# Election 2016 Twitter Sentiment Map

Alex Engel

CS448B Spring 2016

# Problem

Many political polls today are conducted using some type of survey. These surveys oftentimes bias poll results due to selection bias and/or leading questions. Data collected in this manner can lead to inaccurate findings.

My project aims to eliminate some of these biases by analyzing the collective political sentiment of our nation through a different medium, social media. Specifically, my project takes the form of an interactive map that uses Twitter data to portray political sentiment state-by-state using both historical and real-time data.

By collecting and extracting sentiment from tweets regarding the three remaining frontrunners in the 2016 presidential election, I aim to provide a more unbiased view of our nations political sentiment.

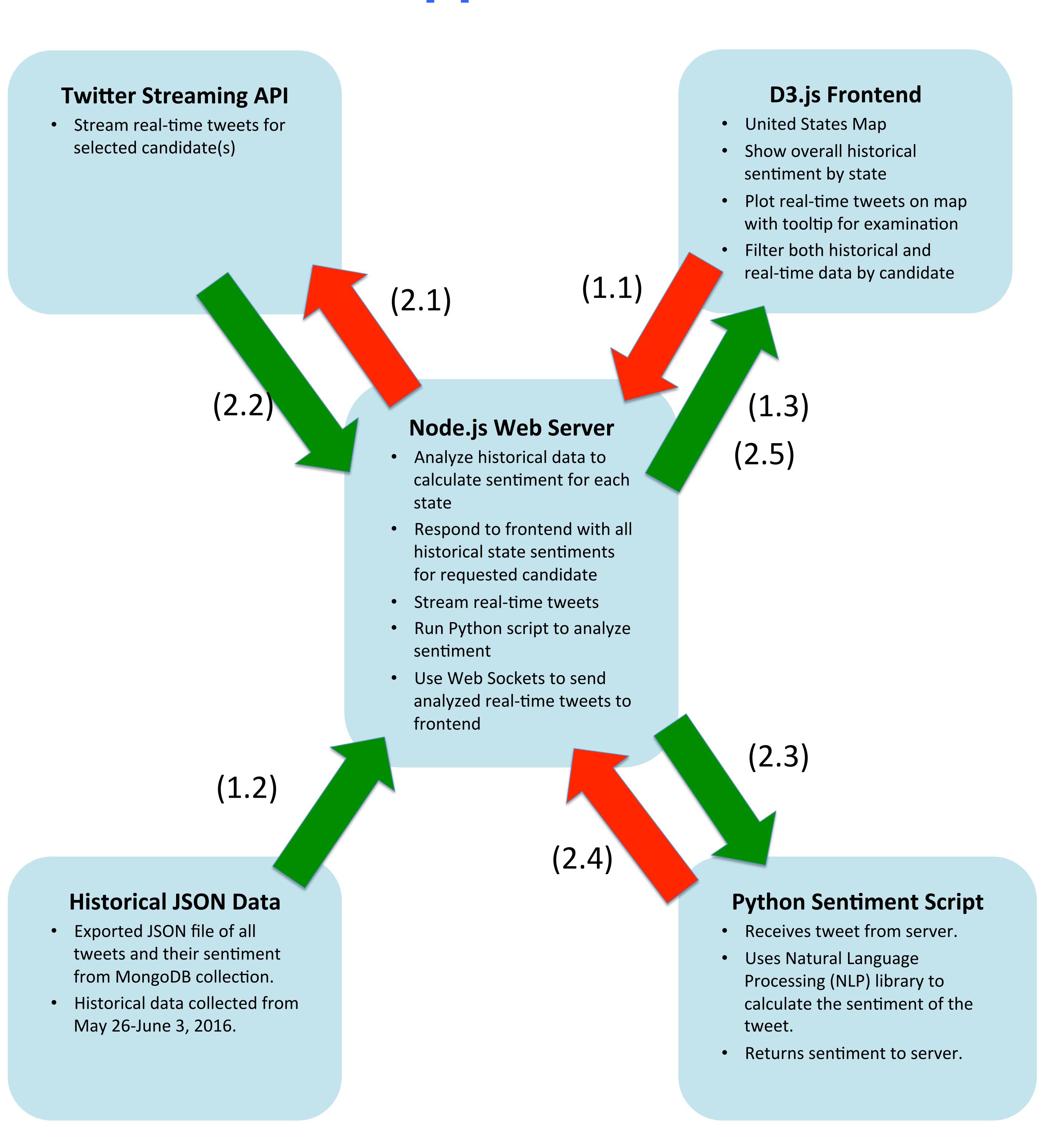
# Motivation

The problem mentioned above was an interesting and difficult task to solve for several reasons. First of all, its implementation involved aspects from many fields of computer science. In addition to creating a D3.js frontend, it was necessary to write a web server Python script to aggregate the relevant data and analyze tweet sentiment, respectively. In essence, I was able to put the knowledge I'd gained from some of my favorite classes to the test.

Another interesting aspect to this project was determining the most effective way to convey sentiment data to the viewer. Given the data collected, it would have been possible to use line charts to plot state sentiment over time or bar charts to see how political sentiment between states is distributed. In the end, I decided on using a color-coded map view to display sentiment. In doing this, my intention was to afford the viewer the ability to observe national trends at a glance while still being able to easily pick out trends in individual states.

Another challenging aspect to this project was the limitations of the Twitter Streaming API. Because there are restrictions on how clients can query the API and what type of information is retrieved, I had to alter my project plan several times.

