

# **PSYC 5720 — Computational Neuroscience**

## **Data Exploration Assignment: Final Project**

*April 18, 2019*

**Due 5/3/2019 at 5 PM**

The overall goal of the data exploration assignment is for you to use a public data set to address a specific hypothesis about how the brain performs computations. Given the time constraints of the class, you are only expected to make progress toward this goal, by pursuing a specific aim that you defined in your proposal.

Your submission will consist of two parts: code that you push to your github repository, and a report that describes your results. The code will account for 40% of the assignment credit, and the report for 60%.

### **Code**

Your github repository will need to contain a notebook that generates the figure(s) you present in your report. This notebook must be at the top level of the repository and be clearly named. I will evaluate your submission by cloning the repository, following your instructions in `README.md` and/or `data/README.md` to retrieve the data set, and then executing the notebook. Your notebook needs to work for you to receive full credit, sure that someone following your instructions with a clean install can duplicate your results. I will mostly be evaluating this part of the assignment based on results, but 10% of your score will reflect whether your code is readable and appropriately documented.

### **Report**

Your report will be structured like an abbreviated scientific paper. This should be around 5 pages in length, with 1-inch margins, submitted as a PDF to Collab. Work that is of high quality that adheres to the guidelines, and with few mistakes in grammar, will receive full credit.

The report should begin with a title and a list of authors, and then the following sections, with the indicated headings.

#### **Introduction**

The introduction can be based off your proposal. You need to define the overarching goal/question you are addressing in a way that emphasizes its significance to understanding neural computations and what is known already in the field. Briefly introduce your data set and clearly state a hypothesis and how it relates to the data. Finally, introduce the specific analysis you performed and how it relates to testing the hypothesis.

## **Results**

Succinctly describe the specifics of the analysis you performed and the results. You need to have at least one figure, which must be captioned with a detailed legend, and referenced in the main text of the report. Always use past tense when describing results.

## **Discussion**

Interpret your results in light of your hypothesis. Describe any limitations or unexpected outcomes, and summarize what the next step would be in addressing the hypothesis or general research question.

## **References**

You should reference at least 3 peer-reviewed primary research papers or reviews in your report. In the text, use parenthetical author-date citations, like (Meliza et al., 2019), and then provide a list of full references in this section. Each reference should include the authors, the title, the year of publication, the journal, and sufficient information to locate the article in the journal (a DOI, volume:start–end, or both). You can use whatever format you prefer as long as all of the required information is present. Every reference in this section needs to correspond to an in-text citation and vice versa. You need to cite the data set you used, using the form requested by the authors on the CRCNS website.

## **Acknowledgments**

Acknowledge the experimenters who collected the data you used, and any assistance you received from classmates not on the author list.