Brian G. Booth, Ph.D.

Postdoctoral Researcher, imec - Vision Lab, University of Antwerp (CDE)
Universiteitsplein 1, Building N, B-2610 Antwerp, Belgium
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EXPERIENCE

Research Manager - Shape Modelling Group, 2018-present
imec-Vision Lab, Dept. of Physics, University of Antwerp

- Managing three PhD students and one postdoc in areas of shape modelling, statistical analysis, and machine learning.

Postdoctoral Researcher, 2016-2017
imec-Vision Lab, Dept. of Physics, University of Antwerp

- Research into computer-aided diagnosis of foot abnormalities as well as automated design and 3D printing of foot orthotic devices.

EDUCATION

Doctor of Philosophy (PhD), Computing Science
Simon Fraser University, Burnaby, BC, Canada
Awarded December 2015
Supervisor: Dr. Ghassan Hamarneh
Thesis Title: Diffusion MRI Analysis Techniques Inspired by the Preterm Infant Brain

Master of Science (MSc), Computing Science
University of Alberta, Edmonton, AB, Canada
Awarded June 2008
Supervisor: Dr. Xiaobo Li
Thesis Title: Focusing on the Medium: An Alternative Approach to Ultrasound Image Segmentation

Bachelor of Science (BSc), Computing Science - Industrial Internship Program
University of Alberta, Edmonton, AB, Canada
Industrial Internship Host: Red Hat (Toronto, Canada)
Awarded June 2005 with Distinction

JOURNAL ARTICLES

Brian G. Booth, Noël L.W. Keijsers, Jan Sijbers, Toon Huysmans. "An assessment of the information lost when applying data reduction techniques to dynamic plantar pressure measurements", Journal of Biomechanics, (in press), https://doi.org/10.1016/j.jbiomech.2019.02.008.

Colin J. Brown, Steven P. Miller, *Brian G. Booth*, Jill G. Zwicker, Ruth E. Grunau, Anne R. Synnes, Vann Chau, and Ghassan Hamarneh. "Predictive connectome subnetwork extraction with anatomical and connectivity priors", Computerized Medical Imaging and Graphics, Vol 71, 2019, pp. 67-78.

Brian G. Booth, Noël L.W. Keijsers, Jan Sijbers, Toon Huysmans. “STAPP: SpatioTemporal Analysis of Plantar Pressure Measurements using Statistical Parametric Mapping”, Gait & Posture, Vol 63, 2018, pp. 268-275.

Kristina Stanković, *Brian G. Booth*, Femke Danckaers, Fien Burg, Philippe Vermaelen, Saartje Duerinck, Jan Sijbers, Toon Huysmans. “Three-dimensional quantitative analysis of healthy foot shape: a proof of concept study”, Journal of Foot and Ankle Research, Vol 11, 2018.

Jeremy Kawahara, Colin J. Brown, Steven P. Miller, *Brian G. Booth*, Vann Chau, Ruth E. Grunau, Jill G. Zwicker, and Ghassan Hamarneh. “BrainNetCNN: Convolutional Neural Networks for Brain Networks; Towards Predicting Neurodevelopment”, NeuroImage, Vol. 146, 2017, pp. 1038-1049.

Brian G. Booth, Steven P. Miller, Colin J. Brown, Kenneth J. Poskitt, Vann Chau, Ruth E. Grunau, Anne R. Synnes, and Ghassan Hamarneh. “STEAM - Statistical Template Estimation for Abnormality Mapping: a Personalized DTI Analysis Technique with Applications to the Screening of Preterm Infants”, NeuroImage, Vol. 125, 2016, pp. 705-723.

Colin J. Brown, Steven P. Miller, *Brian G. Booth*, Shawn Andrews, Vann Chau, Kenneth J. Poskitt, and Ghassan Hamarneh. “Structural network analysis of brain development in young preterm neonates,” NeuroImage, Vol. 101, 2014, pp. 667-680.

BOOK CHAPTERS

Urs Ribary, Alex L. Mackay, Alexander Rauscher, Christine M. Tipper, Debbie Giaschi, Todd S. Woodward, Vesna Sossi, Sam M. Doesburg, Lawrence M. Ward, Anthony Herdman, Ghassan Hamarneh, *Brian G. Booth*, and Alexander Moiseev. “Emerging neuroimaging technologies: Towards future personalized diagnostics, prognosis, targeted intervention and ethical challenges,” In: Neuroethics: Anticipating the Future, J. Illes, S. Hossain, eds., Oxford University Press, pp. 15-53, 2017 (ISBN: 9780198786832).