# Approach



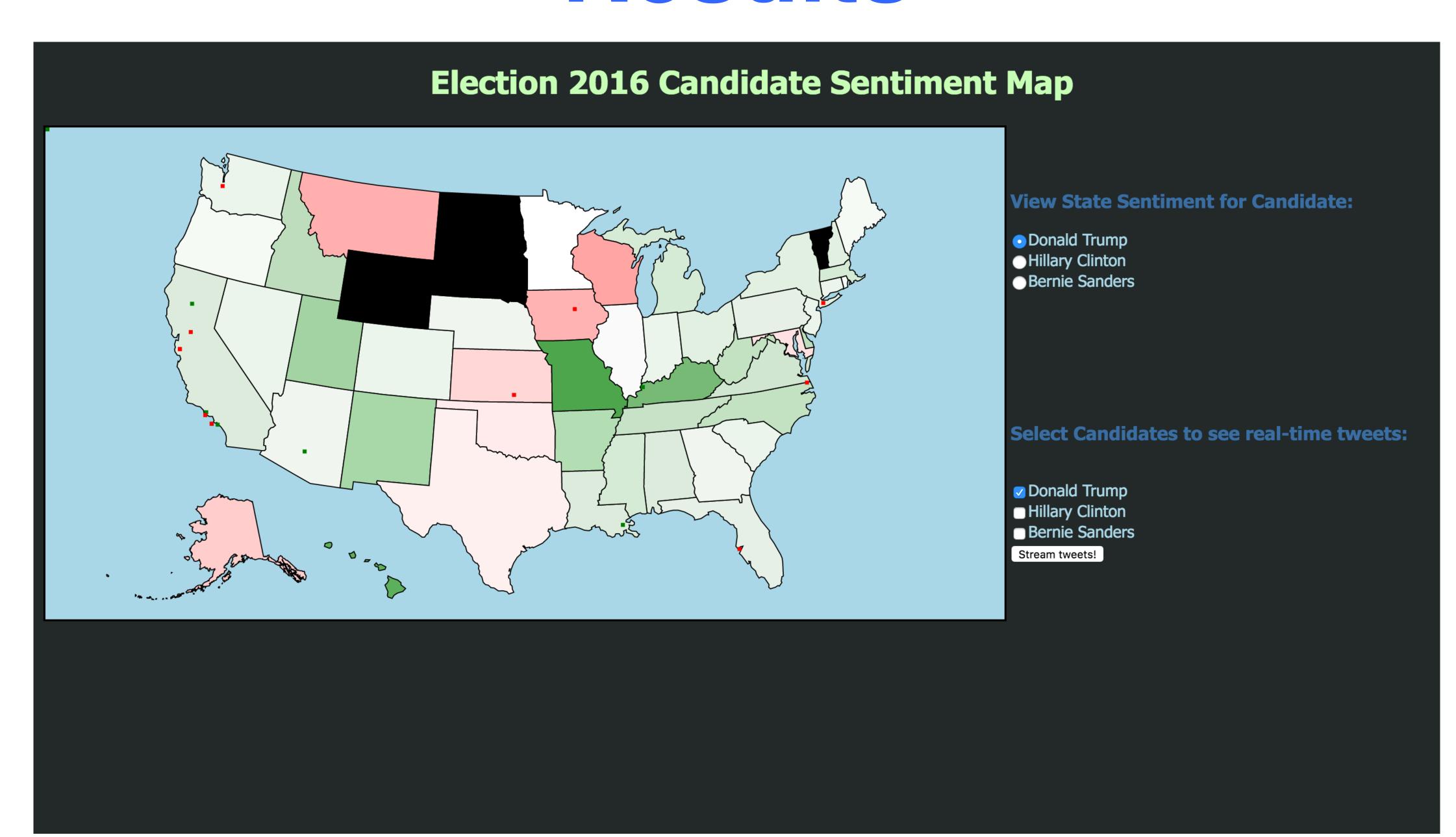
#### Task 1: Historical Sentiment Data

- (1.1) D3 frontend sends request to server with selected candidate
- (1.2) Server analyzes historical JSON data
- (1.3) Historical sentiment data returned to server to color states

#### Task 2: Real-time Sentiment Data

- (2.1) Server requests relevant tweets from Streaming API
- (2.2) Server receives and processes tweets
- (2.3) Python script analyzes each tweet for sentiment
- (2.4) Sentiment returned to server
- (2.5) Tweet and sentiment sent to frontend via Web Sockets for plotting

## Results



Sentiment analysis is still in it's infancy, and as such, has a ways to go in terms of accuracy. That being said, by drawing from large amounts of data and plotting it effectively, my visualization shows definite trends in how political sentiment about the remaining candidates is distributed throughout our nation. One of the more obvious trends is the ambiguity of Twitter's sentiment regarding Donald Trump. As can be seen in the screenshot above, tweets about Trump have a high sentiment variability between states.

Another interesting aspect of my results is the ability to pinpoint where certain political events were happening. During development, Bernie Sanders had a rally in Oakland and my visualization's real-time feature made it easy to tell that there was increased positive sentiment regarding Sanders in the Bay Area during this time.

### Future Work

The majority of the potential for future work related to this project is in regards to sentiment analysis. Due to time constraints, I used a sentiment analysis library that is not optimized for analyzing tweets. Future projects could train their analysis script on tweets for better results. There is also room for non-binary sentiment types that reflect more complex emotions.

Another potential area for work include more complex user interaction with the data. For example, the user could click on a state to see more detailed breakdowns of the data both in graphical form and raw form or drag sliders to see how sentiment has changed over time.