Botometer Downloader

CS109a: Fall 2018

Authors: Gordon Hew, Wenqin Hu, Blair Leduc

TF: Ken Arnold

Botometer checks the Twitter accounts and gives it a score

In [1]:
```
%matplotlib inline
import numpy as np
import pandas as pd
import matplotlib
import matplotlib.pyplot as plt
import seaborn as sns
sns.set()

# http://www.tweepy.org/
import tweepy
import sys
import jsonpickle
import json
import os
import zipfile
import time
from datetime import date
from sklearn.decomposition import PCA
import math
import botometer
```

In [3]:
```
# access botometer #

mashape_key = "HozoY73W3umshiUthQGQaS73C88Np1rXS7tjsnFZ2NrU2lzVmd"
twitter_app_auth = {
'consumer_key': 'fNSZp54j8HgQPqVDZ0UcW1lSl',
'consumer_secret': 'yQ5EvshFjADCV0EWJ02WCMqjn9PnaEuqMKVAyl9H3yuvNyPaUv',
'access_token': '1058713520701882369-3bP6OTKN6ebVYwiLe5Yh43DrZQpPRj',
'access_token_secret': 'RoONmFjQ7kVcUdqQXoiyKye6TBJfwdNFUcZpF0miFNBIa',
  }
bom = botometer.Botometer(wait_on_ratelimit=True,
                          mashape_key=mashape_key,
                          **twitter_app_auth)
```

In [4]:
```python
def get_botmeter(IDs):
    accounts = IDs

    botometer_result=[]
    botometer_screen_name=[]

    for screen_name, result in bom.check_accounts_in(accounts):
        botometer_screen_name.append(screen_name)
        botometer_result.append(result)


    return (botometer_result, botometer_screen_name)
```

In [6]:
```python
account_df=pd.read_csv('data/random_user_ids.txt', header = None)
print (len(account_df))
account_df.head(1)
```

```
1000
```

Out[6]:

	0
0	934576158305345536

In [7]:
```python
accounts = list(account_df[0])
len(accounts)
```

Out[7]:
```
1000
```

In [15]:
```python
t = time.time()

botometer_result_1000,botometer_screen_name_1000 \
    = get_botmeter(accounts)

runtime_botometer = time.time()-t
print('botometer_time: ',runtime_botometer)
```

```
botometer_time:  4566.151033878326
```

In [16]:
```python
with open('data/botometer_result_1000random.json', 'w') as outfile:
    json.dump(botometer_result_1000, outfile)
```

load botometer scores from file

In [2]:
```
def arrange_botometer_score(data_botometer,is_bot):
    account_score = []
    for i in (range(len(data_botometer))):
        for key,val in data_botometer[i].items():
            temp = key
        if temp != 'error':
            parameters = []
            parameters.append(is_bot)
            for key,val in data_botometer[i]['user'].items():
                parameters.append(val)
            for key,val in data_botometer[i]['categories'].items():
                parameters.append(val)
            for key,val in data_botometer[i]['scores'].items():
                parameters.append(val)
            account_score.append(parameters)

    account_score = pd.DataFrame(account_score)
    account_score.columns = columns = ['is_bot','id','screen_name',
                                       'content','friend','network',
                                       'sentiment','temporal','user',
                                       'score_english','score_universal'
                                      ]
    return account_score
```

