Maxime Taquet

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Research Interests

Developing novel microstructure imaging technologies to understand, characterize and diagnose autism spectrum disorders

Current Position

Harvard Medical School, Boston, MA
Post-Doctoral Research Fellow in Radiology, 2014 - present
Computational Radiology Laboratory, Boston Children's Hospital

Education

Harvard Medical School, Boston, MA
Visiting Research Fellow, 2010 - 2013
Computational Radiology Laboratory
Supervisor : Simon K. Warfield

Université catholique de Louvain, Louvain-La-Neuve, Belgium
Ph.D. Student in Applied Sciences, 2009 - 2013
Thesis : Multi-Fascicle Models of the Brain Microstructure for Population Studies : Acquisition, Estimation, Registration and Statistical Analysis
Supervisor : Benoît Macq

Université catholique de Louvain, Louvain-La-Neuve, Belgium
M.Sc. Electrical Engineering, 2007 - 2009 (Summa Cum Laude)
Development and Validation of a Navigation System for Assisted Orthopedic Surgery

Simon Fraser University, Vancouver, Canada
M.Sc. Exchange Student, 2007 - 2008 (GPA : 4.33/4.33)

Université catholique de Louvain, Louvain-La-Neuve, Belgium
B.Sc. Engineering, 2004-2007 (Summa Cum Laude)

Publications

Mapping Collective Emotions to Make Sense of Collective Behavior. Maxime Taquet, Jordi Quoidbach, Yves-Alexandre de Montjoye, Martin Desseilles, Behavioral and Brain Sciences, 37, 1-2, 2014

A Mathematical Framework for the Registration and Analysis of Multi-Fascicle Models for Population Studies of the Brain Microstructure. Maxime Taquet, Benoit Scherrer, Olivier Commowick, Jurriaan M. Peters, Mustafa Sahin, Benoit Macq and Simon K. Warfield, IEEE Transactions on Medical Imaging, in press (IEEE Early Access Paper, DOI : 10.1109/TMI.2013.2289381), 2013

Diffusion Tensor Imaging and Related Techniques in Tuberous Sclerosis Complex : Review and Future Directions. Jurrriaan M. Peters*, Maxime Taquet*, Anna K. Prohl, Benoit Scherrer, Agnies M. van Eeghen, Sanjay P. Prabhu, Mustafa Sahin, and Simon K. Warfield, Future Neurology, in press, 2013
*Equal contributions

Estimation of a Multi-Fascicle Model from Single B-Value Data with a Population-Informed Prior. Maxime Taquet, Benoît Scherrer, Nicolas Boumal, Benoît Macq, Simon K. Warfield, to appear in Medical Image Computing and Computer Assisted Interventions, 2013

Characterizing the DIstribution of Anisotropic MicrO-structural eNvironments with Diffusion-weighted imaging (DIAMOND). Benoît Scherrer, Armin Schwartzman, Maxime Taquet, Sanjay P. Prabhu, Mustafa Sahin, Alireza Akhond-Asl and Simon K. Warfield, to appear in Medical Image Computing and Computer Assisted Interventions, 2013

The Brain Functional Network of Children with Autism : Redundancy and Disconnection. Maxime Taquet and Jurriaan M. Peters, Médecine/Sciences, June 2013

Reliable Selection of the Number of Fascicles in Diffusion Images by Estimation of the Generalization Error, Benoît Scherrer*, Maxime Taquet*, Simon K. Warfield, in proceedings of 23rd biennial International Conference on Information Processing in Medical Imaging (IPMI), July 2013, Asilomar, USA
*Equal Contributions

Brain functional networks in syndromic and non-syndromic autism : a graph theoretical study of EEG connectivity, Jurriaan M. Peters*, Maxime Taquet*, Clemente Vega, Shafali S. Jeste, Ivan Sanchez Fernandez, Jacqueline Tan, Charles A Nelson, Mustafa Sahin and Simon K. Warfield, BMC Medicine, 2013, 11 :54.
*Equal Contributions

Registration and Analysis of White Matter Group Differences with a Multi-Fiber Model, Maxime Taquet, Benoît Scherrer, Olivier Commowick, Benoît Macq, Simon K. Warfield, in proceedings of Medical Image Computing and Computer Assisted Intervention, 2012

