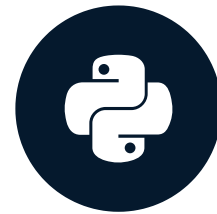


Analyzing Twitter Data

ANALYZING SOCIAL MEDIA DATA IN PYTHON



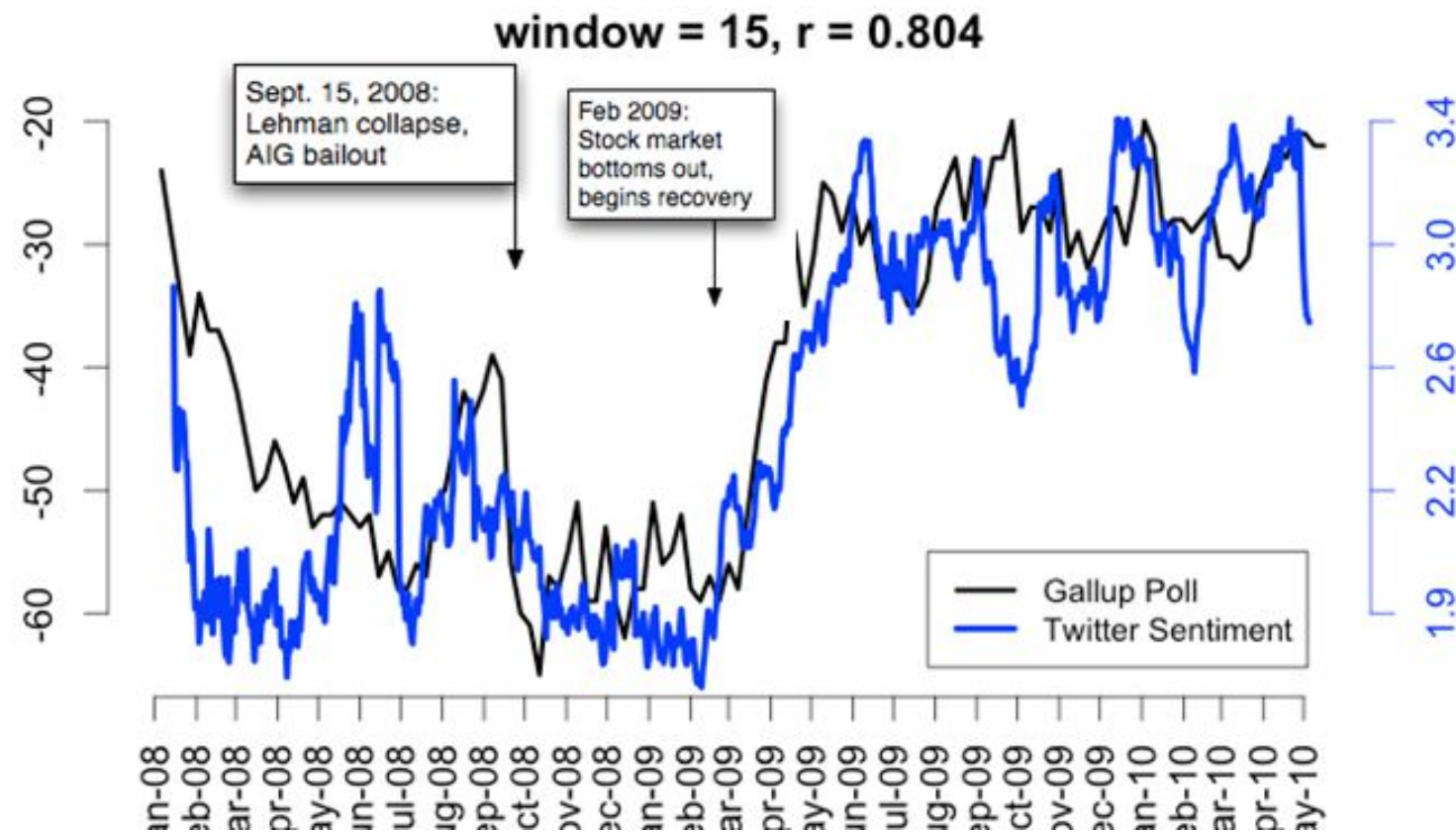
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Why Analyze Twitter Data?

Twitter sentiment versus Gallup Poll of Consumer Confidence

Brendan O'Connor, Ramnath Balasubramanyan, Bryan R. Routledge, and Noah A. Smith. 2010.
From Tweets to Polls: Linking Text Sentiment to Public Opinion Time Series. In ICWSM-2010



Why Analyze Twitter Data?

