**CURRICULUM VITAE**

John Muschelli III

**PERSONAL DATA**

Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health. 615 North Wolfe Street, Baltimore, MD 21205-2179.

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**EDUCATION AND TRAINING**

2012–2016 **PhD**, *Biostatistics*,

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

2008–2010 **ScM**, *Biostatistics*,

Johns Hopkins Bloomberg School of Public Health, Baltimore, MD.

2004–2008 **BS**, *Biomathematics and Neuroscience*,

The University of Scranton, Scranton, PA

**PROFESSIONAL EXPERIENCE**

2016–Present **Assistant Scientist**, Department of Biostatistics, Johns Hopkins Bloomberg

School of Public Health.

2012–2016 **Trainee**, *T32AG021334: Epidemiology and Biostatistics of Aging Training*

*Grant*, Mentors: Dr. Michelle Carlson, Dr. Ravi Varadhan.

2009–2016 **Research Associate**, *Johns Hopkins Biostatistics Consulting Center*, Baltimore,

MD. Collaborated on statistical projects with senior consultants. Weekly consulting

for student research projects. Report writing and analyzing data using statistical

software: R, Stata.

2009–2014 **Data Analyst / Data Manager**, *Brain Injury Outcomes Division*, Baltimore,

MD. Decreased turnaround time on data safety report (from weeks to hours) by using

knitr, LaTeX, and dynamic documents. Created a standardized database and processing pipeline for CT images. Analyzed phase II and III trials for treatment of intracerebral hemorrhage. Data management and consultation of electronic case report form (eCRF) creation.

2010–2012 **Data Analyst**, *Laboratory for Neurocognitive and Imaging Research at*

*Kennedy Krieger Institute*, Baltimore, MD. Reduced manual steps in complex

imaging study analysis using automation from programming. Analysis of functional MRI (fMRI) imaging studies using Statistical Parametric Mapping. Programming consultant: Matlab & R.

**PROFESSIONAL ACTIVITIES**

**EDITORIAL ACTIVITIES**

*Peer Review Activities*

*Ad Hoc Review of Proposals*

* *Spirit grant*

**PUBLICATIONS**

*Books*

Crainiceanu, C., Caffo, B., Muschelli, J., (Apr. 2018). Methods in Biostatistics with R: A Rigorous and Practical Treatment of Biostatistics Foundations using R. Leanpub. URL: <https://leanpub.com/biostatmethods>.

