Durham, NC

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Raphael Geddert

SKILLS

Data Science

Reinforcement learning • Machine Learning • Parameter Estimation • Experimental Design • Data Visualization • Data Wrangling • Shell Scripting

Programming

Python: Numpy • Pandas • PyTorch • Scikit-Learn • Matplotlib/Seaborn • statsmodels • PsychoPy

R: Tidyverse (ggplot2, dplyr, etc) • Shiny • Rmarkdown • Rstan • plotrix

Javascript: DOM manipulation • Jquery • NodeJS • Underscore • Canvas • SVG

Other: Bash • SQL • Unix • Git • SPSS • JASP • SAS • Mplus • RStudio • Atom • Jupyter Notebook • Qualtrics • MTurk • VBA • MATLAB • Advanced HTML/CSS • Open AI Gym

Statistical Analysis

Bayesian Parameter Estimation • Structural equation modeling • hierarchical/linear mixed-effects regression • time frequency filtering and analysis • Representational Similarity Analysis

Research

Behavioral and survey research • electroencephalogram (EEG) • fMRI (brain imaging)

Certificates

Neuromatch Academy: Deep Learning (2021), Computational Neuroscience (2020)

EDUCATION and WORK EXPERIENCE

Duke University   **2019 – Present**
Ph.D. Student in Cognitive Neuroscience (3.98 GPA)
➢ MA in Spring 2022

UC Davis MIND Institute   **2017 – 2019**
Head coordinator for large million-dollar longitudinal clinical trial

University of California, Davis   **2013 – 2017**
BS Neurobiology, Physiology, & Behavior | BA Psychology (3.97 GPA)

SELECTED EXPERIENCES

Data Science and Research

➢ Collected and analyzed data for independently designed research project exploring human task switching behavior using Bayesian and frequentist statistics (first-author preprint)

➢ Designed independent senior thesis research project on attention using human electroencephalography (EEG; published senior thesis)

➢ Created online data science tools, including a tutorial for model-free RL and parameter estimation, a tutorial on Qualtrics data collection, and led workshops on RL modeling

➢ Optimized data accessibility for large clinical trial at the UC Davis MIND Institute by independently designing data querying software using VBA in Excel, resulting in data requests taking seconds rather than weeks

➢ Collaborated on project examining cognitive flexibility using hierarchical RL modeling and Bayesian parameter estimation (preprint)

➢ Lead data analyst for project using structural equation modeling to identify executive function phenotypes in Autism spectrum disorder (publication)

➢ Analyzed fMRI data to identify activations and functional connectivity using univariate and multivariate regressions (publication)

Teaching & Science Communication

➢ TA'd *Research Methods and Statistics for Psychological Science* (2 semesters) at Duke University, leading 4 sections to date (~20 students each)

➢ Co-Lead of the Cognitive Neuroscience Research Internship's programming course

➢ Mentored and supervised 10+ undergraduate and graduate students in data collection, programming, and computational modeling (RL)

➢ Presented research at the annual meetings of the Cognitive Neuroscience Society, Society for Neuroscience, Psychonomic Society, and International Society for Autism Research

AWARDS: Charles Lafitte Foundation (Duke) – $4000+ | NSF Graduate Research Fellowship – HM | James B. Duke Fellowship (Duke) – $25,000 | Trainee Professional Development Award (Society for Neuroscience) – $1000 | Department Citation for Outstanding Undergraduate Accomplishment (UC Davis) | Regents Scholarship (UC Davis) – Full-Ride