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as of January 2018

Daniel Jon Peterson

Work

Apr 2015-Ongoing: Research Scientist/Engineer, University of Washington
- Created and maintained publicly available data processing pipelines for medical image processing, including a process that generates files for creating 3D printed model brains.
- Extracted biological meaning from diverse data sets using advanced regression models, permutation statistics, graph theory, and machine learning techniques.
- Worked directly with people from challenging populations, such as temporal lobe epilepsy patients, people with advanced neurodegenerative disease, and patients currently on hospice (~6 months life expectancy).
- Utilized software containerization, cloud computing, and distributed version control in an academic setting.

Nov 2006-Aug 2010,Jan 2012-Apr 2015: Research Assistant, The Kennedy Krieger Institute
- Worked with Diffusion Tensor Imaging (DTI) processing and analysis for a learning disabilities research center, helped collect fMRI, DTI and structural MRI data on children.
- Designed and implemented data processing and analysis workflows for DTI data.
- Authored scientific publications on the neurobiological basis of developmental disorders, including Autism, ADHD, Dyslexia, and Neurofibromatosis-1.
- Assisted in writing grants, to both federal and private funding sources.

Aug 2010-Jan 2012: Graduate Research, Johns Hopkins University
- Trained in the theory and practice of developing novel biomolecular NMR experiments, including pulse programming, quantum mechanics, and protein thermodynamics.

Education

Doctoral Student in Chemistry, Johns Hopkins University, Baltimore, MD
- Scored in the 99th percentile among incoming graduate students on the American Chemical Society (ACS) physical chemistry placement exam.
- Completed all relevant coursework (degree not completed).

BA in chemistry, Lewis & Clark College, Portland, OR
- Participated twice in the Rogers summer undergraduate research fellowship.
- Study abroad: received "Diplome d'Études Français" from Université Louis Pasteur in Strasbourg, France
- Helped develop a novel solution-state NMR experiment that was presented at the 47th ENC conference, and published in the Journal of Magnetic Resonance in Chemistry.

High School Diploma, Sammamish High, Bellevue, WA
- Received a Score of 5 on AP tests of chemistry, calculus BC, physics and computer science

Skills

programming languages: MATLAB, Mathematica, Java, bash, R, Python
other systems and tools: AWS, docker, sun grid engine, R tidyverse, github

Publications

Journal Articles

Madhyastha TM, Koh N, McAllister-Day TK, Hernández-Fernández M, Kelley A, Peterson DJ, Rajan S, Woelfer KA, Wolf J, Grabowski TJ. (in press, November 2017) Running neuroimaging applications on Amazon Web Services: How, when, and at what cost?. Frontiers in neuroinformatics.

Peterson D. (2017). Streamlining the process of 3d printing a brain from a structural MRI. Research Ideas and Outcomes, 3, e13394.

Rutman A, Peterson DJ, Cohen WA, Mossa-Basha M. (2017) Diffusion Tensor Imaging of the Spinal Cord: Clinical Value, Investigational Applications, and Technical Limitations. Current Problems in Diagnostic Radiology

Peterson DJ, Rutman A, Hippe DS, Jarvik JG, Chokshi FH, Reyes MR, Bombardier CH, Mossa-Basha M. (2017) Test-Retest and Inter-Reader Reproducibility of Semi-Automated Atlas-Based Analysis of Diffusion Tensor Imaging Data in Acute Cervical Spine Trauma in Adult Patients, American Journal of Neuroradiology. 38 (10), 2015-2020

Wang S, Peterson DJ, Wang Y, Wang Q,Grabowski TJ, Li W, Madhyastha TM. (2017) Empirical Comparison of Diffusion Kurtosis Imaging and Diffusion Basis Spectrum Imaging Using the Same Acquisition in Healthy Young Adults. Frontiers in Neurology. 2017;8:118. doi:10.3389/fneur.2017.00118.

Wang S, Peterson DJ, Gatenby JC, Li W, Grabowski TJ, Madhyastha TM. (2017) Evaluation of Field Map and Nonlinear Registration Methods for Correction of Susceptibility Artifacts in Diffusion MRI. Frontiers in Neuroinformatics. 2017;11:17. doi:10.3389/fninf.2017.00017.

Askren MK, McAllister-Day TK, Koh N, Mestre Z, Dines JN, Korman BA, Melhorn SJ, Peterson DJ, Peverill M, Rane SD, Reilly MA, Reiter MA, Sambrook KA, Woelfer KA, Qin X, Grabowski T, Madhyastha T. (2016) Using Make for Reproducible and Parallel Neuroimaging Workflow and Quality Assurance. Fronteirs in Neuroinformatics, 10(2), 1-16

Jacobson LA, Peterson DJ, Rosch KS, Crocetti D, Mori S, & Mostofsky SH. (2015). Sex-Based Dissociation of White Matter Microstructure in Children With Attention-Deficit/Hyperactivity Disorder.Journal of the American Academy of Child & Adolescent Psychiatry, 54(11), 938-946.