*Journal Articles*

\* denotes authors contributed equally

1. Ding, T, Cohen, A., O’Connor, E., Karim, H., Crainiceanu, A, **Muschelli, J**, Lopez, O, Klunk, W., Aizenstein, H., Krafty, R, (2020). “An improved algorithm of white matter hyperintensity detection in elderly adults”. *NeuroImage: Clinical* 25, p. 102151.
2. Hansen, B. M., Ullman, N., **Muschelli, J.**, Norrving, B., Dlugash, R., Avadhani, R., Awad, I., Zuccarello, M., Ziai, W. C., Hanley, D. F., (2020). “Relationship of white matter lesions with intracerebral hemorrhage expansion and functional outcome: MISTIE II and CLEAR III”. Neurocritical Care, pp. 1–9. DOI: 10.1007/s12028-020-00916-4.
3. Rothstein, J. D., Caulfield, L. E., Broaddus­Shea, E. T., **Muschelli, J.**, Gilman, R. H., Winch, P. J., (2020). “‘The doctor said formula would help me’: health sector influences on use of infant formula in peri­urban Lima, Peru”. *Social Science & Medicine* 244.C.
4. Valcarcel, A. M., **Muschelli, J.**, Pham, D. L., Martin, M. L., Yushkevich, P., Brandstadter, R., Schindler, M. K., Patterson, K. R., Calabresi, P. A., Bakshi, R., Shinohara, R. T., (2020). “TAPAS: a thresholding approach for probability map automatic segmentation in multiple sclerosis”. *NeuroImage: Clinical*.
5. **Muschelli, J.** (2019b). “ROC and AUC with a binary predictor: a potentially misleading metric”. *Journal of Classification*, pp. 1–13.
6. **Muschelli, J.** (2019a). “Recommendations for processing head CT data”. *Frontiers in Neuroinformatics* 13, p. 61. ISSN: 1662­5196. DOI: 10.3389/fninf.2019.00061. URL: <https://www.frontiersin.org/article/10.3389/fninf.2019.00061>.
7. Hadavand, A., **Muschelli, J.**, Leek, J., (2019). “Analysis of student behavior using the R package crsra”. *Journal of Learning Analytics* 6.2, pp. 140–152.
8. Ryan, S. M., Vestal, B., Maier, L. A., Carlson, N. E., **Muschelli, J.,** (2019). “Template creation for high­resolution computed tomography scans of the lung in R software”. *Academic Radiology*.
9. **Muschelli, J.**, Sweeney, E., Crainiceanu, C. M., (2018). “freesurfer: connecting the Freesurfer software with R”. *F1000Research* 7.
10. **Muschelli, J**., Gherman, A., Fortin, J.­P., Avants, B., Whitcher, B., Clayden, J. D., Caffo, B. S., Crainiceanu, C. M., (2018). "Neuroconductor: an R platform for medical imaging analysis". Biostatistics, kxx068. DOI: 10.1093/biostatistics/kxx068.
11. Commowick, O., Istace, A., Kain, M., Laurent, B., Leray, F., Simon, M., Pop, S. C., Girard, P., Ameli, R., Ferré, J.­C., Kerbrat, A., Tourdias, T., Cervenansky, F., Glatard, T., Beaumont, J., Doyle, S., Forbes, F., Knight, J., Khademi, A., Mahbod, A., Wang, C., Mckinley, R., Wagner, F., **Muschelli, J.**, Sweeney, E., Roura, E., Lladó, X., Santos, M. M., Santos, W. P., Silva­Filho, A. G., Tomas­Fernandez, X., Urien, H., Bloch, I., Valverde, S., Cabezas, M., Vera­Olmos, F. J., Malpica, N., Guttmann, C., Vukusic, S., Edan, G., Dojat, M., Styner, M., Warfield, S. K., Cotton, F., Barillot, C., (2018). “Objective evaluation of multiple sclerosis lesion segmentation using a data management and processing infrastructure”. *Scientific Reports*.
12. Smith, C. H., Turbitt, E., **Muschelli, J.**, Leonard, L., Lewis, K. L., Freedman, B., Muratori, M., Biesecker, B. B., (2018). “Feasibility of coping effectiveness training for caregivers of children with autism spectrum disorder: a genetic counseling intervention”. *Journal of genetic counseling* 27.1, pp. 252–262.
13. Valcarcel, A., **Muschelli, J**, Crainiceanu, C, Pham, D., Calabresi, P., Bakshi, R, Shinohara, R., (2018c). “TAPAS: threshold adjustment to probability map automatic segmentations”. *MULTIPLE SCLEROSIS JOURNAL*. Vol. 24, pp. 629–630.
14. Valcarcel, A. M., Linn, K. A., Vandekar, S. N., Satterthwaite, T. D., **Muschelli, J.**, Calabresi, P. A., Pham, D. L., Martin, M. L., Shinohara, R. T., (2018b). “MIMoSA: an automated method for intermodal segmentation analysis of multiple sclerosis brain lesions”. *Journal of Neuroimaging*.
15. Valcarcel, A. M., Linn, K. A., Khalid, F., Vandekar, S. N., Tauhid, S., Satterthwaite,T. D., **Muschelli, J.**, Bakshi, R., Shinohara, R. T., (2018a). “MIMoSA: an approach to automatically segment T2 hyperintense and T1 hypointense lesions in multiple sclerosis”. *International MICCAI Brainlesion Workshop*, pp. 47–56.
16. **Muschelli, J.**, Sweeney, E. M., Ullman, N. L., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2017). “PItcHPERFeCT: primary intracranial hemorrhage probability estimation using random forests on CT”. *NeuroImage: Clinical* 14, pp. 379 –390. ISSN: 2213­1582. DOI: http://dx.doi.org/10.1016/j.nicl.2017.02.007. URL: <http://www.sciencedirect.com/science/article/pii/S2213158217300414>.
17. Hanley, D. F., Lane, K., McBee, N., Ziai, W., Tuhrim, S., Lees, K. R., Dawson, J., Gandhi, D., Ullman, N., Mould, W. A., Mayo, S. W., Mendelow, A. D., Gregson, B., Butcher, K., Vespa, P., Wright, D. W., Kase, C. S., Carhuapoma, J. R., Keyl, P. M., Diener­West, M., **Muschelli, J.**, Betz, J. F., Thompson, C. B., Sugar, E. A., Yenokyan, G., Janis, S., John, S., Harnof, S., Lopez, G. A., Aldrich, E. F., Harrigan, M. R., Ansari, S., Jallo, J., Caron, J.­L., LeDoux, D., Adeoye, O., Zuccarello, M., Adams, H. P., Rosenblum, M., Thompson, R. E., Awad, I. A., (2017). “Thrombolytic removal of intraventricular haemorrhage in treatment of severe stroke: results of the randomised, multicentre, multiregion, placebo­controlled CLEAR III trial”. *The Lancet* 389.10069, pp. 603–611.
18. Kickingereder, P., Neuberger, U., Bonekamp, D., Piechotta, P., Götz, M., Wick, A., Sill, M., Kratz, A., Shinohara, R., Jones, D., Radbruch, A., **Muschelli, J.**, Unterberg, A., Debus, J., Schlemmer, H.­P., Herold­Mende, C., Pfister, S., von Deimling, A., Wick, W., Capper, D., Maier­Hein, K., Bendszus, M., (2017). “Radiomic subtyping improves disease stratification beyond key molecular, clinical and standard imaging characteristics in patients with glioblastoma.” *Neuro­Oncology*.
19. Maier, O., Menze, B., von der Gablentz, J., Häni, L., Heinrich, M., Liebrand, M., Winzeck, S., Basit, A., Bentley, P., Chen, L., Christiaens, D., Dutil, F., Egger, K., Feng, C., Glocker, B., Götz, M., Haeck, T., Halme, H.­L., Havaei, M., Iftekharuddin, K., Jodoin, P.­M., Kamnitsas, K., Kellner, E., Korvenoja, A., Larochelle, H., Ledig, C., Lee, J.­H., Maes, F., Mahmood, Q., Maier­Hein, K., McKinley, R., **Muschelli,J.**, Pal, C., Pei, L., Rangarajan, J., Reza, S., Robben, D., Rueckert, D., Salli, E., Suetens, P., Wang, C.­W., Wilms, M., Kirschke, J., Krämer, U., Münte, T., Schramm, P., Wiest, R., Handels, H., Reyes, M., (2017). “ISLES 2015 ­ a public evaluation benchmark for ischemic stroke lesion segmentation from multispectral MRI”. *Medical Image Analysis* p 35.
20. Bundy, D. G., **Muschelli, J.**, Clemens, G. D., Strouse, J. J., Thompson, R. E., Casella, J. F., Miller, M. R., (2016). “Preventive care delivery to young children with sickle cell disease”. *Journal of pediatric hematology/oncology* 38.4, pp. 294–300.
