Jeff Mohl, Ph.D.

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Summary

- Perceptual neuroscientist with 6+ years of experience in visual and auditory spatial perception including human psychophysics, signal processing, and computational modeling
- Experience directing a research program (4+ years) involving multiple contributors
- Strong quantitative and programming skills including applied statistics and data analysis
- Proven track record of significant results with 4 peer-reviewed publications (2 first author)
- Cross-disciplinary industry experience in engineering and software development

Research Experience

Duke University, Postdoctoral Research Associate   May 2020 – Present
Department of Psychology and Neuroscience
- Integrating behavioral and neural data sources to model the sensorimotor transform underlying auditory, visual, and audio-visual cue localization
- Writing and editing research manuscripts and grant proposals
- Mentoring junior PhD and undergraduate students

Duke University, Graduate Researcher   Aug 2014 – May 2020
Department of Neurobiology

Doctoral work: *Multisensory Integration and Causal Inference in Audio-Visual Spatial Perception*
- Designed and carried out behavioral experiments for humans and non-human primates to study how spatial hearing and vision interact to localize sensory cues
- Developed a novel analysis strategy for analyzing continuous psychophysics data (eye tracking)
- Computationally modeled perceptual decisions, contrasting theory with real behavior
- Communicated scientific findings via slide deck presentations and 2 manuscripts (1 in prep)

Collaborative work: *Neural Multiplexing Group (Statistics, Psychology, Neurobiology)*
- Collaborated across groups with members of the Statistical Science department to release an open source statistical package for analyzing time varying neural signals
- Leveraged cross-competency in statistical modeling and scientific subject matter to facilitate communication between statisticians and neuroscientists, which has resulted in 3 manuscripts.
- Interfaced with labs across 4 universities to implement analysis on diverse datasets

Education

Duke University Durham, NC
Ph.D., Neurobiology   May 2020
- NDSEG awardee (5-10% award rate, national fellowship, 3 years tuition and stipend)

Montana State University Bozeman, MT
B.S., Mechanical Engineering; Minor: Mechatronics (EE/CS); Highest Honors   May 2014
- Academic All-American (Track and Field) 2011-2014

Technical Skills

Scientific Programming: MATLAB; R; Python
Research: Experiment design; Literature review and synthesis; Scientific writing (manuscripts, grants)
Modeling and Machine Learning: Statistical modeling; Neural networks; Supervised learning

Industry Experience

PrintingForLess.com, Software Developer (Intern)   May 2013 – Aug 2013
Livingston, MT
- Streamlined an order cancellation process by providing a frontend tool for intranet users to perform several backend database operations and checks, cutting time required by ~75%
- Provided support, database management (SQL), and issue tracking for internal sales staff

The Boeing Company, Payloads Design Engineer (Intern)   May 2012 – Aug 2012
Everett, WA
- Designed interiors to customer specifications while balancing manufacturing constraints
- Developed a set of Visual Basic macros to automate a repetitive ordering task in Excel, saving an estimated 10-15 work hours per week

Leadership and Community Involvement

Co-Chair for Professional Development   Aug 2019 – June 2020
Duke Institute for Brain Science, Graduate Student Consortium
- Recruited speakers, organized events, and hosted meetings to connect graduate students and post docs with early career industry professionals with bioscience backgrounds
- Coauthored a grant to fund these events, which earned $2000 in funding

Vice President   Jan 2018 – June 2018
Duke Neurobiology External Review - Student Committee
- Coauthored a report summarizing student experience for an external review board

Counselor   July 2016
Duke Biomedical Science and Engineering Summer Camp
- Instructed 30 high school students over the course of a multi-week summer research experience

Publications

Mohl JT, Pearson JM, Groh JM. Monkeys and humans implement causal inference to simultaneously localize auditory and visual stimuli. *J Neurophysiol* 124: 715–727 (2020)

Mohl JT, Caruso VC, Tokdar ST, Groh JM. Sensitivity and specificity of a Bayesian single trial analysis for time varying neural signals. *Neurons, Behavior, Data Analysis, and Theory* 3: 1 (2020)

Glynn C, Tokdar ST, Zaman A, Caruso VC, **Mohl JT**, Willett SM, Groh JM. Analyzing second order stochasticity of neural spiking under stimuli-bundle exposure. *Annals of Applied Statistics(In press)*(2020)

Caruso VC, **Mohl JT**, Glynn C, Lee J, Willett SM, Zaman A, Ebihara AF, Estrada R, Freiwald WA, Tokdar ST, Groh JM. Single neurons may encode simultaneous stimuli by switching between activity patterns. *Nature Communications* 9: 2715 (2018)