Brian G. Booth and Ghassan Hamarneh. “Diffusion MRI for Brain Connectivity Mapping and Analysis (Chapter 7)”, In: MRI: Physics, Image Reconstruction, and Analysis, Angshul Majumdar, Rabab Kreidieh Ward, eds., CRC Press, pp. 137-171, 2015 (ISBN: 9781482298871).

Brian G. Booth and Ghassan Hamarneh. “Brain Connectivity Mapping and Analysis using Diffusion MRI (Chapter 19)”, In: Medical Imaging: Technology and Applications, Troy Farncombe, Krizysztof Iniewski, eds., CRC Press, pp. 529-563, 2013 (ISBN: 9781466582620).

SELECTED PEER-REVIEWED CONFERENCE PAPERS

Jeroen Van Houtte, Kristina Stankovic, *Brian G. Booth*, Femke Danckaers, Véronique Bertrand, Frederik Verstreken, Jan Sijbers and Toon Huysmans. “An Articulating Statistical Shape Model of the Human Hand”, in Proceedings of the 9th International Conference on Applied Human Factors and Ergonomics (AFHE), July 2018,
pp. 433-445.

Colin J. Brown, Kathleen P. Moriarty, Steven P. Miller, *Brian G. Booth*, Jill G. Zwicker, Ruth E. Grunau, Anne R. Synnes, Vann Chau, Ghassan Hamarneh. “Prediction of Brain Network Age and Factors of Delayed Maturation in Very Preterm Infants”, in Proceedings of Medical Image Computing and Computer-Assisted Intervention (MICCAI), October 2017, pp. 84-91.

Kristina Stanković, Femke Danckaers, *Brian G. Booth*, Fien Burg, Saartje Duerinck, Jan Sijbers, Toon Huysmans. “Foot Abnormality Mapping using Statistical Shape Modelling,” In Proceedings of 3D Body Scanning Technologies (3DBST), November 2016, pp. 70-79.

Colin J. Brown, Steven Miller, *Brian G. Booth*, Jill Zwicker, Ruth Grunau, Anne Synnes, Vann Chau, and Ghassan Hamarneh. “Predictive Subnetwork Extraction with Structural Priors for Infant Connectomes,” In Proceedings of Medical Image Computing and Computer-Assisted Intervention (MICCAI), October 2016, pp. 175-183 (**Shortlisted for Best Student Paper Award**).

Colin J. Brown, Steven P. Miller, *Brian G. Booth*, Kenneth J. Poskitt, Vann Chau, Anne R. Synnes, Jill G. Zwicker, Ruth E. Grunau, and Ghassan Hamarneh. “Prediction of Motor Function in Very Preterm Infants using Connectome Features and Local Synthetic Instances,” in Proceedings of Medical Image Computing and Computer-Assisted Intervention (MICCAI), October 2015, pp. 69-76 (**33% Acceptance Rate**).

Brian G. Booth and Ghassan Hamarneh. “DTI-DeformIt: Generating Ground-Truth Validation Data for Diffusion Tensor Images,” in Proceedings of 11th IEEE International Symposium on Biomedical Imaging (ISBI), May 2014, pp. 730-733.

Brian G. Booth and Ghassan Hamarneh. “A Cross-sectional Piecewise Constant Model for Segmenting Highly Curved Fiber Tracts in Diffusion MR Images,” in Proceedings of Medical Image Computing and Computer-Assisted Intervention (MICCAI), September 2013, pp. 469-476 (**32% Acceptance Rate**).

Colin J. Brown, *Brian G. Booth*, and Ghassan Hamarneh. "Uncertainty in Tractography via Tract Confidence Regions," in Proceedings of MICCAI Workshop on Computational Diffusion MRI (CDMRI), September 2013, pp. 13-22 (**Podium Presentation**).

Colin J. Brown, *Brian G. Booth*, and Ghassan Hamarneh. "K-Confidence: Assessing Uncertainty in Tractography using k Optimal Paths," in Proceedings of 10th IEEE International Symposium on Biomedical Imaging (ISBI), April 2013, pp. 250-253.

Brian G. Booth and Ghassan Hamarneh. "Multi-region Competitive Tractography via Graph-based Random Walks," in Proceedings of 11th IEEE Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA), January 2012, pp. 73-78 (**Podium Presentation**).

K. Krishna Nand, Rafeef Abugharbieh, *Brian G. Booth*, and Ghassan Hamarneh. "Detecting Structure in Diffusion Tensor MR Images," in Proceedings of Medical Image Computing and Computer-Assisted Intervention (MICCAI), September 2011, pp. 90-97 (**29% Acceptance Rate**).

Brian G. Booth and Ghassan Hamarneh. "Consistent Information Content Estimation for Diffusion Tensor MR Images," in Proceedings of 1st IEEE Conference on Healthcare Informatics, Imaging and Systems Biology (HISB), July 2011, pp. 166-173 (**Best Paper Award**).