21. Fortin, J.­P., Sweeney, E. M., **Muschelli, J.**, Crainiceanu, C. M., Shinohara, R. T., Initiative, A. D. N., (2016). “Removing inter­subject technical variability in magnetic resonance imaging studies”. *NeuroImage* 132, pp. 198–212.
22. Hanley, D. F., Thompson, R. E., **Muschelli, J.**, Rosenblum, M., McBee, N., Lane, K., Bistran­Hall, A. J., Mayo, S. W., Keyl, P., Gandhi, D., Morgan, T. C., Ullman, N., Mould, W. A., Carhuapoma, J. R., Kase, C., Ziai, W., Thompson, C. B., Yenokyan, G., Huang, E., Broaddus, W. C., Graham, R. S., Aldrich, E. F., Dodd, R., Wijman, C., Caron, J.­L., Huang, J., Camarata, P., Mendelow, A. D., Gregson, B., Janis, S., Vespa, P., Martin, N., Awad, I., Zuccarello, M., (2016). “Safety and efficacy of minimally invasive surgery plus alteplase in intracerebral haemorrhage evacuation (MISTIE): a randomised, controlled, open­label, phase 2 trial”. *The Lancet Neurology* 15.12, pp. 1228–1237.
23. Kickingereder, P, Götz, M, **Muschelli, J**, Wick, A, Neuberger, U, Shinohara, R, Radbruch, A, Schlemmer, H, Wick, W, Bendszus, M, Maier­Hein, K, Bonekamp, D, (2016). “Large­scale radiomic profiling of glioblastoma identifies an imaging signature for predicting and stratifying antiangiogenic treatment response”. *RöFo­Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren*. Vol. 188. S 01, WISS301\_1.
24. Sweeney, E. M., Shinohara, R. T., Dewey, B. E., Schindler, M. K., **Muschelli, J.**, Reich, D. S., Crainiceanu, C. M., Eloyan, A., (2016). “Relating multi­sequence longitudinal intensity profiles and clinical covariates in incident multiple sclerosis lesions”. *NeuroImage: Clinical* 10, pp. 1–17.
25. **Muschelli, J.**, Ullman, N. L., Mould, W. A., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2015b). “Validated automatic brain extraction of head CT images”. *NeuroImage* 114, pp. 379–385.
26. **Muschelli, J.**, Sweeney, E., Lindquist, M., Crainiceanu, C., (2015a). “fslr: connecting the FSL software with R”. *R Journal* 7.1, pp. 163–175.
27. **Muschelli, J.**, Ullman, N. L., Sweeney, E. M., Eloyan, A., Martin, N., Vespa, P., Hanley, D. F., Crainiceanu, C. M., (2015c). “Quantitative intracerebral hemorrhage localization”. *Stroke* 46.11, pp. 3270–3273.
28. Choe, A. S., Jones, C. K., Joel, S. E., **Muschelli, J.**, Belegu, V., Caffo, B. S., Lindquist, A., van Zijl, P. C., Pekar, J. J., (2015). “Reproducibility and temporal structure in weekly resting­state fMRI over a period of 3.5 years”. *PloS one* 10.10, e0140134.
29. Webb, A. J., Ullman, N. L., Morgan, T. C., **Muschelli, J.**, Kornbluth, J., Awad, I. A., Mayo, S., Rosenblum, M., Ziai, W., Aldrich, Zuccarrello, F. M., John, S., Harnof, S., Lopez, G., Broaddus, W. C., Wijman, C., Vespa, P., Bullock, R., Haines, S. J., Cruz­Flores, S., Tuhrim, S., Hill, M. D., Narayan, R., Hanley, D. F., (2015). “Accuracy of the ABC/2 score for intracerebral hemorrhage systematic review and analysis of MISTIE, CLEAR­IVH, and CLEAR III”. *Stroke* 46.9, pp. 2470–2476.
30. **Muschelli, J.**, Sweeney, E., Crainiceanu, C., (2014). “brainR: interactive 3 and 4D images of high resolution neuroimage data”. *R Journal* 6.1, pp. 41–48.
31. **Muschelli, J.**, Betz, J., Varadhan, R., (2014). “Binomial regression in R”. *Handbook of Statistics: Computational Statistics with R* 32, pp. 257–309.
32. **Muschelli\*, J.**, Nebel\*, M. B., Caffo, B. S., Barber, A. D., Pekar, J. J., Mostofsky, S. H., (2014). “Reduction of motion­related artifacts in resting state fMRI using aCompCor”. *NeuroImage* 96, pp. 22–35.
33. Eloyan, A., Li, S., **Muschelli, J.**, Pekar, J. J., Mostofsky, S. H., Caffo, B. S., (2014). “Analytic programming with fMRI data: a quick­start guide for statisticians using R”. *PLOS ONE* 9.2, e89470.
34. Nebel, M. B., Joel, S. E., **Muschelli, J.**, Barber, A. D., Caffo, B. S., Pekar, J. J., Mostofsky, S. H., (2014). “Disruption of functional organization within the primary motor cortex in children with autism”. *Human Brain Mapping* 35.2, pp. 567–580.
35. Mould, W. A., Carhuapoma, J. R., **Muschelli, J.**, Lane, K., Morgan, T. C., McBee, N., Bistran­Hall, A. J., Ullman, N. L., Vespa, P., Martin, N. A., Awad, I., Zuccarello, M., Hanley, D. F., (2013a). “Minimally invasive surgery plus recombinant tissue­type plasminogen activator for intracerebral hemorrhage evacuation decreases perihematomal edema”. *Stroke* 44.3, pp. 627–634.
36. Mould, W., Carhuapoma, J., **Muschelli, J**, Lane, K, Morgan, T., McBee, N., Bistran­Hall, A., Ullman, N., Vespa, P, Martin, N., Awad, I., Zuccarello, M., Hanley, D. F., (2013b). “MISTIE investigators: minimally invasive surgery plus recombinant tissue­ type plasminogen activator for intracerebral hemorrhage evacuation decreases peri­hematomal edema”. *Stroke* 44.3, pp. 627–634.
37. Bundy, D. G., **Muschelli, J.**, Clemens, G. D., Strouse, J. J., Thompson, R. E., Casella, J. F., Miller, M. R., (2012). “Ambulatory care connections of medicaid­insured children with sickle cell disease”. *Pediatric Blood & Cancer* 59.5, pp. 888–894.
38. Eloyan, A., **Muschelli, J.**, Nebel, M. B., Liu, H., Han, F., Zhao, T., Barber, A. D., Joel, S., Pekar, J. J., Mostofsky, S. H., (2012). “Automated diagnoses of attention deficit hyperactive disorder using magnetic resonance imaging”. *Frontiers in Systems Neuroscience* 6, p. 6.
39. Hinson, H. E., Melnychuk, E., **Muschelli, J.**, Hanley, D. F., Awad, I. A., Ziai, W. C., (2012). “Drainage efficiency with dual versus single catheters in severe intraventricular hemorrhage”. *Neurocritical Care* 16.3, pp. 399–405.
40. Jaffe, J., Melnychuk, E., **Muschelli, J.**, Ziai, W., Morgan, T., Hanley, D. F., Awad, I. A., (2012). “Ventricular catheter location and the clearance of intraventricular hemorrhage”. *Neurosurgery* 70.5, pp. 1258–1264.
41. Webb, A. J., Ullman, N. L., Mann, S., **Muschelli, J.**, Awad, I. A., Hanley, D. F., (2012). “Resolution of intraventricular hemorrhage varies by ventricular region and dose of intraventricular thrombolytic the clot lysis: evaluating accelerated resolution of IVH (CLEAR IVH) program”. *Stroke* 43.6, pp. 1666–1668.
42. Ziai, W. C., **Muschelli, J.**, Thompson, C. B., Keyl, P. M., Lane, K., Shao, S., Hanley, D. F., (2012). “Factors affecting clot lysis rates in patients with spontaneous intraventricular hemorrhage”. *Stroke* 43.5, pp. 1234–1239.
43. Newell, D. W., Shah, M. M., Wilcox, R., Hansmann, D. R., Melnychuk, E., **Muschelli, J.**, Hanley, D. F., (2011). “Minimally invasive evacuation of spontaneous intracerebral hemorrhage using sonothrombolysis”. *Journal of Neurosurgery* 115.3, pp. 592–601.
44. Niedner, M. F., Huskins, W. C., Colantuoni, E., **Muschelli, J.**, Harris, J. M., Rice, T. B., Brilli, R. J., Miller, M. R., (2011). “Epidemiology of central line­associated bloodstream infections in the pediatric intensive care unit”. *Infection Control* 32.12, pp. 1200–1208.

