

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 Kendzierski on analysis of single cell mRNA sequencing experiments.

Johns Hopkins University

Bloomberg School of Public Health, Department of Biostatistics

Summer Intern, Advisor: Ciprian M. Crainiceanu

Summer 2016

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

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.

Manuscripts in progress:

Maronge JM & Rathouz PJ. *Power Analysis for Between and Within Subject Covariates in Longitudinal Studies*. In progress.

Maronge JM, Muschelli J, Crainiceanu C. *Global PCA decomposition of local neighborhood moments with applications to MRI*. In progress.

PRESENTATIONS

Talks:

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

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

Posters:

Maronge JM, Fang Z. *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.

Maronge JM, Fang Z. *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: L^AT_EX, Rmarkdown, Microsoft Office

SOFTWARE

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