MAXIME CHAMBERLAND
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chamberm.github.io

Languages: French, English

Studies

- **Cardiff University** — UK
  Post-doctoral fellow — *2017-*
  - Research topic: Computational Diffusion MRI
  - Supervisors: Derek. K. Jones
- **University of Sherbrooke** — Canada
  Ph.D - Radiation sciences & Biomedical Imaging — *2013-2017*
  - Research topic: Diffusion and functional MRI visualization & neurosurgical applications
  - Supervisors: Maxime Descoteaux, Kevin Whittingstall, David Fortin
- **University of Sherbrooke** — Canada
  M.Sc - Computer Science - Medical imaging — *2011-2013*
  - Research topic: Real-time fiber tractography
  - Supervisor: Maxime Descoteaux
- **University of Sherbrooke** — Canada
  B.Sc - Digital Imaging Science including 4 internships — *2007-2010*

Work Experience

- **University of Sherbrooke** — Sherbrooke, Qc
  Sessional Lecturer - Visual and digital interactions (IMN638) — *2014*
- **University of Sherbrooke** — Sherbrooke, Qc
  Teaching fellow - Digital media acquisition (IMN117) — *2011-2014*
- **Borealis www.boreal-is.com** — Magog, Qc
  R&D developer — *2010*
- **Canadian Space Agency www.asc-csa.gc.ca** — St-Hubert, Qc
  Web developer — *2008-2009*

Reviewing expertise

NeuroImage, Neuromage Clinical, Human Brain Mapping, PLoS One, Frontiers, Medical Image Analysis, Behavioral and brain functions, The Open Neuroimaging Journal, International Journal of Neural Systems, MICCAI 2015

International presentations

2017 Invited speaker, Prof: Rachid Deriche, Computational Brain Connectivity Mapping, Winter School Workshop, Juan-les-Pins, France.

2016 Invited speaker, Image Sciences Institute, Prof: Alexander Leemans, PROVIDIlab, UMC Utrecht, Netherlands.

2016 Invited speaker, CUBRIC Cardiff University Brain Research Imaging Centre, Prof: Derek Jones, Cardiff, UK.

2015 Invited speaker, CRL - Boston Children's Hospital (Harvard Medical School), Prof: Simon Warfield, Boston, USA.

2015 Invited speaker, Center for Brain Imaging, Prof: Fernando Boada, NYU, New York, USA.

2015 Invited speaker, Department of Mathematics and Computer Science, Prof: Luc Florack, TUe, Eindhoven, Netherlands.

2014 Invited speaker, Sophia-Antipolis (INRIA), Prof: Rachid Deriche, Nice, France.

2014 Neurotechnix conference, Oral presentation (Best student paper award), Rome, Italy.

2013 Sherbrooke/Boston meeting, Laboratory of Mathematics in Imaging (Harvard Medical School), Prof: C-F Westin, Boston, USA.

2013 Sherbrooke/Boston meeting, CRL - Boston Children's Hospital (Harvard Medical School), Prof: Simon Warfield, Boston, USA.

Visiting researcher

2016 Cardiff University Brain Research Center (CUBRIC) UK. Topic: Real-time connectomics. Supervisor: Derek. K. Jones, 2 months.

2015 Boston Children's Hospital, Harvard Medical school, Computational Radiology Lab. Topic: Surgical application of interactive tractography. Supervisors: Simon Warfield, Benoit Scherrer, 6 months.

2015 UMC - Utrecht (The Netherlands). Topic: Real-time orientation-dependent opacity rendering of fiber tractography. Supervisor: Alexander Leemans (PROVIDILab), 2 months.

