

Education

University of Texas at Austin

PhD in Neuroscience, 2014

Doctoral Advisor: Richard W. Aldrich

Washington and Lee University

BS in Physics, *magna cum laude*, 2009

Experience

Data Scientist - L3 Data Tactics - 2014 to present

- Work on DARPA project to build large-scale machine learning applications for cyber defense and anomaly detection. Using Spark to develop methods for modeling terabyte data sets.
- Developed data science and predictive analytics for government customers in domains including time series forecasting, social media analytics, and cyber defense.

Research Assistant - laboratory of Richard W. Aldrich - 2010 to present

- Established a rigorous statistical basis for analysis of emerging biophysical experimentation.
- Developed Bayesian framework for parameter inference in common biophysical settings.
- Pioneered the use of nonparametric Bayesian methods for the analysis of single molecule time series.

Data Science Intern - Civitas Learning - Summer 2013

- Built predictive models of student success in higher education.
- Designed and built an automated data science framework for analysis of large numbers of population segments.

Skills

- R, Python, Scala, Spark, Hive, Impala, HDFS, HTML, js (d3), Linux/UNIX, AWS, git.
- Bayesian inference, MCMC, Nonparametric Bayes, Bootstrap, time series, HMM, clustering/segmentation, Dirichlet process mixture models, ANNs, PCA, genetic algorithms.
- Electrophysiology, fluorescence spectroscopy, protein purification, molecular biology, cell culture.

Honors and Awards

- Predoctoral Fellowship, American Heart Association, 2012- 2014
- Complex Systems Summer School, Santa Fe Institute for Complex Systems, 2012
- Student Research Award Finalist, Biophysical Society, 2012
- APS Student Leadership Award, American Physics Society, 2008
- NSF REU Research Scholarship, National Science Foundation, 2007

Recent Publications

Hines, K., J. Bankston, R. Aldrich. 2015. Analyzing Single Molecule Time Series Via Nonparametric Bayesian Inference. *Biophysical Journal*. 108(3) 540-556.

Hines, K., T. Middendorf, R. Aldrich. 2014. Determination of Parameter Identifiability in Nonlinear Biophysical Models: A Bayesian Approach. *Journal of General Physiology*. 143(3):401-416.