JACOB M. MARONGE

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RESEARCH INTERESTS

Experimental design, statistical computing, neuroimaging, longitudinal studies

EDUCATION

University of Wisconsin-Madison August 2016 - Present
PhD, Statistics (Emphasis in Biostatistics)
Advisor: Paul J. Rathouz

Louisiana State University Health Sciences Center May 2016
MS, Biostatistics
Thesis: "Optimal Designs for Wavelet Regression Models"
Advisor: Zhide Fang

University of Wisconsin-Milwaukee May 2014
BS, Physics

PROFESSIONAL EXPERIENCE

University of Wisconsin-Madison
Waisman Center January 2018 - Present
Predoctoral Fellow, Morse Society Scholars Program *Madison, WI*

· Awarded membership to the Morse Society Scholars Program. This fellowship offers a unique training opportunity to graduate students in multiple disciplines who are conducting research in the areas of developmental psychopathology and the psychiatric aspects of developmental disabilities.

University of Wisconsin-Madison
School of Medicine and Public Health, Department of Biostatistics and Medical Informatics September 2017 - Present
Research Assistant, Advisor: Paul J. Rathouz *Madison, WI*

· Studying properties of longitudinal data analysis and outcome-dependent sampling for complicated design structures.

University of Wisconsin-Madison
School of Medicine and Public Health, Department of Biostatistics and Medical Informatics August 2016 - August 2017
NIH Predoctoral Trainee in Biostatistics, Program Director: Paul J. Rathouz *Madison, WI*

· Grant number: T32HL083806-10

· Performed three semester-long rotations:
Summer 2017: Worked with Paul J. Rathouz and Katie Hustad on a longitudinal study focusing on expressive language development of children diagnosed with Cerebral Palsy. We implemented a multivariate, longitudinal model to analyze and interpret these data.
Spring 2017: Worked with Michael Newton on an Empirical Bayes Method to compare covariance matrices across multiple conditions.
Fall 2016: Worked with Christina Kendziorski on analysis of single cell mRNA sequencing experiments.

Johns Hopkins University
Bloomberg School of Public Health, Department of Biostatistics Summer 2016
Summer Intern, Advisor: Ciprian M. Crainiceanu *Baltimore, MD*

- Worked with the Statistical Methods and Applications for Research in Technology (SMART) Research Group.
- Addressed issues in segmentation of stroke ischemia patients by implementing a localized neighborhood principal components analysis approach.
- Participated in the France Life Imaging-Information Analysis and Management (FLI-IAM) Multiple Sclerosis Lesion Segmentation Challenge with John Muschelli, Elizabeth Sweeney, and Russell Shinohara. We implemented a random forest technique in the challenge.

PUBLICATIONS

Submitted:

Maronge JM, Rathouz PJ. *Power analysis for clustered and longitudinal studies using between-within covariate decomposition.* Submitted.

Maronge JM, Muschelli J, Crainiceanu C. *Global PCA of local moments with application to multi-sequence MRI segmentation.* Submitted.

Peer-Reviewed:

Maronge JM, Zhai Y, Wiens DP, Fang Z. *Optimal designs for spline wavelet regression models*, Journal of Statistical Planning and Inference, 184, 94-104, 2017.

Tudorascu DL, Karim HT, **Maronge JM**, Alhilali L, Fakhran S, Aizenstein HJ, Muschelli J, Crainiceanu CM. *Reproducibility and Bias in Healthy Brain Segmentation: Comparison of Two Popular Neuroimaging Platforms*, Frontiers of Neuroscience, 10, 503, 2016.

PRESENTATIONS

Invited Talks:

Global PCA of Local Neighborhood Moments with Applications to MRI Segmentation. Statistical Methods in Imaging Conference, Philadelphia, PA, June 6, 2018.

Empirical Bayes Analysis of Covariance. University of Wisconsin Department of Biostatistics and Medical Informatics Student Seminar, Madison, WI, May 5, 2017.

Single Cell RNA Sequencing: Analysis and Applications. University of Wisconsin Department of Biostatistics and Medical Informatics Student Seminar, Madison, WI, December 16, 2016.

Posters:

Global PCA of Local Neighborhood Moments with Applications to MRI Segmentation. ENAR, Atlanta, GA, March 25, 2018.

Optimal Designs for Wavelet Regression Models. Louisiana State University Health Sciences Center School of Public Health Delta Omega Research Day, New Orleans, LA, April 20, 2016.

Optimal Designs for Wavelet Regression Models. Louisiana State University Health Sciences Center School of Graduate Studies Research Day, New Orleans, LA, November 6, 2015.

PROFESSIONAL MEMBERSHIPS

The Morse Society January 2018 - Present
Delta Omega Honorary Society for Public Health May 2016 - Present
American Statistical Association April 2015 - Present

COMPUTING SKILLS

Languages: R, SAS, MATLAB, Mathematica
Markup: LaTeX, Rmarkdown, Microsoft Office

SOFTWARE

medals: R package to implement Memory Efficient Decomposition for Analysis of Local neighborhood moments for Segmentation (MEDALS). Available on Neuroconductor and GitHub.