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CMPS493_01

Subject: Report Paper on Independent Project

Topic: Thank you Obama!

Idea:

It all began three weeks ago. The idea was not born until late in the wee hours of the night when I was done with my 411 midterm presentation, and out of ideas for my independent research project and instead wanted something more useful. Thus I decided visualize data over time and settled on Barack Obama as a viable candidate for the experimentation.

I used Microsoft's Bing Search to find the images, along with their Emotions API via Microsoft Cognitive Services. I used python as my backend for the number crunching. Then I fed all our pickled info over to a csv file in order to add it to a Google Spreadsheet. From there, I found it easy to use Google's Google Chart API to make different plots of our data.

User experience was a bit tricky, so I used Bootstrap to format the charts. I tried to compare Obama's emotions to different values such as S&P, and approval rate. Unfortunately, no matter how much I tried, I didn't see any correlations between the data (this could be due to Emotion API's inclination to classify a face as happy or neutral more than anything else). Of course, if there is one trend I managed to see, it's that Obama's happiness has dropped sharply this past month and there has been a slight rise in his neutrality, contempt and anger (I don't think trump has anything to do with it, and possibly he's a Manchester fan).

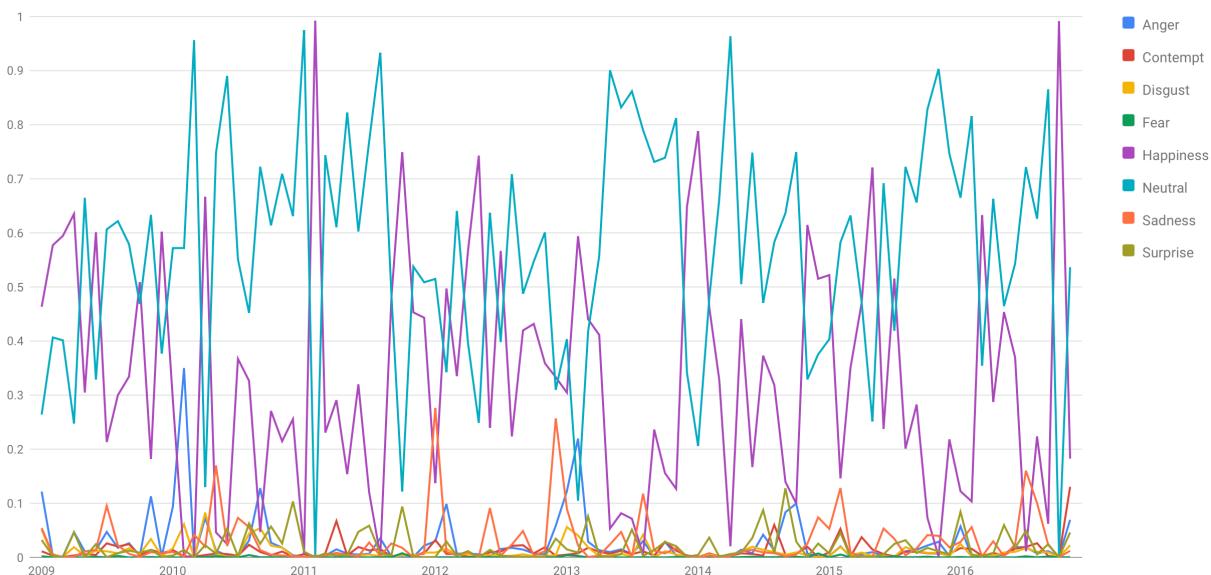
Overall this was a great project that I enjoyed working on and I hope you can enjoy looking at the data I've gotten for you.