Interpolating Multi-Fiber Model by Gaussian Mixture Simplification, Maxime Taquet, Benoît Scherrer, Christopher Benjamin, Sanjay Prabhu, Benoît Macq, Simon K. Warfield, in proceedings of IEEE International Symposium on Biomedical Imaging, 2012

A Generalized Correlation Coefficient, Application to DTI and Multi-Fiber DTI, Maxime Taquet, Benoît Macq, Simon K. Warfield, in proceedings of IEEE Mathematical Methods in Biomedical Image Analysis, 2012

Spatially Adaptive Log-Euclidean Polyaffine Registration based on Sparse Matches, Maxime Taquet, Benoît Macq, Simon K. Warfield, in proceedings of MICCAI, 2011

Compact Rotation Invariant Image Descriptors By Spectral Trimming, Maxime Taquet, Laurent Jacques, Benoît Macq, Sylvain Jaume, in proceedings of IEEE International Conference on Image Processing, 2011

Invariant Spectral Hashing of Image Saliency Graph, Maxime Taquet, Laurent Jacques, Christophe De Vleeschouwer, Benoît Macq, in proceedings of Computational Topology in Image Context, 2010

Feature-based error processing for robust surface registration in computer assisted orthopedic surgery, Maxime Taquet, in proceedings of the IEEE MELECON 2010, 492-497

Invited Talks   July 2013, **Reliable Selection of the Number of Fascicles in Diffusion Images**

by Estimation of the Generalization Error, IPMI 2013, Asilomar (CAL)

Mar. 2013, **La place de l'ingénieur en psychiatrie**, SynoPsy's Seminars, Liège (BE)

Dec. 2012, **Measuring the brain connectivity : from beyond-DTI models to network analysis**, COMA Group, University of Liège, ULg, Liège (BE)

Nov. 2012, **Registration and Analysis of Multi-Fascicle Models for White Matter Population Studies**, Journal Club, Brigham and Women's Hospital, Harvard Medical School, Boston (MA)

Nov. 2012, **EEG Functional Connectivity and Network Analysis in Tuberous Sclerosis and Autism**, Cortical Physiology Laboratory, CashLab, Massachusetts General Hospital, Harvard Medical School, Boston (MA)

Nov. 2012, **Measuring the brain connectivity**, Image and Signal Processing Seminars, Université catholique de Louvain, UCL, Louvain-la-Neuve (BE)

Nov. 2012, **Using neuroimages to understand the brain**, Lecture at University of Namur, Namur (BE)

Oct. 2012, **Probing the brain connectivity**, Louvain Drug Research institute, UCL, Brussels (BE)

Aug. 2012, **How to cheat with statistics ? A practical guide to the skeptical reviewers**, Martinos Center, Harvard Medical School, Boston (MA)

May 2012, **Interpolating Multi-Fiber Model by Gaussian Mixture Simplification**, IEEE International Symposium on Biomedical Imaging, Barcelona (SP)

Apr. 2012, **How to cheat with statistics ? A practical guide for the skeptical reviewers**, Signal Processing Seminars, Université catholique de Louvain (BE)

Feb. 2012, **How to cheat with statistics ? A practical guide for the skeptical reviewers**, Massachusetts General Hospital, Harvard Medical School, Boston (MA)

Jan. 2012, **A Generalized Correlation Coefficient, Application to DTI and Multi-Fiber DTI**, IEEE Workshop on Mathematical Methods in Biomedical Image Analysis, Breckenridge (CO)

Sep. 2011, **Compact Rotation Invariant Image Descriptors By Spectral Trimming**, IEEE International Conference on Image Processing, Brussels (BEL)

Jan. 2011, **On the use of spectral hashing for connectome analysis at the microscale**, Reid Lab, Harvard Medical School, Boston (MA)

Dec. 2010, **Invariant Spectral Hashing of Image Saliency Graph**, Workshop on Computational Topology in Image Context, Sevilla (SP)

Awards	MICCAI Student Travel Awards, 2013
	WBI.WORLD Excellence Scholarship, 2013-2014
	OHBM Trainee Abstract Award, 2013
	ISMRM Educational Stipend, 2013
	IEEE International Symposium on Biomedical Imaging Best Paper Award, 2012

IEEE International Symposium on Biomedical Imaging Student Travel Grant, 2012
WBI.WORLD Excellence Scholarship, 2012
Belgian National Fund for Scientific Research (FNRS) Travel Award, 2011-2012
Belgian American Educational Foundation (BAEF) scholarship, 2010-2011
IEEE Region 8 Best Student Paper Award, 2010
Belgian National Fund for Scientific Research (FNRS) Reserach Award, 2010-2013
IEEE UCL Chapter Best Master Thesis Award, 2009
Canadian Western Engineering Competition Finalist, 2008