***Articles and Editorials not peer reviewed***

1. Sharrock, M., Mould, W. A., Ali, H., Hildreth, M., Hanley, D. F., Muschelli, J., (2020). “3D deep neural network segmentation of intracerebral hemorrhage: development and validation for clinical trials”. medRxiv (under review).
2. Leroux, A., Xu, S., Kundu, P., Muschelli, J., Smirnova, E., Chatterjee, N., Crainiceanu, C. (2020). “Quantifying the Predictive Performance of Objectively Measured Physical Activity on Mortality in the UK Biobank” (submitted).

*Other*

**The Corresponding Author: An Academic Data Science Podcast**, *John Muschelli and Stephanie Hicks*, https://soundcloud.com/the­corresponding­author, Approximately 250 listeners.

**CURRICULUM VITAE**

John Muschelli III

Part II

**TEACHING**

*Advisees*

2018–2020 **Joseph Catallini**, *ScM*, Research Advisor.

2018-2020 **Sarah Ryan**, *(UC Denver) PhD*, Final Oral Reader. Summer Internship

Advisor (2018).

2020 **Jingran Zhu**, *ScM*, Academic Advisor.

2020 **Elizabeth Du**, *MPH*, Academic Advisor.

2018 **Luqin Gan**, *ScM*, Academic Advisor.

2018 **W. Andrew Mould**, *MPH*, Capstone Advisor.

Capstone: The Effects of Perihematomal Edema on Hemorrhagic Stroke Patients and Outcomes

2017 **Lucia Rivera Lara**, *MPH*, Capstone Advisor.

Capstone: The Impact of Blood Pressure Variability on Hemorrhage Enlargement on

Patients with Acute Intracerebral Hemorrhage

2017 **Saqer Alkharabsheh**, *MPH*, Capstone Advisor.

2017 **Noam Finkelstein**, *ScM*, Academic Advisor.

*Final Oral Participation*

2018-2020 **Sarah Ryan**, *(UC Denver) PhD*.

2018 **Kenneth Morales**, *ScM*, Thesis Reader.

Thesis: PrEP and Porn: Trends in Popularity of condom­less pornographic videos

featuring men having sex with men

*Other Advising*

2018 **Alessandra Valcarcel**, *(UPenn) PhD*, Independent Study Advisor.

2018 **Sarah Ryan**, *(UC Denver) PhD*. Summer Advisor

*Classroom Instruction*

2014 – Present **Co­Instructor**, *JHSPH*, Introduction to R for Public Health Researchers.

Co­developed a one­week, 4­hour­a­day course in the Winter and Summer Institutes at Johns Hopkins with Dr. Andrew Jaffe. Developed 50% of code and slides for presentation and recorded lectures delivering slides.