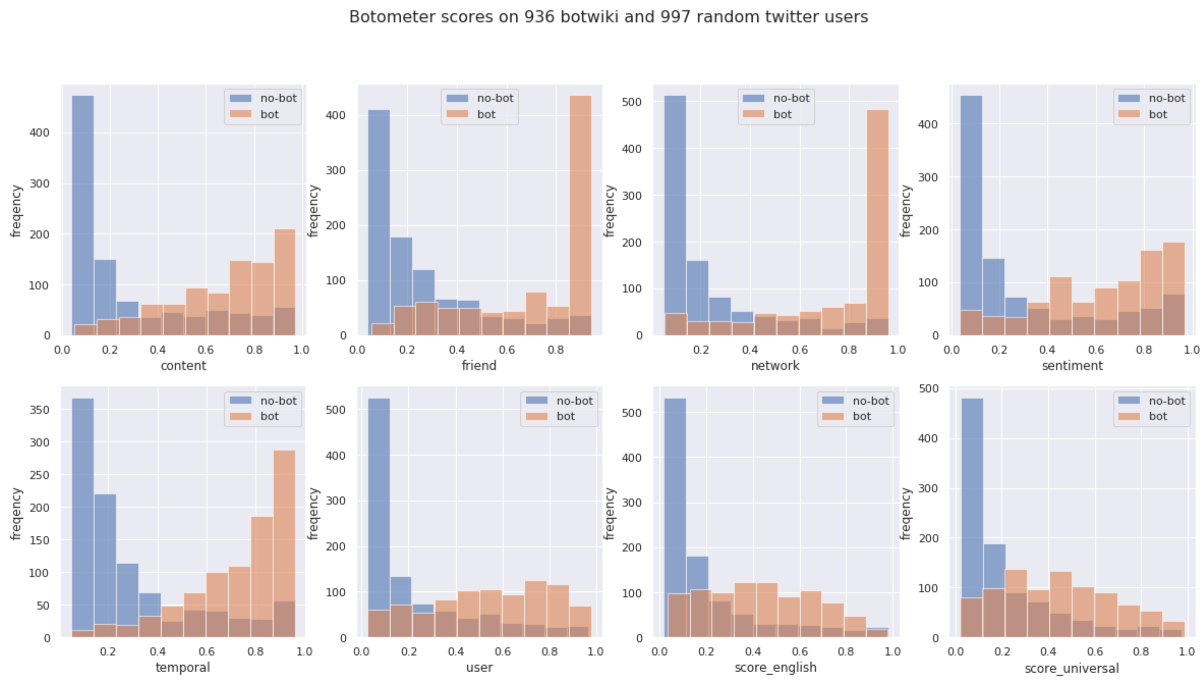
In [3]:
```
with open('data/botometer_result_1000random.json') as handle:
    human_botometer = json.loads(handle.read())
with open('data/botometer_result_936bot.json') as handle:
    bot_botometer = json.loads(handle.read())
```

In [4]:
```
human_score = arrange_botometer_score(human_botometer,is_bot='False')
bot_score = arrange_botometer_score(bot_botometer,is_bot='Ture')
```

```
In [10]: fig, axs = plt.subplots(2, 4, figsize=(20, 10))
         col = 3
         for j in range(2):
             for i in range(4):
                 axs[j,i].hist(human_score.iloc[:,col].tolist(), alpha=0.6,
                               label='no-bot')
                 axs[j,i].hist(bot_score.iloc[:,col].tolist(), alpha=0.6,
                               label='bot')
                 axs[j,i].set_ylabel('freqency')
                 axs[j,i].set_xlabel(human_score.columns[col])
                 axs[j,i].legend()
                 col=col+1

         fig.suptitle("Botometer scores on 936 botwiki "\
                      +"and 997 random twitter users",
                      fontsize=16)
```

```
Out[10]: Text(0.5,0.98,'Botometer scores on 936 botwiki and 997 random twitter u
         sers')
```



```
In [60]: account_df2 = account_df.copy()
         account_df2 = account_df2.drop(columns=['screen_name', 'name',
                                                 'verified', 'location',
                                                 'description', 'lang',
                                                 'url', 'geo_enabled',
                                                 'created_at'])
         account_df2.head(1)
```

Out[60]:

	id	followers_count	statuses_count	friends_count	favourites_count	listed_count	is_bo
0	37861434	135481	9539	6	0	1591	True

In [130]:
```python
y_train = account_df2['is_bot']
x_train = (account_df2.drop(columns=['id', 'is_bot','botometer_score']))
x_train = (x_train+1).apply(np.log, axis=0)

x_train = (x_train - x_train.min())/(x_train.max() - x_train.min())
x_train.describe()
```

Out[130]:

	followers_count	statuses_count	friends_count	favourites_count	listed_count
count	100.000000	100.000000	100.000000	100.000000	100.000000
mean	0.422452	0.435771	0.177962	0.291188	0.366396
std	0.254621	0.232974	0.208065	0.292839	0.225001
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.286515	0.290618	0.000000	0.000000	0.192609
50%	0.410244	0.490280	0.103968	0.238762	0.359801
75%	0.593019	0.590976	0.317226	0.493743	0.498676
max	1.000000	1.000000	1.000000	1.000000	1.000000

