human Brain Mapping, 2012.

8. Olivetti E, Nguyen TB, **Garyfallidis E**, "*The Approximation of the Dissimilarity Projection*", 2nd IEEE International Workshop on Pattern Recognition in NeuroImaging, 2012.

9. **Garyfallidis E**, Nimmo-Smith I, "*Cartesian grid q-space reconstruction*", HARDI Reconstruction Workshop of the 9th IEEE International Symposium on Biomedical Imaging, 2012.

10. Correia MM, Williams GB, Yeh F-C, Nimmo-Smith I, **Garyfallidis E**, "*Robustness of diffusion scalar metrics when estimated with Generalized Q-Sampling Imaging acquisition schemes*", 19th Proceedings of the International Society of Magnetic Resonance in Medicine, 2011.
11. **Garyfallidis E**, Brett M, Amirbekian B, Nguyen C, Yeh F-C, Olivetti E, Halchenko Y, Nimmo-Smith I, "*Dipy - a novel software library for diffusion MR and tractography*", 17th Annual Meeting of the Organization for Human Brain Mapping, 2011.
12. Tsiaras V, Simos PG, Rezaie R, Sheth BR, **Garyfallidis E**, Castillo EM, Papanicolaou AC, "*Extracting biomarkers of autism from MEG resting-state functional connectivity networks.*", Computers in biology and medicine 41(12):1166-77, 2011.
13. **Garyfallidis E**, Brett M, Nimmo-Smith I, "*Fast Dimensionality Reduction for Brain Tractography Clustering*", 16th Annual Meeting of the Organization for Human Brain Mapping, 2010.
14. **Garyfallidis E**, Brett M, Tsiaras V, Vogiatzis G, Nimmo-Smith I, "*Identification of corresponding tracks in diffusion MRI tractographies*", 18th Proceedings of the International Society of Magnetic Resonance in Medicine, 2010.

Oral Conference Presentations

1. Garyfallidis, E., D. Wassermann, and M. Descoteaux. "Direct native-space fiber bundle alignment for group comparisons." International Society of Magnetic Resonance in Medicine (ISMRM). Milan, Italy. 7796, 2014.

Invited Talks

1. Garyfalldis E. (2014), "Diffusion MRI workshop", University of Verona, Italy.
2. Garyfallidis E. (March. 2013), "Quickbundles-based Segmentation", Harvard University, USA.
3. Garyfallidis E. (May. 2013), "Diffusion imaging course with Dipy", University of California at Berkeley, USA.
4. Garyfallidis E. (Sep. 2012), "Dipy 0.6 on the edge of diffusion MR analysis", Cimec, FBK, Trento, Italy.
5. Garyfallidis E. (Jul. 2012), "Accuracy in voxel reconstruction using dMRI", Stanford University, USA.

Outreach

Garyfallidis E, Nimmo-Smith I (2010), "*Surfing your Brain Super-Highways*". Presented at the 350th celebration of the Royal Society, London, UK. In the presence of Her Majesty Queen Elizabeth II and His Royal Highness the Duke of Edinburgh. Video available at tinyurl.com/dipyfirst.

Awards

1. Winner of the international IEEE ISBI HARDI competition 2013.
   http://hardi.epfl.ch/static/events/2013_ISBI/workshop.html#results
2. FQRNT Travelling Award for attending ISMRM 2014.
3. Distinction Award for the MSc – Grade 8.65/10.
4. Distinction Award for the BSc Thesis – Grade 10/10.
5. Scholarship from the Board of Graduate Studies, University of Cambridge (2009 – 2010).
6. EPSRC funding for College and Tuition Fees for the 4 years of the PhD course.
7. Sponsorship from the Vergottis Foundation for the living expenses for the PhD course.
8. Scholarship (Jul. 2004 – Jun. 2005) awarded after competitive examination at the MSc course.
9. Scholarship (Mar. 2006 – Jul. 2006) from the Computational Vision and Robotics Laboratory, FORTH, GR.

Past Employment

2004 – 2006	**Freelance Developer**	Applications for Booking Air-tickets, Athens, GR.
2002 – 2003	**Security Analyst**	National Center for Scientific Research, Athens, GR.
2000 – 2001	**Company Developer**	AlphaCyber Group, Stock Market Analysis, Athens, GR.
1997 – 2000	**Sales/Promotion**	Golden Jewelery Shop, Athens, GR.

Programming

I am a professional software engineer. I have programmed in more than 20 different languages. I am a professional Python developer and experienced in C/C++ and Matlab.

PhD Courses

Machine Learning, Statistical Pattern Processing, Signal Detection and Estimation, High Performance Computing, Statistical, Methods, and Complex Optimization.

MSc Courses

Medical Imaging, Neurobiology, Neurophysiology, Introduction to Robotics, Developmental Psychology, Biomedial Technology, Robotic Action, Biomimetic Robotics, Philosophy of the Mind, and Machine Vision.

Activities & Sports

Crossfit, Swimming, Martial Arts, Trail running, Co-Founder of the Ultimate Workout.

Personal Characteristics

Team player, Passionate, Friendly, Hard Working, Inventive.

References

Prof. Maxime Descoteaux	Position:	Associate Professor	Telephone:	+1-819-580-1456
		University of Sherbrooke	E-mail:	maxime.descoteaux@gmail.com
		Sherbrooke, CA	Relationship:	Post-doc supervisor
Dr. Ian Nimmo-Smith	Position:	Head of Methods Group	Telephone:	+44 7966 699 097
		MRC – CBU	E-mail:	iannimmosmith@gmail.com
		Cambridge, UK	Relationship:	PhD 1st advisor
Dr. Matthew Brett	Position:	Head Engineer at NIPY	Telephone:	+1 5106 434 053
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		Berkeley, US	Relationship:	Collaborator
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		Athens, GR	Relationship:	BSc supervisor