Brian Gereke, Ph.D.

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Summary

Neuroscience PhD with 10 years of experience designing experiments and building custom data preprocessing, statistical modeling, and visualization pipelines for complex rodent behavior and neurophysiology datasets. Practical hands-on experience in machine learning and computer vision. Passion for writing organized, documented, and testable code in Python and R in order to extract sharable, repeatable, and actionable knowledge from data. Ability to self-manage difficult projects from conception to completion and effectively communicate results to technical and nontechnical audiences.
See publications: https://www.ncbi.nlm.nih.gov/pubmed/?term=Brian+gereke

Skills

- **Python** (5 yrs): numpy, pandas, scikit-learn, statsmodels, scipy, pyspark, opencv, tkinter, flask, multiprocessing, sphinx, scrapy, unittest, pytest, fastapi, etc.
- **R** (5 yrs): base + tidyverse, DBI, mgcv, glmnet, rgl, etc.
- **Arduino** (2 yrs) | **Matlab** (10 yrs) | **JavaScript | SQL | C++ | Git | Spark | XGBoost | TensorFlow/PyTorch | Faiss | Docker | Kubeflow**
- Experiment design | statistics (parametric, nonparametric, multivariate, etc.) | signal processing | spatio-spectro-temporal analysis | GLMs | gradient boosted trees | SVMs | CNNs | dimensionality reduction | clustering | point processes | reinforcement learning | representation learning | approximate nearest neighbors

Experience

Postdoctoral Researcher | **Berkeley National Lab**   2018–present
- Built, deployed and maintained an object-oriented, multi-process, gpu-accelerated application for real-time control of a robotic experimental data acquisition system using Python, R and Arduino.
- Led a team in creating a markerless behavior tracking system from multi-view video data using a tensorflow package (DeepLabCut).

Graduate Student Researcher | **University of Texas at Austin**   2012–2018
- Utilized HPC resources to perform embarrassingly parallel analyses of large scale rodent hippocampal neural spiking and local field potential data using generalized additive mixed models in R, Matlab and Python.
- Developed novel predictive point process models for sparse time-frequency representations with applications to hippocampal field potential data.
- Spearheaded data aggregation, cleansing, and feature engineering tasks using Matlab, R and Python.

Education

PhD, University of Texas at Austin | **Neuroscience**   2012-2018
    Thesis: Experience-dependent trends in hippocampal theta and gamma rhythms
BS, University of Arizona | **Applied Mathematics**   2007-2012