Sam McGee

Data Scientist / Analyst

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WORK EXPERIENCE

Project Manager, *Central Arizona Project Management, December 2022 – Present*

- Planned the storage, staging, and installation of hospital equipment in 380,000ft^2 site using PMI guidelines
- Organized and consolidated data in Excel between multiple structured and unstructured databases to inform upper management of current storage needs and coordinating priority installations throughout site across project phases

fMRI Program Developer, *Mayo Clinic Phoenix, August 2022 – Present (Contract)*

- Identified stakeholder needs and evaluated viable solutions to deliver suite of fMRI tasks in open-source formats, ensuring future compatibility of vital clinical and research tests through anticipated software and hardware updates
- Developed updated fMRI tasks in Python, including necessary visual stimuli and verifying precise timing accuracy
- Designed and built new research fMRI scripts, eliciting stronger neurological signals in specific brain regions

Graduate Researcher, *Arizona State University, August 2017 – June 2022*

- Collected Qualtrics survey data from 200+ respondents, organized 500+ archival survey responses to create and manage database of bilingual responses to a language survey used to determine bilingual status
- Administered cognitive testing across multiple collection times for 20 adolescent research participants to compile longitudinal dataset of cognitive skill development, identifying learning rate differences in bilingual populations
- Prepared monthly progress reports and biannual presentations of study findings for diverse academic audiences

Research Assistant, *Barrow Neurological Institute, February 2016 – June 2020*

- Analyzed hospital MRI data with MATLAB, shell scripts, and Python, categorizing high grade tumors before surgery
- Managed subject recruitment and retention, scheduling, fMRI task operation, and cognitive assessment of over 100 participants across cohorts for research study on aging and autism as part of 2 longitudinal research studies
- Compiled and analyzed longitudinal aging and autism data using MATLAB, Python, and SPSS, collaborating with other researchers to report results in academic presentations and journal publications
- Maintained study expenditure records, writing bi-annual reports for continued grant funding of multiple projects

PROJECTS

Bilingual Subtype Classification Using Latent Variable Modeling

- Identified and quantitatively supported the existence of diagnostic groups of bilinguals in archival and collected responses to a language survey by scripting and implementing latent modeling analyses in R and MPlus
- Visualized and presented results to dissertation committee and currently preparing academic publication
- Improved diagnostic accuracy and utility of language survey tool by recognizing survey item issues, testing and verifying data-driven alternatives, and proposing corrections to adopted by original survey designers

Shortcut BLRT Power Analysis for Latent Profile Models

- Implemented alternative power analysis for latent models in R, reducing total run-time from 24+ hours to 4 hours
- Applied script to large archival dataset to identify minimum number of participants required in dissertation study, finalizing funding requirements for successful grant proposal
- Created GitHub repository of opensource R script for public access, use, and feedback

Word Learning Rate Differences in Bilingual Elementary Children

- Recruited 20 school aged children and collected data across 2 timepoints to analyze with repeated measures MANCOVA and regression using SPSS and SPM, identifying group learning rate differences
- Presented primary findings at International Symposium of Bilingualism 12 (2019)

Predicting the Boston Marathon 2023 Time Cutoff

- Webscraped historical Boston Marathon cutoff times and recent qualifying time standards to train and test several simple linear regression models using R, predicting potential upcoming time cutoff range for Boston Marathon 2023
- Fielded comments and feedback in an open online forum, leading to improved accuracy for reporting and alternative models and programming packages to consider using in future iterations

SKILLS

R (dplyr, ggplot2, tidyr, etc.), SPSS, Python (pandas, NumPy, Matplotlib, etc.), MPlus, SQL, MATLAB, SPM, ePrime, MS Office Suite (Word, Excel, PowerPoint, etc.), Google Drive (Docs, Sheets, Slides, etc.), Qualtrics
Latent variable modeling, Longitudinal growth modeling, EFA / CFA / PCA, Multiple regression, ANOVA, Bayesian inference, Archival / big data, Data management, Survey research design, Cognitive / behavioral assessment

EDUCATION

PhD, Speech and Hearing Science, Arizona State University (August 2017 – June 2022)
BA, Psychology, Loyola Marymount University (August 2010 – May 2014)
Project Management Professional, Project Management Institute (Licensed through December 2025, #33932942)