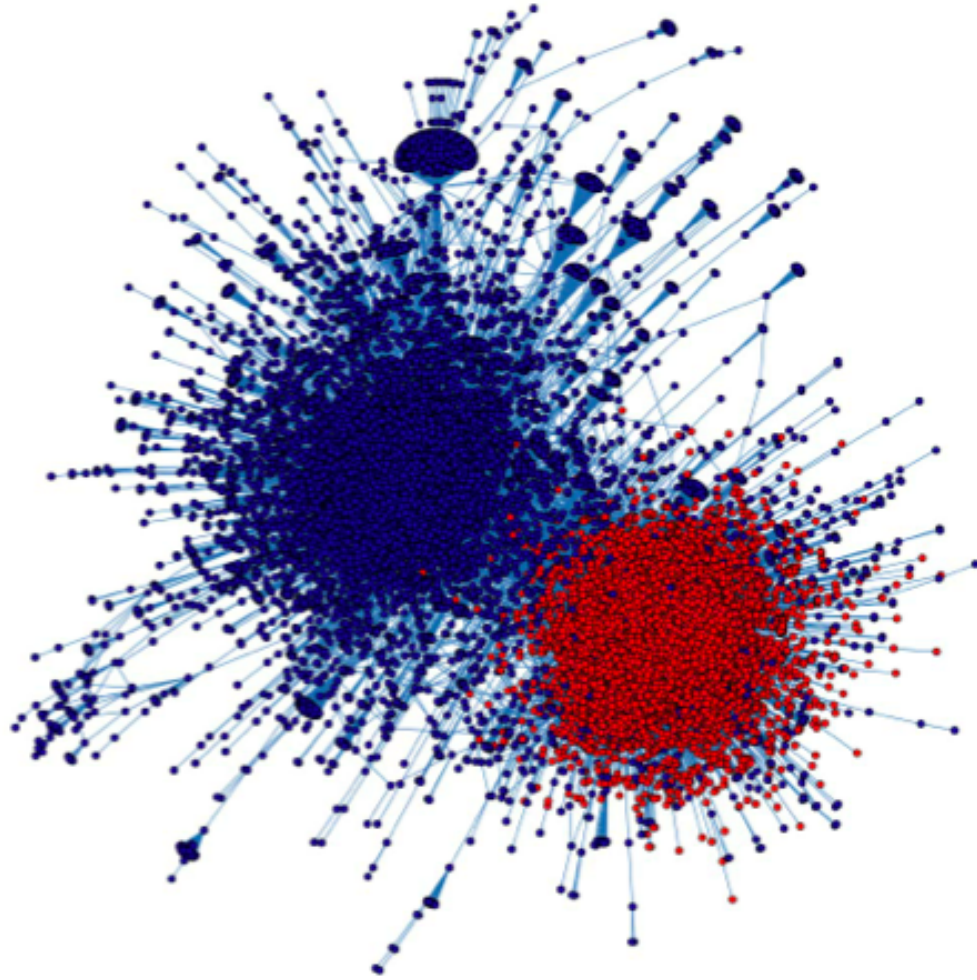


Fig. 2. The political retweet network, laid out using a force-directed algorithm. Node colors reflect cluster assignments (see text).

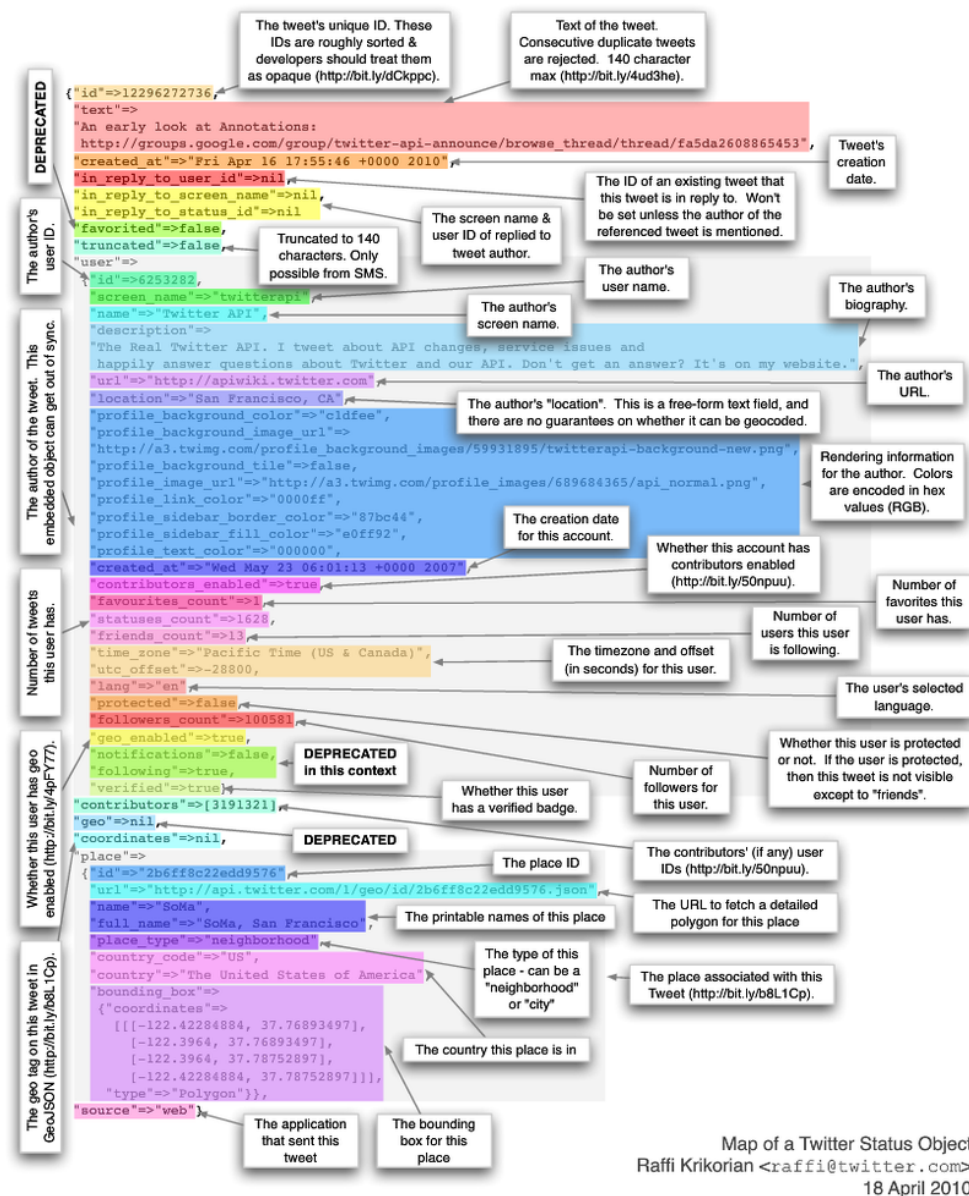
Source: Conover et al. (2011)