2016–2017 **Co­instructor**, *JHSPH*, Advanced Data Science.

Provides an intensive introduction to applied statistics and data analysis. Since both data analysis and methods development require substantial hands­on experience, focuses on hands­on data analysis.

2020 **Instructor**, *ENAR*, R package development.

Developed and instructed a tutorial on R package development. Created of all code

and slides for presentation; a 1­hour, 45 minute tutorial.

2019 **Instructor**, *SMI*, R Software Development Workshop.

Co­developed and instructed a tutorial on R package developed for 40 statisticians. Ran the workshop and delivered a 2 hour tutorial with Dr. Amanda Mejia.

2018 **Instructor**, *ENAR*, Neuroimaging Analysis within R.

Co­developed and instructed a tutorial for 20 statisticians. Created 75% of all code and slides for presentation and presented for half of the 4­hour session.

2017 **Instructor**, *ISBI*, Neuroimaging Analysis within R.

Co­developed and instructed a tutorial for 30 biomedical engineers. Created 75% of all code and slides for presentation and presented for half of the 4­hour session.

2015 **Instructor**, *ENAR*, A Tutorial for Multisequence Clinical Structural Brain MRI.

Co­developed and instructed a tutorial for 35 statisticians. Created 75% of all code and slides for presentation and presented for half of the 3­hour session.

2015 **Instructor**, *Coursera*, Neurohacking with R.

Co­developed a MOOC (massive open online course) for [Coursera](https://www.coursera.org/) on neuroimage processing and statistical analysis completely within R. Developed 50% of code and slides for presentation and recorded lectures delivering slides.

2014–

Present

# Working Groups

### Biostatistics Structural Imaging Research Group.

2014–

Present

**Penn Statistical Imaging and Visualization Endeavor (PennSIVE) Working Group**, *University of Pennsylvania, Department of Biostatistics and Epidemiology*.

2009–

Present

**Statistical Methods and Applications for Research in Technology (SMART) Working Group**, *Johns Hopkins University, Department of Biostatistics*.

### 2012–2016 Epidemiology and Biostatistics of Aging (EBA) Training Program Meeting,

*Johns Hopkins University, Center on Aging and Health*.

# Journal Reviewer

**Scientific Reports**, <https://www.nature.com/srep/>.

**Human Brain Mapping**, <https://onlinelibrary.wiley.com/journal/10970193>.

**NeuroImage**, <https://www.journals.elsevier.com/neuroimage>.

**Radiology: Artificial Intelligence**, <https://pubs.rsna.org/journal/ai>.

**Journal of Neuroimaging**, [https://onlinelibrary.wiley.com/journal/](https://onlinelibrary.wiley.com/journal/15526569) [15526569](https://onlinelibrary.wiley.com/journal/15526569).

**Transactions on Biomedical Engineering**, <https://tbme.embs.org/>.

**International Journal of Information Technology & Decision Making**, [https://](https://www.worldscientific.com/worldscinet/ijitdm) [www.worldscientific.com/worldscinet/ijitdm](https://www.worldscientific.com/worldscinet/ijitdm).

**Expert Systems With Applications**, [https://www.journals.elsevier.com/](https://www.journals.elsevier.com/expert-systems-with-applications) [expert-systems-with-applications](https://www.journals.elsevier.com/expert-systems-with-applications).

**Data**, <https://www.mdpi.com/journal/data>.

# Talks and Presentations

2020 [**R Package Development**](http://johnmuschelli.com/smi_2019),

*Eastern North American Region (ENAR)*, Little Rock, AK, [Tutorial](http://johnmuschelli.com/smi_2019).

### [Neuroconductor: An R Platform for Medical Imaging Analysis](https://johnmuschelli.com/neuroc_talk/Arkansas_2020.html) ,

*University of Arkansas for Medical Sciences (UAMS)*, (Online due to COVID19), [In­](https://johnmuschelli.com/neuroc_talk/Arkansas_2020.html) [vited Seminar](https://johnmuschelli.com/neuroc_talk/Arkansas_2020.html).

### 2019 [Potential Batch Effects and Biases in the UK Biobank Accelerometer Data](https://johnmuschelli.com/ENAR_2019.html),

*ENAR*, Philadephia, PA, [Talk](https://johnmuschelli.com/ENAR_2019.html).

### 2018 [Neuroconductor and Reproducibility: Imaging in R](http://johnmuschelli.com/jsm_2018),

*Joint Statistical Meeting (JSM)*, Vancouver, BC, Canada, [Talk](http://johnmuschelli.com/jsm_2018).

### [My First Exposure to Accelerometer Data was for 100000 People from UK](https://johnmuschelli.com/CMStat_2018/index.html) [Biobank](https://johnmuschelli.com/CMStat_2018/index.html),

*11th International Conference of the ERCIM WG on Computational and Methodolog­ ical Statistics*, Pisa, Italy, [Talk](https://johnmuschelli.com/CMStat_2018/index.html).

### [Submitting to CRAN and Continuous Integration](http://johnmuschelli.com/smi_2018),

*R Package Hackathon at Statistics in Imaging Conference*, Philadelphia, PA, [Talk and](http://johnmuschelli.com/smi_2018) [Hackathon Co­organizer](http://johnmuschelli.com/smi_2018).

### [Imaging Statistics in R](http://johnmuschelli.com/smi_2018),

*Statistics in Imaging Conference*, Philadelphia, PA, [Talk](http://johnmuschelli.com/smi_2018).

### Neuroimaging Analysis within R,

*Eastern North American Region (ENAR)*, Atlanta, GA, [Short Course](http://johnmuschelli.com/imaging_in_r/).

