

# CALEB E. STRAIT

## DATA SCIENTIST

(413) 884 - 4767

[caleb.strait@gmail.com](mailto:caleb.strait@gmail.com)

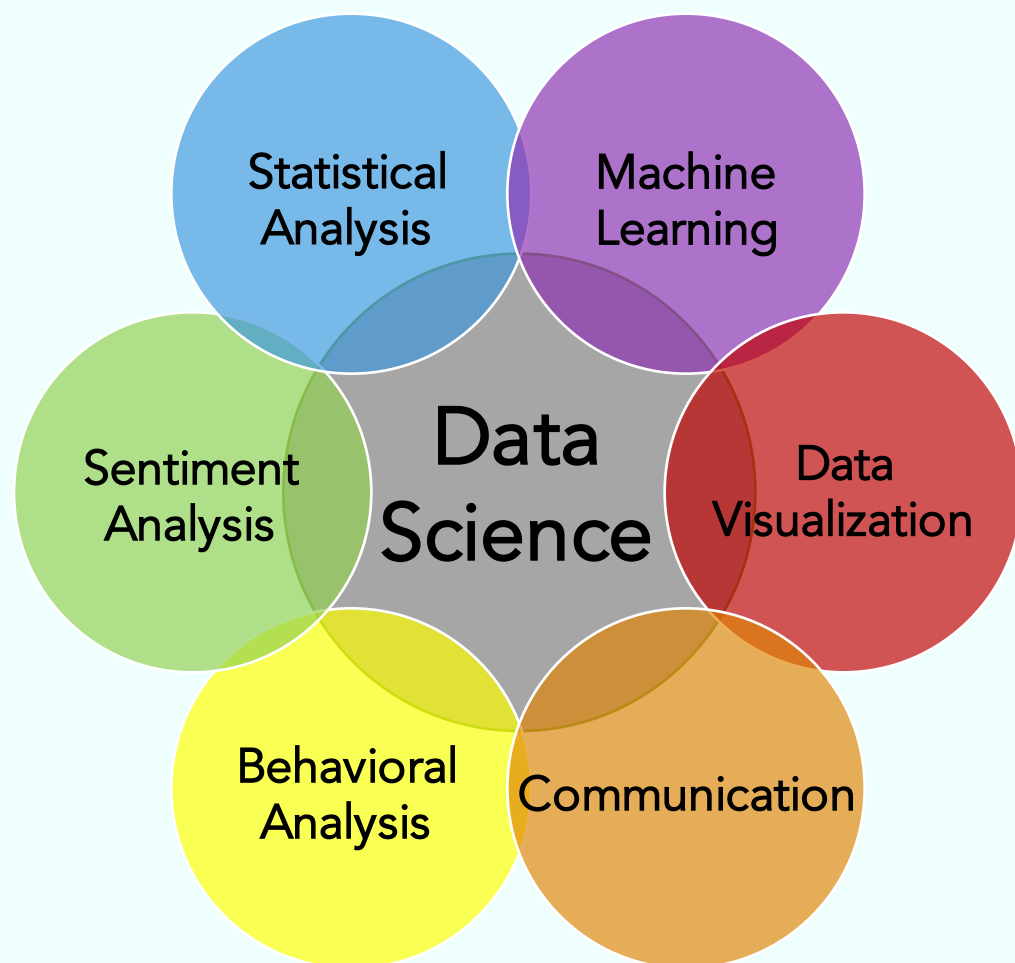
Athens, Ohio - open to relocation

[calebstrait.com](http://calebstrait.com)

[github.com/calebstrait](https://github.com/calebstrait)

[linkedin.com/in/calebstrait](https://linkedin.com/in/calebstrait)

## Skills



## Languages

**MATLAB** - Psychtoolbox

**Python** - Flask, Pandas, Numpy, Natural Language Toolkit, Jupyter Notebook, SciKit-Learn, Matplotlib

**Web** - HTML, CSS, Javascript, API

**System** - Mac OS, Windows, Linux

**SQL, Java, C++/C#, SPSS**

## Education

**University Of Rochester**

Ph.D., Brain & Cognitive Sciences  
May 2016

M.A., Brain & Cognitive Sciences  
January 2014

**Oberlin College**

B.A., Psychology  
Concentration, Cognitive Science  
Minor, Computer Science  
May 2011

## Experience

Data Science Fellow

Insight Data Science

January 2017 - Present

Built "Nextgame," a web application that uses reinforcement learning to give increasingly personalized video game recommendations by prompting user feedback for each recommended game. Hosted at [nextgame.site](http://nextgame.site).

- Designed an intuitive user interface to maximize user feedback with respect to game recommendations and therefore enable real-time improving recommendations through reinforcement learning.
- Pieced together a functioning web app in three weeks: wrote a custom recommendation algorithm in Python, collected data with web scraping and the [igdb.com](http://igdb.com) API, stored data in a PostgreSQL database, implemented automatic SQL queries to fetch data for the user, cleaned data with regular expressions, Pandas, and Numpy, and hosted with Amazon Web Services via Flask.
- Validated the app's performance after saving usage data from 42 users. Used a binary cumulative density function test on logistic regression coefficients to show that there were significantly more users for whom upvoting increased over time than we would expect by chance.

Data Science Side Project

March 2017 - Present

Created "RedditAI," a reddit.com front page stream web application that learns to recognize and promote the content a user is likely to upvote by analyzing the sentiment of the post's title and top comments. Hosted at [redditai.stream](http://redditai.stream).

- Used the reddit API PRAW to build a reddit-like app, that fetches a particular reddit account's current front page posts. Users can use their own account, or interact with a 'hivemind' account's upvote history.
- Implemented a feedforward neural network with one hidden layer in Python using the computational package TensorFlow. The algorithm produces a new score for each current front page post as a function of it's top comments' sentiments, scored with NLTK's VADER. The app sets the network's initial weights by training on the top comments' sentiments from the user's previously upvoted posts.

Doctoral Researcher

University of Rochester

June 2011 - May 2016

Studied the computational underpinnings of human choice processes. Analyzed behavioral choice data from custom economic tasks: Added neural data collection for the tasks producing the cleanest behavioral data. Modeled neural responses as a function of key features in concurrent behavioral and eye-movement data.

- Designed and programmed 30+ custom economic decision tasks in a lab capable of recording the activity of single brain cells en-mass mid-task. Led a team of three laboratory technicians and four research assistants in adding neural data collection during the 4 tasks producing the cleanest behavioral data.
- Wrote custom logistic regression models of neuronal spike frequencies in reward-specialized brain regions as functions of decision task parameters and choice behavior data. Demonstrated that particular brain regions encode task information in a way that computationally subtracts an option's pros from its cons. Compared this linear model's fit to that of a pure information-theoretic analysis: mutual information between neural response and encoded task parameters.
- Published four 1<sup>st</sup>-author peer-reviewed articles in some of the highest impact-factor journals in neuroscience. Wrote and successfully defended a 150-page doctoral thesis around these works, "Neural Mechanisms of Reward-Based Choice," through a series of public departmental talks.