Andrew J. Holbrook, Ph.D.

Postdoctoral Scholar
Department of Human Genetics, University of California, Los Angeles
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Research Interests

Bayesian semiparametrics, Markov chain Monte Carlo, dimension reduction, computational biology, data sciences

Dissertation title: *Geometric Bayes*; Advisor: Prof. Babak Shahbaba, Ph.D.

Education

2013-2018, Ph.D., Statistics, University of California, Irvine, CA

2013-2015, M.S., Statistics, University of California, Irvine, CA

2005-2009, B.A., German and Classical Languages, University of California, Berkeley, CA

Academic Awards and Scholarships

Leonard J. Savage Award, International Society for Bayesian Analysis (2018)
Outstanding Dissertation in Theory and Methods, Honorable Mention

Carl W. Cotman Young Investigator Award, UCI MIND (2018)

UC Irvine Graduate Dean's Dissertation Fellowship Award (2017-2018)

UCI MIND Aging Fellowship (2015-2017)

Robert L. Newcomb Graduate Student Award, UC Irvine Department of Statistics (2014)

Papers

10. **Holbrook A**, Lemey P, Baele G, Dellicour S, Brockmann D, Rambaut A, Suchard S. *Massive parallelization boosts big Bayesian multidimensional scaling*. Submitted to Journal of Computational and Graphical Statistics, 2019.

9. Ji X, Zhang Z, **Holbrook A**, Nishimura A, Baele G, Rambaut A, Lemey P, Suchard M. *Gradients do grow on trees: a linear-time O(N)-dimensional gradient for statistical phylogenetics*. Submitted to Annals of Applied Statistics, 2019.

8. Lan S, **Holbrook A**, Elias G, Fortin N, Ombao H, Shahbaba B. *Flexible Bayesian Dynamic Modeling of Correlation and Covariance Matrices*. Bayesian Analysis, In Press, 2019.

7. Tustison N, **Holbrook A**, Avants B, Roberts J, Cook P, Reagh Z, Stone J, Gillen D, Yassa M. *Longitudinal mapping of cortical thickness measurements: an Alzheimer's Disease Neuroimaging Initiative-based evaluation study*. Journal of Alzheimer's Disease, In Press, 2019.

6. **Holbrook A**, Lumley T, Gillen D. *Estimating prediction error for complex samples*. Canadian Journal of Statistics, In Press, 2019.

5. Li L, **Holbrook A**, Shahbaba B, Baldi P. *Neural network gradient Hamiltonian Monte Carlo*. Computational Statistics, vol. 34, no. 1, pp. 281-299, 2019.

4. **Holbrook A**. *Differentiating the pseudo determinant*. Linear Algebra and its Applications, vol. 548, pp. 293-304, 2018.

3. **Holbrook A**, Lan S, Vandenberg-Rodes A, Shahbaba B. *Geodesic Lagrangian Monte Carlo over the space of positive definite matrices: with application to Bayesian spectral density estimation*. Journal of Statistical Computation and Simulation, vol. 88, no. 5, pp. 982-1002, 2018.

2. **Holbrook A**, Vandenberg-Rodes A, Fortin N, Shahbaba B. *A Bayesian supervised dual-dimensionality reduction model for simultaneous decoding of LFP and spike train signals.* Stat Journal, vol. 6, no. 1, pp. 53-67, 2017.

1. Grill J, **Holbrook A**, Pierce A, Hoang D, Gillen D. *Attitudes toward Potential Participant Registries.* Journal of Alzheimer's Disease, vol. 56, no. 3, pp. 939-946, 2017.

Invited Talks

Excerpts from *Geometric Bayes* (JSM Savage Award session 2019)

Evaluating the ANTs longitudinal cortical thickness pipeline (Statistical methods in imaging 2019)

Teaching

- Teaching Assistant, Stat 7 – Introduction to Probability and Statistics (Fall 2014, Summer 2015); Department of Statistics, University of California, Irvine
- Teaching Assistant, Stat 8 – Biostatistics (Winter 2015); Department of Statistics, University of California, Irvine
- Teacher, Mathematics and English as a Second Language (2010-2011); Dalian American International School

Professional Experience

- Postdoctoral scholar with Prof. Marc A. Suchard, M.D., Ph.D. at the Department of Human Genetics, University of California, Los Angeles; Los Angeles, California (2018-present)
- Statistical consultant, the Alzheimer's Disease Research Center at the University of California, Irvine; Irvine, California (2015-2017)
- Statistical consultant, the Center for Statistical Consulting at the University of California, Irvine; Irvine, California (Winter and Spring 2014)
- Trainee, the Summer Institute for Training in Biostatistics at North Carolina State University and the Duke Clinical Research Institute; Raleigh, North Carolina (Summer 2013)
- Teacher, the Dalian American International School; Dalian, People's Republic of China (2010-2011)

Service and Community Involvement

- Lead organizer, *Conference on philosophy of machine learning: knowledge and causality*. March 17-18, 2018 at the University of California, Irvine
- Member, American Statistical Association (2018-present)

Journal Reviewer

Bayesian Analysis

IEEE Transactions on Industrial Electronics