### [Robust Lesion Segmentation on MRI of Patients with Multiple Sclerosis](http://johnmuschelli.com/Genentech_Talk_2018.html),

*Genentech*, South San Francisco, CA, [Talk](http://johnmuschelli.com/Genentech_Talk_2018.html).

### 2017 Neuroconductor: A Framework for a Framework for Reproducible Neuroimag­ ing Analysis in R,

*Eastern North American Region (ENAR)*, Washington, DC, Poster.

### Creating Interactive Graphics,

*Joint Statistical Meeting (JSM)*, Baltimore, MD, Discussant and Organizer.

### [Neuroconductor: A Neuroimaging Analysis Project in R](https://johnmuschelli.com/neuroc_talk/index.html),

*University of Mississippi Medical Center (UMMC)*, Jackson, MS, [Invited Seminar](https://johnmuschelli.com/neuroc_talk/index.html).

### Creating Interactive Graphics,

*Joint Statistical Meeting (JSM)*, Baltimore, MD, Discussant and Organizer.

### 2016 [Papayar: A Better Interactive Neuroimage Plotter in R](http://johnmuschelli.com/JSM_2016/index.html),

*Joint Statistical Meeting (JSM)*, Chicago, IL, [Talk](http://johnmuschelli.com/JSM_2016/index.html).

### [Processing Neuroimaging Data in R: Capabilities](http://johnmuschelli.com/Neuroimaging_in_R/index.html),

*Mathematical and Statistical Challenges in Neuroimaging Data Analysis*, Banff, AB, [Talk](http://johnmuschelli.com/Neuroimaging_in_R/index.html).

### [Processing fMRI Data in R](http://johnmuschelli.com/Neuroimaging_in_R/fmri_proc.html),

*SAMSI Challenges in Functional Connectivity Modeling and Analysis Workshop*, Durham, NC, [Talk](http://johnmuschelli.com/Neuroimaging_in_R/fmri_proc.html).

### 2015 Succeeding in Undergraduate: A Message to Top Students,

*Sun Valley High School*, Aston, PA, Talk.

### [SuBGELS: Subtraction­Based Gadolinium­Enhancing](https://github.com/muschellij2/ESublime_Poster/raw/gh-pages/ESublime_Poster.pdf) [Lesion Segmentation](https://github.com/muschellij2/ESublime_Poster/raw/gh-pages/ESublime_Poster.pdf),

*Hopkins Imaging Conference*, Baltimore, MD, [Poster](https://github.com/muschellij2/ESublime_Poster/raw/gh-pages/ESublime_Poster.pdf).

### [Automated Intracerebral Hemorrhage Segmentation of CT Scans](http://muschellij2.github.io/Orals_Proposal/JSM_2015_Talk.html),

*Joint Statistical Meeting (JSM)*, Seattle, WA, [SPEED Talk and Poster](http://muschellij2.github.io/Orals_Proposal/JSM_2015_Talk.html).

[**PItcHPERFECT: Primary Intracerebral Hemorrhage Prediction**](http://muschellij2.github.io/ENAR_2015_Poster/Muschelli_John_CT_ICH_Segmentation_Poster.pdf)[**Employing Regression and Features Extracted from CT**](http://muschellij2.github.io/ENAR_2015_Poster/Muschelli_John_CT_ICH_Segmentation_Poster.pdf), *Eastern North American Region (ENAR)*, Miami, FL, [Poster](http://muschellij2.github.io/ENAR_2015_Poster/Muschelli_John_CT_ICH_Segmentation_Poster.pdf).

### Quantitative Localization and Predictive Performance of Intracranial Hemorrhage,

*International Stroke Conference (ISC)*, Nashville, TN, Poster.

### Validated Automatic Brain Extraction of Head CT Images,

*Organization for Human Brain Mapping (OHBM)*, Honolulu, HI, [Poster](https://github.com/muschellij2/CT_BET/blob/master/Skull_Strip_Paper/Muschelli_John_CTSkullStripping_Long_Poster.pdf).

### 2014 [Validated Automatic Brain Extraction of Head CT Images](https://github.com/muschellij2/CT_BET/raw/master/Skull_Strip_Paper/CT_Skull_Stripping_Presentation.pptx),

*Hopkins Imaging Conference*, Baltimore, MD, [Talk](https://github.com/muschellij2/CT_BET/raw/master/Skull_Strip_Paper/CT_Skull_Stripping_Presentation.pptx) and [Poster](https://github.com/muschellij2/CT_BET/raw/master/Skull_Strip_Paper/Muschelli_John_CTSkullStripping_Long_Poster.pdf).

### [Reduction of motion­related artifacts in resting state fMRI](https://github.com/muschellij2/Motion_Poster/raw/master/Motion_Processing_Poster_RS_2012_mb_revised_dc.pdf) [using aCompCor](https://github.com/muschellij2/Motion_Poster/raw/master/Motion_Processing_Poster_RS_2012_mb_revised_dc.pdf),

*Hopkins Imaging Conference*, Baltimore, MD, [Poster](https://github.com/muschellij2/Motion_Poster/raw/master/Motion_Processing_Poster_RS_2012_mb_revised_dc.pdf).

Award: Top Poster

### 2013 [Visualizing Brain Imaging in Interactive 3D](http://muschellij2.github.io/ENAR_2013_Talk/ENAR_Visualization_5Mar2013_Final.html),

*ENAR*, Orlando, FL, [Talk](http://muschellij2.github.io/ENAR_2013_Talk/ENAR_Visualization_5Mar2013_Final.html).

### 2012 Resting State Preprocessing and Motion Artifacts,

*Second Biennial Conference on Resting State*, Madgeburg, Germany, Poster.

### Effects of preprocessing on motion­inuced artifacts in resting state fMRI,

*Society for Neuroscience (SfN)*, New Orleans, LA, Poster.