What you can't analyze

- Can't collect data on observers
- Free-level of access is restrictive
 - Can't collect historical data
 - Only a 1% (unverified) sample

What you can analyze

- 1% sample is still a few million tweets
- Within a tweet
 - Text
 - User profile information
 - Geolocation
 - Retweets and quoted tweets



Let's review!

ANALYZING SOCIAL MEDIA DATA IN PYTHON

Collecting data through the Twitter API

ANALYZING SOCIAL MEDIA DATA IN PYTHON



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Twitter API

- API: Application Programming Interface
 - Method of accessing data
- Twitter APIs
 - Search API
 - Ads API
 - Streaming API

Streaming API

- Streaming API
 - Real-time tweets
- Filter endpoint
 - Keywords
 - User IDs
 - Locations
- Sample endpoint
 - Random sample

Using tweepy to collect data

- `tweepy`
 - Python package for accessing Streaming API

SListener

```
from tweepy.streaming import StreamListener
import time

class SListener(StreamListener):
    def __init__(self, api = None):
        self.output = open('tweets_%s.json' %
                           time.strftime('%Y%m%d-%H%M%S'), 'w')
        self.api = api or API()
    ...
```

tweepy authentication

```
from tweepy import OAuthHandler
```

```
from tweepy import API
```

```
auth = OAuthHandler(consumer_key, consumer_secret)
```

```
auth.set_access_token(access_token, access_token_secret)
```

```
api = API(auth)
```

Collecting data with tweepy

```
from tweepy import Stream  
  
listen = SListener(api)  
stream = Stream(auth, listen)  
stream.sample()
```

Let's practice!

ANALYZING SOCIAL MEDIA DATA IN PYTHON

Understanding Twitter JSON

ANALYZING SOCIAL MEDIA DATA IN PYTHON



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Contents of Twitter JSON

```
{  "created_at": "Thu Apr 19 14:25:04 +0000 2018",  
  "id": 986973961295720449,  
  "id_str": "986973961295720449",  
  "text": "Writing out the script of my @DataCamp class  
          and I can't help but mentally read it back to myself in  
          @hugobowne's voice.",  
  "retweet_count": 0,  
  "favorite_count": 1,  
  ... }
```

- How many retweets, favorites
- Language
- Reply to which tweet
- Reply to which user

Child JSON objects

```
{  
  "user": {  
    "id": 661613,  
    "name": "Alex Hanna, Data Witch",  
    "screen_name": "alexhanna",  
    "location": "Toronto, ON",  
    ...  
  }  
}
```

Places, retweets/quoted tweets, and 140+ tweets

- `place` and `coordinate`
 - contain geolocation
- `extended_tweet`
 - tweets over 140 characters
- `retweeted_status` and `quoted_status`
 - contain all tweet information of retweets and quoted tweets

Accessing JSON

```
import json

tweet_json = open('tweet-example.json', 'r').read()
tweet = json.loads(tweet_json)
tweet['text']
```

Child tweet JSON

```
tweet['user']['screen_name']  
tweet['user']['name']  
tweet['user']['created_at']
```

Let's practice!

ANALYZING SOCIAL MEDIA DATA IN PYTHON