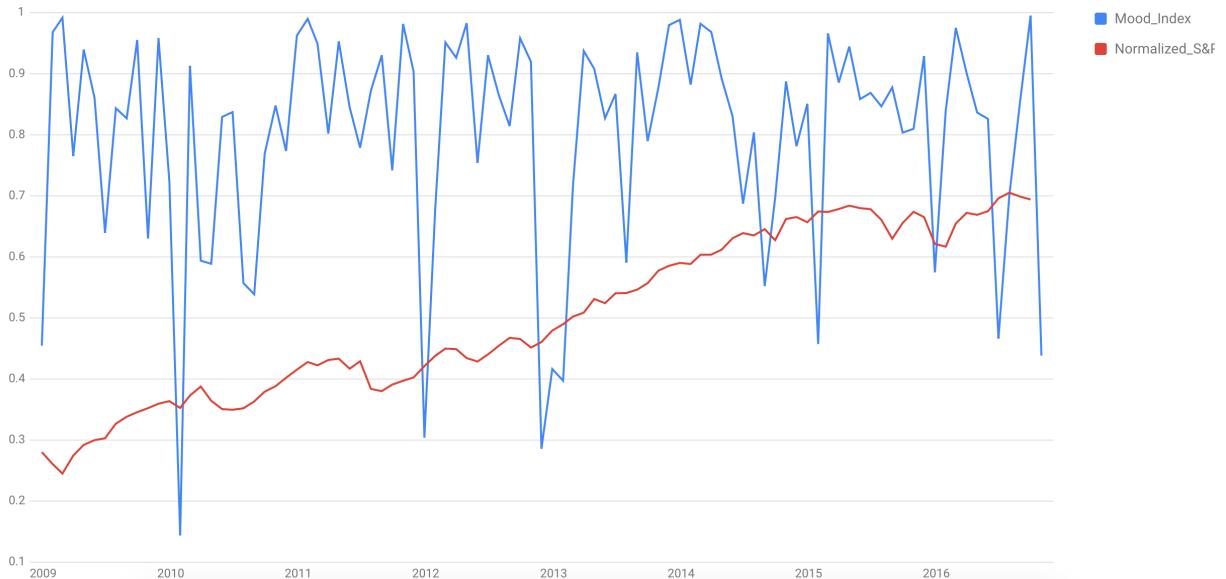
A LOOK BACK

President Obama's time in office has been eventful. Here's a data-driven trip through memory lane analyzing his moods and the things that happened, using computer vision and statistical summary.

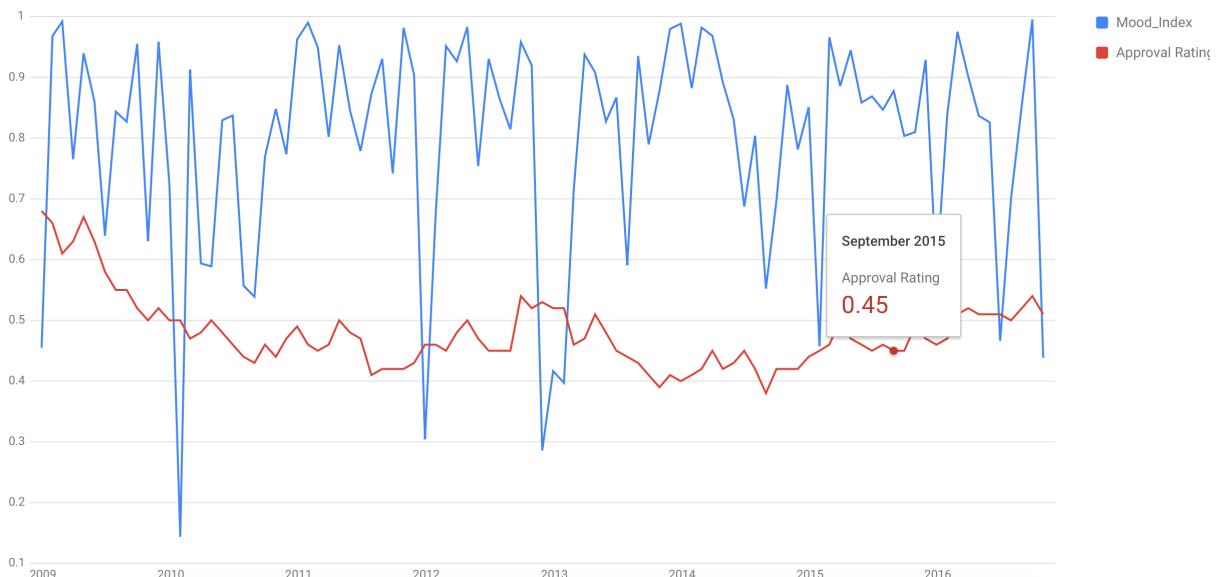
Detailed Report:



Using Microsoft's Cognitive Services API, I quantified Obama's mood using pictures found with Bing's search API, and then aggregated the data, which took around an hour to process, into this graph.



I distilled the different emotions that Obama feels in his photographs into a mood index. Basically, positive moods such as happiness contribute positive weighting and negative moods such as sadness and anger contribute negative weighting. Then I plotted this against a normalized version of S&P500. It turns out that there is little correlation between Obama's monthly mood and the S&P500 index. $\nwarrow (\circ) \nearrow$



Even though the mood index comparison to S&P500 was a little bit disappointing, I next moved towards looking at approval rating. Does Obama have a higher approval rating when he smiles more?



Methodology:

I was motivated by the question: "What can we learn from a person's emotions over time?" Thus, the idea of Thank you Obama! was born. I had to do extensive preprocessing in order to get the data. I wrote Python scripts to aggregate around 1000 image URLs of Obama's face from his inauguration in Jan 2009 to November 2016 with Bing Search API. Next, I fed these image URLs into Microsoft Cognitive Services Emotions API, getting a 8D vector of quantified emotions (anger, contempt, disgust, fear, happiness, neutral, sadness, and surprise). These emotion vectors were averaged into an average representation of Obama's emotion for each month. A mood index was developed as a sum of positive and negative emotions.

Platform and Language Used:

Python (and several other frameworks such as scikit-learn), JavaScript, Html5, Digital Ocean Server, Microsoft Cognitive Services, Google Chart, Bing Search API, Emotions API



Thanks Obama