# Software

## R Packages

All download counts are from RStudio CRAN logs and are accurate as of April 22, 2020.

### [rscopus](http://cran.r-project.org/web/packages/rscopus/index.html): Scopus Database API Interface, *49092*.

[**fslr**](http://cran.r-project.org/web/packages/fslr/index.html)**: Wrapper Functions for FSL (FMRIB Software Library) from Functional MRI of the Brain (FMRIB)**, *32914*.

[**neurobase**](http://cran.r-project.org/web/packages/neurobase/index.html)**: Neuroconductor Base Package with Helper Functions for nifti Objects**, *27353*.

[**brainR**](http://cran.r-project.org/web/packages/brainR/index.html)**: Helper Functions to misc3d and rgl Packages for Brain Imaging**, *25576*.

[**matlabr**](http://cran.r-project.org/web/packages/matlabr/index.html)**: An Interface for MATLAB using System Calls**, *23256*.

[**diffr**](http://cran.r-project.org/web/packages/diffr/index.html)**: Display Differences Between Two Files using Codediff Library**, *20822*.

[**WhiteStripe**](http://cran.r-project.org/web/packages/WhiteStripe/index.html)**: White Matter Normalization for Magnetic Resonance Images using WhiteStripe**, *20474*.

[**spm12r**](http://cran.r-project.org/web/packages/spm12r/index.html)**: Wrapper Functions for SPM (Statistical Parametric Mapping) Version 12 from the Wellcome Trust Centre for Neuroimaging**, *13162*.

[**kirby21.base**](http://cran.r-project.org/web/packages/kirby21.base/index.html)**: Example Data from the Multi­Modal MRI Reproducibility Resource**, *12796*.

[**freesurfer**](http://cran.r-project.org/web/packages/freesurfer/index.html)**: Wrapper Functions for Freesurfer**, *12262*.

[**gcite**](http://cran.r-project.org/web/packages/gcite/index.html)**: Google Citation Parser**, *11917*.

### [gifti](http://cran.r-project.org/web/packages/gifti/index.html): Reads in Neuroimaging GIFTI Files with Geometry Information, *11909*.

[**papayar**](http://cran.r-project.org/web/packages/papayar/index.html)**: View Medical Research Images using the Papaya JavaScript Library**, *11414*.

[**kirby21.t1**](http://cran.r-project.org/web/packages/kirby21.t1/index.html)**: Example T1 Structural Data from the Multi­Modal MRI Reproducibility Resource**, *10578*.

[**cifti**](http://cran.r-project.org/web/packages/cifti/index.html)**: Toolbox for Connectivity Informatics Technology Initiative (CIFTI) Files**, *10280*.

[**kirby21.fmri**](http://cran.r-project.org/web/packages/kirby21.fmri/index.html)**: Example Functional Imaging Data from the Multi­Modal MRI Reproducibility Resource**, *9632*.

[**mscstts**](http://cran.r-project.org/web/packages/mscstts/index.html)**: R Client for the Microsoft Cognitive Services Text­to­Speech REST API**, *9434*.

[**neurohcp**](http://cran.r-project.org/web/packages/neurohcp/index.html)**: Human Connectome Project Interface**, *8981*. [**glassdoor**](http://cran.r-project.org/web/packages/glassdoor/index.html)**: Interface to Glassdoor API**, *8919*. [**fedreporter**](http://cran.r-project.org/web/packages/fedreporter/index.html)**: Interface to Federal RePORTER API**, *8141*.

[**stapler**](http://cran.r-project.org/web/packages/stapler/index.html)**: Simultaneous Truth and Performance Level Estimation**, *8079*.

[**text2speech**](http://cran.r-project.org/web/packages/text2speech/index.html)**: Text to Speech**, *6077*.

### [leanpubr](http://cran.r-project.org/web/packages/leanpubr/index.html): Leanpub API Interface, *5573*.

[**nsrr**](http://cran.r-project.org/web/packages/nsrr/index.html)**: Interface to National Sleep Research Resource**, *4547*.

[**neurovault**](http://cran.r-project.org/web/packages/neurovault/index.html)**: Neurovault Database API Access**, *598*.

GitHub [**drammsr**](https://github.com/muschellij2/drammsr)**: Port of Deformable Registration via Attribute Matching and Mutual­ Saliency Weighting (**[**DRAMMS**](http://www.cbica.upenn.edu/sbia/software/dramms/)**) Registration to R**.

[**didactr**](https://github.com/muschellij2/didactr)**: Tools for Creating Automated Courses**. [**flexconnr**](https://github.com/muschellij2/flexconnr)**: FLEXCONN Model Wrapped in R** .

[**extrantsr**](https://github.com/muschellij2/extrantsr)**: Additional functionality and extensions to the ANTsR R package**.

[**rcamino**](https://github.com/muschellij2/rcamino)**: R Port of Camino Software**.

[**dcm2niir**](https://github.com/muschellij2/dcmniir)**: R wrapper for dcm2nii DICOM converter**. [**ichseg**](https://github.com/muschellij2/%20ichseg)**: ICH Segmentation of CT scans**.

[**msseg**](https://github.com/muschellij2/%20msseg)**: MS Lesion Segmentation**. [**googleCite**](https://github.com/muschellij2/googleCite)**: Scraper for Google Citations**.

[**processVISION**](https://github.com/muschellij2/processVISION)**: Scripts for Parsing XML from VISION database**. [**sri24**](https://github.com/muschellij2/sri24)**: SRI24 Atlas: Normal Adult Brain Anatomy**.