Professional Activity

Founder and member of the MICCAI Student Board, 2011-2013
Founder and member of the Belgian Student Club at Harvard and MIT, 2012-2013

Reviews

The Journal of Neuroscience
Human Brain Mapping
IEEE Transactions on Medical Imaging
Medical Image Analysis
Statistics in Medicine
Journal of Magnetic Resonance Imaging
IEEE Transactions on Multimedia
MICCAI (2013, 2012)
ISMRM (2012, 2011),
Workshop on Biomedical Image Registration

Organizing Committee

ISPOR 16th Annual European Congress, 2013 - Symposium on the "Use of Real-World Data in Pharmocoeconomics and Outcomes Research"

Program Committee

WBIR'14, 6th International Workshop on Biomedical Image Registration, 2014

Advising

Robin Lefrant, UCL MSc Electrical Eng., Brain resilience after damages, 2012-2013
Stéphanie Guérit, UCL MSc Biomed. Eng., Brain resilience after damages, 2012-2013
Jolene Singh, Harvard MSc Physics, Models of the white matter diffusion, 2012
Ruobin Gong, Harvard MA Statistics, Functional connectivity in autism, 2012
Augustin Cosse, UCL MSc App. Math., Imaging in prostate brachytherapy (IEEE UCL Chapter Best Master Thesis Award), 2010-2011

Selected media mentions

Der Stadard (AU), May 2014
Yoga und Meditiation als Fitness fürs Gehirn im Alter

Interagency Autism Coordinating Committee (IACC), Apr. 9, 2013
Science Update

Future Medicine, Neuropsychiatry, Apr., 2013
Brain connectivity differs in children with autism, EEG study suggests

Le Soir, Mar. 14, 2013
Autisme : Un cerveau différent

RTBF, Mar. 13, 2013
Que se passe-t-il dans le cerveau d'un enfant autiste ?

Autism Speaks, Mar. 8, 2013
Brain Network Analysis Furthers Understanding of Autism

Spektrum der Wissenschaft (German edition of Scientific American), Mar. 1, 2013
Autismus - Falsch verbunden

Vector, Mar. 1, 2013
Could "network" analysis of the brain explain autism's features?

De Volkskrant, Feb. 28, 2013
Autistische hersenen zijn fijner geweven

The Sacramento Bee, Feb. 27, 2013
"Network" analysis of the brain may explain features of autism

US News, Feb. 27, 2013
Brain Connections Differ in Children With Autism

Teaching Activity TA Signals and Systems, Université catholique de Louvain, Fall 2009
TA Engineering Project II, Université catholique de Louvain, Spring 2010
TA Physics II, Université catholique de Louvain, Spring 2009
TA Engineering Project II, Université catholique de Louvain, Spring 2009
TA Physics III, Université catholique de Louvain, Fall 2008
TA Physics I, Université catholique de Louvain, Fall 2008
TA Applied Physics, Université catholique de Louvain, Fall 2008

Experience **Simon Fraser University**, Vancouver, Canada, 2008
Video Encoding/Decoding (H.264 standard) for mobile platform

Sonecom, Ottignies, Belgium, 2007-2009
Polling and Communication

Nivopub (Web-design for small businesses), Nivelles, Belgium, 2003
Funder and director of a mini-entreprise

Personal Achievements Volunteer for CPCS, Nepal, 2010
Protection and social rehabilitation for children in the streets

President of the student union *Dévelop'Kot*, 2008-2010
Awareness and social events organization

Run&Biker to raise funds, 2006
1200km Run&Biking from Belgium to Denmark
3300 EUR raised for an NGO
Nivelles Sportsman of the year Mayor Award, 2006

Biker to raise funds, 2004
1000km Biking from Belgium to Mt-Ventoux (F)
2800 EUR raised for an NGO

Technical skills Operating systems : Mac OSX, Linux, Windows
Programming : C/C++, ITK/VTK, Java, Pyhton
Web : HTML/CSS, Javascript, PHP, MySQL

Math. Programming : Matlab, R (BUGS), LAPACK, GMM++

Languages   **French** : Native   **English** : Fluent   **Dutch** : Intermediate   **Chinese** : Basics