Brian G. Booth and Ghassan Hamarneh. "Exact Integration of Diffusion Orientation Distribution Functions for Graph-based Diffusion MRI Analysis," in Proceedings of 8th IEEE International Symposium on Biomedical Imaging (ISBI), March 2011, pp. 935-938 (**Podium Presentation**).

INVITED TALKS

"Innovative Analysis Techniques of Pressure Data", presented at the InForMed Annual Meeting, January 2018.

"CAD WALK: Computer-Aided Diagnosis of Foot Problems using Metric Learning", presented at the EGAMI Annual Workshop, October, 2017.

"Spatio-temporal Analysis of Connectivity Patterns for White Matter Injury Detection in the Preterm Infant Brain", presented at Geometry for Anatomy Workshop, Banff International Research Station (BIRS), August, 2011.

SELECTED AWARDS AND HONORS

International Level:

- Marie Curie Individual Fellowship, 2016 (**15.4% success rate**)

National Level (Canada):

- IODE War Memorial Scholarship, 2012 (**5.5% success rate**).
- NSERC Postgraduate Scholarship - Doctoral, 2010 (27% success rate).
- Foreign Government Research Travel Award - France, 2010 (**one of only 3 awarded**).
- NSERC Postgraduate Scholarship - Masters, 2006 (30.7% success rate).

Provincial Level:

- Sir James Lougheed Award of Distinction, 2012.
- Pacific Century Graduate Scholarship, 2008.
- iCORE Graduate Student Award, 2006.
- Alberta Heritage Graduate Student Scholarship, 2006.

Institution Level:

- SFU Applied Sciences Teaching Assistant Excellence Award, 2015.
- SFU Graduate Fellowship, 2009 and 2011.
- SFU President's Research Stipend, 2011.
- SFU Special Graduate Entrance Scholarship, 2008.
- Walter H. Johns Graduate Fellowship, 2006.

TEACHING EXPERIENCE

Lecturer:

- Operating Systems (CMPT 300), Simon Fraser University, Fall 2015.

Teaching Assistant (i.e. lab instruction and marking):

- Digital Signal and Image Processing (2001WETDSB), University of Antwerp, Spring 2017.
- Introduction to Computer Design (CMPT 150), Simon Fraser University, Spring 2015.
- Introduction to Computer Design (CMPT 150), Simon Fraser University, Fall 2014.
- Scientific Computer Programming (CMPT 102), Simon Fraser University, Fall 2014.
- Technical Writing & Group Dynamics (CMPT 376W), Simon Fraser University, Spring 2014.

- Operating Systems (CMPT 300), Simon Fraser University, Fall 2008.
- Reinforcement Learning (CMPUT 499/609), University of Alberta, Winter 2007.
- Reinforcement Learning (CMPUT 499/609), University of Alberta, Winter 2006.
- Practical Programming Methodology (CMPUT 201), University of Alberta, Fall 2005.

SUPERVISORY EXPERIENCE

Postdoctoral Researchers:

- Kenan Niu, imec-Vision Lab, Department of Physics, University of Antwerp (2018-2019).

Graduate Students:

- Jeroen Van Houtte, Ph.D. Student, imec-Vision Lab, Department of Physics, University of Antwerp (2018-present).
- Kristina Stanković, Ph.D. Student, imec-Vision Lab, Department of Physics, University of Antwerp (2016-present).
- Bebart Janbek, Ph.D. Student, Department of Mathematics, Simon Fraser University (2013-2018).
- Colin J. Brown, Ph.D. Student, School of Computing Science, Simon Fraser University (2012-2018).
- K. Krishna Nand, M.Sc. Student, Department of Electrical & Computer Engineering, University of British Columbia (2010-2012).

Undergraduate Students:

- Leif Stroman, B.Sc. Student, School of Computing Science, Simon Fraser University (2012-2013).
- Ryan Neighbour, B.Sc. Student, Department of Computing Science, University of Alberta (2006).

REVIEWER EXPERIENCE

Reviewer for International Journals:

- Cerebral Cortex (2018-present).
- International Biomechanics (2018-present).
- Medical Physics (2017-present).
- Computers in Biology and Medicine (2017-present).
- Journal of Magnetic Resonance Imaging (2017-present).
- Brain Imaging and Behaviour (2016-present).
- IEEE Transactions on Image Processing (2016-present).
- Computational and Mathematical Methods in Medicine (2016-present).
- International Journal of Computer Assisted Radiology and Surgery (2016-present).
- Applied Sciences (2016-present).

Reviewer for International Conferences:

- IEEE International Symposium on Biomedical Imaging (ISBI), (2015-present).

Reviewer for Grant Applications:

- The Wellcome trust/DBT India Alliance Fellowship (2018).