Jeff Mohl, Ph.D.

Data Science, Analysis, and Statistics

(406) 425-1097
JeffTMohl@gmail.com
jtmohl.com
linkedin.com/in/jeff-t-mohl/

Projects and Publications

Statistical and computational modeling of sensory processing

Our brains are exceptionally efficient at extracting useable information from a noisy environment and combining information from multiple senses. My Ph.D. focused on understanding how this is accomplished, and particularly how auditory and visual stimuli are combined to improve perceptual accuracy.

- Designed, piloted, performed, and analyzed a novel experiment to explore the way visual and auditory information interact in the brain. (paper: doi.org/10.1101/823385)
- Computationally modeled behavior and neural data using MATLAB and R to gain insight into the underlying processes (github: CI_behavioral)

Time-series analysis of rapidly fluctuating neural data

Neural data is inherently noisy, and traditional methods for dealing with this noise discard potentially useful temporal information. We wanted to develop a method that would allow us to deal with this noise, while still analyzing the interesting temporal fluctuations in neural data.

- Collaborated with members of the statistical science department to develop a novel analysis strategy for time varying neural signals. Developed in R, released as an open source package (CRAN: neuromplex)
- Designed and implemented a series of simulation studies to evaluate reliability and robustness of this statistical package in MATLAB and R. (paper: arXiv:2001.11582 github: mplx_tests)
- Interfaced with labs across four universities, performing ETL in MATLAB and R to implement analysis on diverse datasets.

Experience

Duke University, *Research Associate,* June 2020 – Current

- Statistical analysis and computational modeling of neural and behavioral data in MATLAB and R.
- Communication of scientific findings through technical writing and presentations.

Duke University, *Ph.D. Student,* Aug. 2014 – May 2020

- Created an carried out a research program, including the synthesis of existing literature, formulation of hypotheses and experiments, implementation of those experiments, data collection and analysis, and written communication of results through two first author manuscripts (one in review, one in prep).
- Obtained three years of personal tuition and stipend funding through a successful NDSEG grant application

PrintingForLess.com, *Software Development Intern,* May 2013 – Aug. 2013

- Streamlined the order cancellation process by providing a frontend tool for intranet users (primarily sales staff) to automatically perform several backend database operations and checks.
- Provided support, database management (SQL), technical consulting, and bug resolution for internal sales staff.

Education

Duke University, Ph.D., Neurobiology, May 2020
Montana State University, B.S., Mechanical Engineering, May 2014

Skills

- MATLAB
- R
- Data visualization
- Statistical analysis
- Computational modeling
- Technical writing and communication
- Research synthesis
- Research project management
- SQL
- Python
  - NumPy, Pandas
  - PyTorch, TensorFlow

Leadership and Involvement

Co-chair for Professional Development, *DIBS Graduate Student Consortium, Duke University.*
Jan 2020 - Current
Recruited speakers, organized events, and hosted meetings to connect graduate students and post docs with early career professionals who transitioned from biosciences to industry.

Vice-President, *Neurobiology External Review – Student Committee, Duke University.*
July 2020
Co-authored a report summarizing student experiences in the Neurobiology department, for an external review committee appointed by the Graduate School to oversee graduate training.