Brian Barry

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Education

University of California, San Diego **March 2020**

BS: Cognitive Science (Machine Learning and Neural Computation)
Minor: Mathematics

Skills

Programming

- Python + Jupyter Notebooks (2.5 years)
  - Statistical analysis
  - Machine learning
  - Deep learning (TensorFlow)
  - Modeling and simulation
  - Signal processing
  - Web and API scraping
  - Web development with Flask
- MATLAB (2 years)
- SQL (1 year)
- JavaScript (1.5 years)
- HTML & CSS
- R
- Version control: Git
- Bash
- Excel

Data Visualization and Design

- Tableau **+** D3.js **+** Matplotlib **+** Figma

Other

- Fluent in French

Experience & Internships

Undergraduate Research Assistant, Voytek Lab, UCSD **September 2019 - February 2021**

Investigated the correlation between spatial and temporal decompositions of neural spiking data using Python.

- Built pipeline to compute correlations between spectral exponents of eigenvalue spectra (from PCA) and power spectra (from FFT)
- Implemented computational model to simulate data
- Presented findings at the Neuromatch Conference (talk) and Brain Criticality Conference (poster)
- Wrote bash scripts to submit jobs for parallel computing

Undergraduate Research Assistant, Swartz Center for Computational Neuroscience **April 2019 - February 2021**

Analyzed EEG data from a rhythmic control task using EEGLAB (MATLAB), and wrote a plugin for EEGLAB incorporating a spectral parametrization module.

- Wrote scripts to automate ICA decomposition, epoching, fitting dipoles, and plotting figures
- Organized ERP, dipole and ERSP component clusters with interactive HTML visualization
- Wrote source code and designed GUI components for the EEGLAB plugin.

Founder, Major Map Initiative, UCSD **January - August 2020**

Led the development of majormap.ucsd.edu, a web based student organization intended to help students select and understand their majors with greater depth. The website currently has an interactive applet that displays course prerequisite maps with D3.js, with more features under development.

- Implemented web scraping script in Python to collect course prerequisites
- Designed front end for website
- Recruited new members

Research Assistant, Stanford Behavioral and Functional Neuroscience Laboratory **February - March 2021**

Conducted pilot study consisting of behavioral experiments on SCO2 KI/KO mice models.

- Set up and conducted experiments, tracking activity with EthoVision XT software
- Analyzed data and presented results to the lab

Undergraduate Research Assistant, UC San Diego Health **January - June 2019**

Conducted EEG neurofeedback experiments and pupillometry assessments on schizophrenic and schizoaffective subjects.

Intern, Jet Propulsion Laboratory **June - August 2014**

Organized and compiled Voyager I residual radio data from Unix into Excel.

Additional Projects

"CollabSource" (full stack; in development) **January 2021 - Present**

- Engineering database using flask sqlalchemy
- Engineering models, views, and controllers
- Designing and engineering frontend using JQuery and React

Extracurricular Activities

Community Service Chair, Sigma Phi Epsilon, UC San Diego **January - September 2019**

Sought out and organized community service opportunities for the chapter.

Additional Relevant Coursework

- Discrete Mathematics and Graph Theory
- Deep Learning Specialization (Coursera)
- Databases and SQL for Data Science (Coursera)
- Differential Equations and Dynamical Systems