Scholarships, awards and prizes

2018 BRAIN Travel award: Guarantors of Brain (1000$)

2018 ISMRM Educational stipend, Paris (475$)

2017 CRSNG Post-doctoral fellowship (90 000$ for 2 years, ranked 1st).

2017 UdeS Publication award: Sherbrooke Neuroscience Center (500$)

2016 UdeS Travel award: Sherbrooke Neuroscience Center (500$)

2016 QBIN Training abroad award: Quebec Bio-Imaging Network (4000$)

2016 FQRNT Publication award: Chercheurs étoiles (1000$)

2016 ISMRM Educational stipend, Singapore (475$)

2015 UdeS Publication award: Sherbrooke Neuroscience Center (500$)

2015 CRSNG Michael Smith Foreign Study Supplements Program (6000$)

2015 QBIN Travel award: Quebec Bio-Imaging Network (500$)

2015 UdeS Publication award: Sherbrooke Neuroscience Center (500$)

2015 UdeS Travel award: Sherbrooke Neuroscience Center (500$)

2015 ISMRM Educational stipend, Toronto, Canada. (460$).

2014 UdeS People's choice, 6th Sherbrooke Neuroscience Center day (500$)

2014 Neurotechnix Best student paper award: Rome, Italy.

2014 QBIN Travel award: Quebec Bio-Imaging Network (500$)

2014 CRSNG Ph.D scholarship: Alexander-Graham-Bell BESC-D (105 000$ for 3 years).

2014 FQRNT Ph.D scholarship: FQRNT (40 000$ for 2 years, kindly declined).

2013 UdeS Ph.D scholarship: FMSS (57 000$ for 3 years, kindly declined).

2013 UdeS Best student poster: CIMS (300$)

2013 ACFAS Best picture: Eurêka festival (1500$)

2013 UdeS Best picture: Research day (250$)

2013 NSF Science visualisation challenge: People's choice and mention from jury.

2012 UdeS Student work recognition: Travel award (750$)

2012 UdeS Travel award: Sherbrooke Neuroscience Center (500$)

2012 Neuro-bureau Brain-Art Competition: Winner of Educational Gallery.

Computer science expertise

Languages: C/C++, Python, OpenGL, GLSL, CUDA, R, ITK/VTK, Java, HTML, CSS, LaTeX, SPARC

IDE tools: Microsoft Visual Studio, Rstudio, Eclispe, CMake, Git, SVN

Softwares: Fibernavigator, Dipy, MRtrix, Slicer, MITK, FSL, ExploreDTI, Brainvisa/Anatomist, AFNI, ANTs, Freesurfer, MisterI, Matlab, Maple, Scilab, Camtasia, Unity3D (Game engine)

OS: Windows, Linux(Ubuntu, CentOS, Mint)

Projects

Fibernavigator (Main active developer): Open-source tool for visualization of dMRI and fMRI data. C++, OpenGL, GLSL. github.com/chamberm/fibernavigator/

Publications

Journals

- **Chamberland**, M., Tax, C. M., and Jones, D. K., Meyer's loop tractography for image-guided surgery depends on imaging protocol and hardware. , *NeuroImage: Clinical*, 20, 458-465, (2018).
- Schilling, K. G., Nath, V., Hansen, C., Parvathaneni, P., Blaber, J., Gao, Y., ... and Schiavi, S., Limits to anatomical accuracy of diffusion tractography using modern approaches., *NeuroImage*, 185, 1-11., (2019).
- Zhang, Z., M. Descoteaux, J. Zhang, G. Girard, M. Chamberland, D. Dunson, A. Srivastava, and H. Zhu., Mapping Population-based Structural Connectomes., *NeuroImage*, 172 (May): 130-145, 2018.
- Maier-Hein, Klaus H., Peter F. Neher, Jean-Christophe Houde, Marc-Alexandre Côté, Eleftherios Garyfallidis, Jidan Zhong, Maxime Chamberland et al., The challenge of mapping the human connectome based on diffusion tractography., *Nature communications* 8, no. 1 (2017): 1349
- **Chamberland M.**, Girard G., Bernier M., Fortin D., Descoteaux M., Whittingstall K., On the origin of individual functional connectivity variability: The role of white matter architecture, *Brain Connectivity* 2017.

- **Chamberland M.**, Scherrer B., Prabhu S., Madsen J., Whittingstall K., Fortin D., Descoteaux M., Warfield S.K., Improved delineation of Meyer's loop using oriented priors through MAGNEtic Tractography (MAGNET), *Human Brain Mapping* 2016.
- C.M.W. Tax, M. Chamberland, M. van Stralen, M.A. Viergever, K. Whittingstall, D. Fortin, M. Descoteaux, A. Leemans, Seeing more by showing less: Orientation-dependent transparency rendering for fiber tractography visualization, *PLoS One* 2015.
- **Chamberland M.**, Bernier M., Fortin D., Whittingstall K., Descoteaux M., 3D interactive tractography-informed resting-state fMRI connectivity, *Frontiers in Neuroscience* 2015.
- **Chamberland M.***, Bernier M.*, Houde JC., Descoteaux M., Whittingstall K., Using fMRI non-local means denoising to uncover activation in sub-cortical structures at 1.5 T for guided HARDI tractography, *Frontiers in Human Neuroscience* 2014.
- **Chamberland M.**, Fortin D., Mathieu D., Descoteaux M., Real-time HARDI tractography for instantaneous structural connectivity display, *Frontiers in Neuroinformatics* 2014.
- Coupé P., Manjon J., Chamberland M., Descoteaux M., Hiba B. Collaborative Patch-Based Super-Resolution for Diffusion-Weighted Images, *NeuroImage* 2013.