Peterson D*, Mahajan R*, Crocetti D, Mejia A, Mostofsky S. (2015). Left-Hemispheric Microstructural Abnormalities in Children With High-Functioning Autism Spectrum Disorder. Autism Research, 8(1), 61-72. (* indicates equal contribution)

Dancy BM, Crump NT, Peterson DJ, Mukherjee C, Bowers EM, Ahn YH, ... & Cole PA. (2012). Live-Cell Studies of p300/CBP Histone Acetyltransferase Activity and Inhibition. Chembiochem, 13(14), 2113-2121.
→ This article was featured on the cover of the Sep. 2012 issue of Chembiochem

Peterson DJ, Ryan M, Rimrodt SL, Cutting LE, Denckla MB, Kaufmann WE, & Mahone EM. (2011). Increased regional fractional anisotropy in highly screened attention-deficit hyperactivity disorder (ADHD). Journal of child neurology, 26(10), 1296-1302..
→ These findings were presented as part of a lecture at the Johns Hopkins dept. of Neurology grand rounds

Rimrodt SL, Peterson DJ, Denckla MB, Kaufmann WE, & Cutting LE. (2010). White matter microstructural differences linked to left perisylvian language network in children with dyslexia. Cortex, 46(6), 739-749.
→ The results presented here were the subject of a press release issued by the editor of Cortex

Peterson DJ, Loening NM. (2007) QQ-HSQC: a quick, quantitative heteronuclear correlation experiment for NMR spectroscopy. Magn. Reson. Chem. 45(11):937-41.

Publication Metrics:

Total peer-reviewed - 13 First-author or shared - 5 Total citations - 280 H-index - 7

Conference Proceedings

Peterson D, Koh N, Askren M, Gatenby C, Madhyastha T, Grabowski T. (June 2017) Profiles of White Matter Microstructure in a Population- Based Cohort of Elderly Patients. Annual meeting of the Organization for Human Brain Mapping (OHBM) in Vancouver, Canada. https://doi.org/10.6084/m9.figshare.5208082.v1

Peterson D, Wang S, Wang Y, Grabowski T, Li W, Madhyastha T. (June 2017) Comparison of Diffusion Kurtosis Imaging to Diffusion Basis Spectrum Imaging in Healthy Young Adults. Annual meeting of the Organization for Human Brain Mapping (OHBM) in Vancouver, Canada. https://doi.org/10.6084/m9.figshare.5208064.v2

Peterson DJ, Hippe DS, Rutman AM, Wilson AE, Jarvik J, Cohen WA, Chokshi F, Mossa-Basha M. (February 2017) Test-Retest and Inter-Reader Reliability of Semi-Automated Atlas-Based Analysis of Diffusion Tensor Imaging Data in Acute Cervical Spinal Cord Injury in Adult Patients, Annual Symposium of the American Society for Spine Radiology (ASSR) in San Diego, California
→Recognized as Best Paper in the Diagnostic Spine category

Rutman AM, Peterson D, Cohen W, Mossa-Basha M. (December 2015) Diffusion Tensor Imaging of the Spinal Cord. An Educational exhibit presented at the 101st Scientific Assembly and Annual Meeting of the Radiological Society of North America in Chicago, Illinois.
→This exhibit received the Cum Laude award

Peterson D, Jacobson L, Crocetti D, Rosch K, Mostofsky S. (June 2014) Premotor white matter integrity is associated with response control in boys, but not girls with ADHD. Annual meeting of the Organization for Human Brain Mapping (OHBM) in Hamburg, Germany.

Peterson D, Caffo B, Mostofsky S. (June 2013) Anomalous Anatomical Connectivity Networks in Children with Autism Spectrum Disorder. Annual meeting of the Organization for Human Brain Mapping (OHBM) in Hamburg, Germany.

Mahone EM, Peterson D, Crocetti D, Slifer K, Denckla MB, Mostofsky SH. (June 2013) Abnormal White Matter Diffusivity in Preschool-Age Children with ADHD. 4th World Congress on ADHD in Milan, Italy.

Peterson D, Crocetti D, Belkaya N, Mostofsky S. (October 2012) Left-Hemisphere Microstructural Abnormalities in Autism Spectrum Disorder. Annual meeting of the Society For Neuroscience (SFN) in New Orleans, Louisiana.

Peterson D, Ryan M, Richardson M, Rimrodt SL, Cutting LE, Mahone EM. (2009, February) Diffusion Tensor Imaging of Children with Attention-Deficit-Hyperactivity Disorder. Annual meeting of the International Neuropsychological Society, Atlanta, GA.

Peterson DJ, Landman BA, Gaur P, Cutting LE, (2008, May) The Impact of Robust Diffusion Tensor Estimation on Voxel-Wise Analysis of DTI Data. Annual meeting of the International Society for Magnetic Resonance in Medicine, Toronto, ON.

Peterson DJ, Gaur P, Rimrodt S. Cutting LE, Denckla M, (2008, July) Diffusion Tensor Imaging of Children with Reading Disability. Annual meeting of the Society for the Scientific Study of Reading, Asheville, NC

Peterson DJ, Gaur P, Rimrodt SL, Cutting LE. (2008, November) Diffusion Tensor Imaging in children with Neurofibromatosis Type 1 and Reading Disability. Annual meeting of the Child Neurology Society, Santa Clara, CA.

Suskauer SJ, Satorio CF, Peterson DJ, Mostofsky SH, Christensen JR. (2007, November) Neuroanatomical and Neurocognitive Differences in a Pair of Twins Concordant for Traumatic Brain Injury. New Frontiers in Pediatric Traumatic Brain Injury Conference, San Diego, CA.

Peterson DJ, Loening NM. (2006, April) QQ-HSQC: A Quick Quantitative Heteronuclear Correlation Experiment. Experimental Nuclear Magnetic Resonance Conference, Pacific Grove, CA