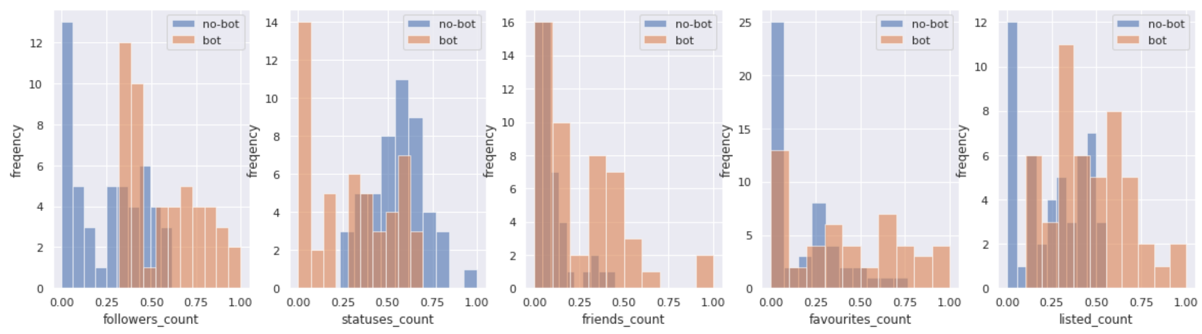
In [129]:
```python
(x_train+1).head(1)
```

Out[129]:

	followers_count	statuses_count	friends_count	favourites_count	listed_count
0	12.816594	10.163249	2.94591	1.0	8.372746

In [131]:
```python
fig, axs = plt.subplots(1, 5, figsize=(20, 5))

for i in range(5):
    axs[i].hist(x_train.iloc[0:49,i].tolist(), alpha=0.6,
                label='no-bot')
    axs[i].hist(x_train.iloc[50:99,i].tolist(), alpha=0.6,
                label='bot')
    axs[i].set_ylabel('freqency')
    axs[i].set_xlabel(x_train.columns[i])
    axs[i].legend()
```

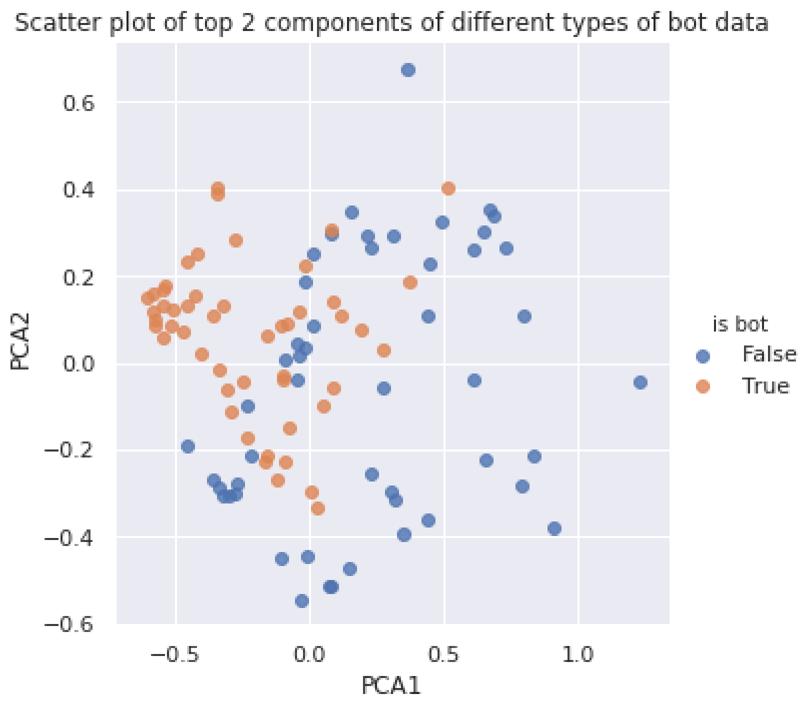


In [135]:
```
pca = PCA(n_components = 2).fit(x_train)
pca_x = pca.transform(x_train)

pca_df = pd.DataFrame(pca_x, columns=['PCA1', 'PCA2'])
pca_df['is bot'] = y_train.values

sns.lmplot(x="PCA1", y="PCA2", hue='is bot',
           data=pca_df, fit_reg=False)
plt.title('Scatter plot of top 2 components of '\
          +'different types of bot data')
```

Out[135]:
```
Text(0.5,1,'Scatter plot of top 2 components of different types of bot
data')
```



save for laver

In [ ]:
```
tweets_df = pd.read_json(json_file_name, lines=True)
tweets_df.dtypes
```

followers = pd.DataFrame(ids) followers.to_csv('data/'+csv_file_name)

bom.check_account(966489271694630912)