Conference proceedings

- **Chamberland M.**, Graw W., Descoteaux M., Jones D.K.,Interactive Computation and Visualization of Structural Connectomes in Real-Time, *MICCAI CNI Workshop*, September 2017.
- Girard G., Chamberland M., Houde J-C, Fortin D., Descoteaux M. Neurosurgical tracking at the Sherbrooke Connectivity Imaging Lab (SCIL), *MICCAI DTI-Challenge*, July 2012.

Book chapters

- Vaillancourt O., Chamberland M., Houde J-C., Descoteaux M., Visualization of Diffusion Propagator and Multiple Parameter Diffusion Signal, *Visualization and Processing of Tensors and Higher Order Descriptors for Multi-Valued Data*, Springer, 2015

Abstracts

- **Chamberland M.**, Derek K. Jones, "Enhancing bundle topology for tractography visualization using silhouette rendering", Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM), Paris, June 2018
- **Chamberland M.**, Descoteaux M., Derek K. Jones, "Advances in structural and functional connectivity visualization using the Fibernavigator", Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM), Paris, June 2018
- **Chamberland M.**, Tax M.W.C, Gray W., Derek K. Jones, "The neurosurgical implication of scanner, gradient performance and acquisition protocol on Meyer's loop reconstruction", Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM), Paris, June 2018
- **Chamberland M.**, Tax, C.M.W., Fortin D., Whittingstall K., Descoteaux M. Exploring geometrical sheet-like structures in real-time, , Lisbon, Portuga *In International Symposium on Magnetic Resonance in Medicine - Breaking the barriers of dMRI Workshop*, Lisbon, Portugal, 2016.
- **Chamberland M.**, Girard G., Bernier M., Fortin D., Descoteaux M., Whittingstall K. Reduced structural and functional inter-subject variability in the visuo-motor system *Proceedings of OHBM 2015*, Geneva, Switzerland, 2016.
- **Chamberland M.**, Scherrer B., Prabhu S., Madsen J., Whittingstall K., Fortin D., Descoteaux M., Warfield S.K. Magnetic ROIs enable improved tractography accuracy through oriented prior, *ISMRM*, Singapore 2016.
- **Chamberland M.**, Girard G., Bernier M., Fortin D., Descoteaux M., Whittingstall K. Association between structural and functional inter-subject variability of the motor and visual networks, *ISMRM*, Singapore 2016.

- Paquette, M., Girard G., Chamberland, M., Descoteaux, M., Noise in Diffusion Tractography Connectomes Is Not Additive, *ISMRM*, Singapore 2016.
- **Chamberland M.**, Bernier M., Fortin D., Descoteaux M., Whittingstall K. Tractography-driven resting-state fMRI for investigating inter-subject variability, *Proceedings of OHBM 2015*, Honolulu, Hawaii, 2015.
- **Chamberland M.**, Bernier M., Fortin D., Whittingstall K., Descoteaux M. Interactively computing and visualizing functional and structural brain connectivity in real-time, *ISMRM*, Toronto 2015.
- Bernier M., Chamberland M., Cunnane S., Whittingstall K., Subcortical structures in resting state fMRI: uncovering functional networks involving deep-brain structures using non-local means denoising at 1.5T, *ISMRM*, Toronto 2015.
- **Chamberland M.**, Descoteaux M., Whittingstall K., Fortin D. Simultaneously probing functional and structural brain connectivity in real-time: Fibernavigator: An interactive tool for brain visualization, *Neurotechnix*, Rome, Italy 2014.
- **Chamberland M.**, Bernier M., Fortin D., Descoteaux M., Whittingstall K. Uncovering a visuospatial network at rest, *Proceedings of OHBM 2014*, Hamburg, Germany, 2014.
- **Chamberland M.**, and Descoteaux M. Explore the brain white matter networks in real-time: Multi-sticks fiber tracking, *Proceeding of: International Society of Magnetic Resonance in Medicine (ISMRM)*. Salt Lake City, U.S, 2013.
- **Chamberland M.**, Fortin D., Descoteaux M. Real-Time Fiber Tractography: Interactive Parameter Tuning for Neurosurgical Interventions, In *Proceedings of OHBM 2012*, Beijing, China, June 2012.

Thesis

- **Chamberland M.**, Développement d?outils neuroinformatiques spécialisés pour améliorer l'analyse individuelle en médecine personnalisée, Ph.D thesis, 2017.
- **Chamberland M.**, Visualisation en imagerie par résonance magnétique de diffusion: Tractographie en temps réel des fibres de la matière blanche du cerveau, M.Sc. thesis, 2013.

Interests

Scientific visualisation, Medical imaging, Snowboard, Hockey.