Shiny Web Applications

2019 [**Do Data Analysis with Your Voice!**](https://jhubiostatistics.shinyapps.io/Speak_dplyr/), [*https://jhubiostatistics.shinyapps.io/Speak\_dplyr/*](https://jhubiostatistics.shinyapps.io/Speak_dplyr/). [**Turning Slide Decks into Videos**](https://jhubiostatistics.shinyapps.io/presentation_to_video/) **(private request needed)**,

[*https://jhubiostatistics.shinyapps.io/presentation\_to\_video/*](https://jhubiostatistics.shinyapps.io/presentation_to_video/).

[**A Sortable NIH RFA Table**](https://jhubiostatistics.shinyapps.io/rfa_sort/), [*https://jhubiostatistics.shinyapps.io/rfa\_sort/*](https://jhubiostatistics.shinyapps.io/rfa_sort/). [**Turn a Folder of Slides into a Leanpub Course**](https://jhubiostatistics.shinyapps.io/slides_to_leanpub/),

[*https://jhubiostatistics.shinyapps.io/slides\_to\_leanpub/*](https://jhubiostatistics.shinyapps.io/slides_to_leanpub/).

### 2016 [Segmentation of Intracranial Hemorrhage from CT Scans](http://johnmuschelli.com/ich_segment_all.html),

[*http://johnmuschelli.com/ich\_segment\_all.html*](http://johnmuschelli.com/ich_segment_all.html).

2015 [**Abandoned Cars in Baltimore Finder**](https://jmuschelli.shinyapps.io/Abandoned_Baltimore_Car), [*https://jmuschelli.shinyapps.io/Abandoned\_Baltimore\_Car*](https://jmuschelli.shinyapps.io/Abandoned_Baltimore_Car). [**Unofficial ENAR 2015 Itinerary Maker**](https://muschellij2.shinyapps.io/ENAR_2015),

[*https://muschellij2.shinyapps.io/ENAR\_2015*](https://muschellij2.shinyapps.io/ENAR_2015).

### 2014 [Online DICOM TO NIfTI Converter](https://muschellij2.shinyapps.io/dcm2nii),

[*https://muschellij2.shinyapps.io/dcm2nii*](https://muschellij2.shinyapps.io/dcm2nii).

[**Cost of most common medical procedures at United States hospitals based on**](https://jmuschelli.shinyapps.io/Shiny_Health_Data)[**Centers for Medicare and Medicaid Services data**](https://jmuschelli.shinyapps.io/Shiny_Health_Data), [*https://jmuschelli.shinyapps.io/Shiny\_Health\_Data*](https://jmuschelli.shinyapps.io/Shiny_Health_Data).

# Skills

**Languages** Proficient: R (including Shiny), bash, Stata, MATLAB.

Beginner: SAS, Python, [C++](http://www.cplusplus.com/), [Visual](http://msdn.microsoft.com/en-us/vbasic/default) [Basic](http://msdn.microsoft.com/en-us/vbasic/default), JavaScript

**Markup** TEX, [LATEX](http://www.latex-project.org/), BibTEX, TeXShop, WinEdt, knitr, HTML, CSS

# Honors and Awards

### 2014 SOURCE (Student Outreach Resource Center) Community Service Award. 2011 Member of the winning team of the ADHD 200 Competition:

**a competition of develop diagnostic classification tools for ADHD diagnosis**

**based on imaging of the brain**.

2004–2008 **Presidential Scholar (Full Tuition Scholarship)**. 2004–2008 **Dean’s List**.

2008 **Alpha Sigma Nu**. 2004 **Alpha Lambda Delta**.

# Additional Experience

2015 **IdEar Team Member**, *Hackathon:* [*MedHacks 1.0*](http://medhacks.org/), Showed as a proof of concept that ears could be used as biometric markers in a global health framework. The target was areas with poor to no registries of people in which pictures of ears could be used to distinguish community members when other demographic information was not unique. Implemented a MATLAB implementation of an SVM to classify people based on image of ear and scale invariant feature transform (SIFT) features. In top 10 of 30 teams.

2015 **Safer Baltimore Biking Team**, *Hackathon:* [*JHU Data Science Hakathon*](https://classic.regonline.com/builder/site/Default.aspx?EventID=1692764), Full de­ scription and product: <http://kbroman.org/jhudashbike/>. Team used open data from Baltimore City to determine road safety as measured by accidents, hazards (pot­ holes), and accidents. Geocoded all hazards and helped develop leaflet final product (map).

2013–

Present

2013–

Present

# Academic Service

**Middle Manager**, [*Thread/Incentive Mentoring Program*](http://www.thread.org/).

Interfaced between executive­level staff and lower­level management. Organized monthly meetings, weekly progress updates and e­mails, and provided broad­scale mentorship for high­school students in the Baltimore City school district. Program title was ”Grandparent”, as it is a family­based, positive change model.

**Co­founder, Vanguard Scholarship**, *Sun Valley High School*.

Co­founded a scholarship for outstanding students attending my alma mater, Sun Valley High School. Interviewed students as a representative of a graduate doing science at mock inter­ view day. Continually recruiting other graduates to become involved and fund raising.

2014 **Organizer, Journal Club**, *JHSPH Department of Biostatistics*.

Scheduled and organized a club for reading and discussing statistical papers.

2013­2015 **Founder/Organizer, Writing Accountability Group**,

*JHSPH Department of Biostatistics*.

Founded and organized a small group (6­8) of students, where the aim is to develop weekly goals for writing and publication.

2013­2014 **Founder/Organizer, Blogging Club**,

*JHSPH Department of Biostatistics*.

Founded and organized a club for student blogging.

2010–2013 **Manager**,

[*Thread/Incentive Mentoring Program*](http://www.thread.org/).

Title was a “Head of Household”; mentored and tutored a student from Dunbar High School, teaching coursework, life skills, support as needed.