

```
In [3]: import tweepy
from tweepy import Stream
from tweepy import OAuthHandler
from tweepy.streaming import StreamListener
import json
import pandas as pd
import csv
import re #regular expression
from textblob import TextBlob
import string
from sklearn import preprocessing as p
import datetime as dt
import time
import os
import re
import sys
import matplotlib.pyplot as plt
```

```
In [4]: import twitter

# initialize api instance
twitter_api = twitter.Api(consumer_key='HMIIT0r1Xelq2umRwCGQ99dzm',
                           consumer_secret='Et8w0xU4H5Likv8ldnoevUp9DcNHgsCygVnsD
VY5zWrjnrF6Pz',
                           access_token_key='1200107616879480832-qCHnWAd0gSRmfEQc
JrFr3cPmWc2w81',
                           access_token_secret='j922WI1gfzRJwk36WJekroxrP8D4008Gm
LMDts8EvqRx3')

# test authentication
print(twitter_api.VerifyCredentials())

consumer_key='HMIIT0r1Xelq2umRwCGQ99dzm'
consumer_secret='Et8w0xU4H5Likv8ldnoevUp9DcNHgsCygVnsDVY5zWrjnrF6Pz'
access_token_key='1200107616879480832-qCHnWAd0gSRmfEQcJrFr3cPmWc2w81'
access_token_secret='j922WI1gfzRJwk36WJekroxrP8D4008GmLMDts8EvqRx3'

auth = tweepy.auth.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_token_key, access_token_secret)
api = tweepy.API(auth)

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d_image": true, "screen_name": "YMuthusami"}
```

```
In [ ]: class StdOutListener(StreamListener):
        def on_data(self, data):
            print(data)
            with open('G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_colle
ct.txt', 'a') as tf:
                tf.write(data)
            return True

        def on_error(self, status):
            print(status)

if __name__ == '__main__':

    #This handles Twitter authentication and the connection to Twitter Stream
ing API
    l = StdOutListener()
    auth = OAuthHandler(consumer_key, consumer_secret)
    auth.set_access_token(access_token_key, access_token_secret)
    stream = Stream(auth, l)

    #This line filter Twitter Streams to capture data by the keywords: 'pytho
n', 'javascript', 'ruby'
    stream.filter(track=['cricket match', 'Football match', 'cricket worldcup'
, 'football worldcup'])
```

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      }
    }
  }
}
```

```
point fielder,My favorite cricketer.....Happy birthday @YUVSTRONG12 sir \ud83d\udd0a\udc90\ud83c\udf82.Love u sir\u2764\ufe0f\ud83d\ude0dThanku for all the beautiful memories.#SixerKing #HappyBirthdayYuvrajSingh https://t.co/sGDmFixvFg","display_text_range":[0,274],"entities":{"hashtags":[{"text":"SixerKing","indices":[238,248]}],{"text":"HappyBirthdayYuvrajSingh","indices":[249,274]},"urls":[],"user_mentions":[{"screen_name":"YUVSTRONG12","name":"yuvraj singh","id":59808841,"id_str":"59808841","indices":[167,179]}],"symbols":[],"media":[{"id":1204836064860360704,"id_str":"1204836064860360704","indices":[275,298],"media_url":"http://pbs.twimg.com/media/ELhwBHQUAAUcz4.jpg","media_url_https":"https://pbs.twimg.com/media/ELhwBHQUAAUcz4.jpg","url":"https://t.co/sGDmFixvFg","display_url":"pic.twitter.com/sGDmFixvFg","expanded_url":"https://twitter.com/Nitintushir_1/status/1204836071130812416/photo/1","type":"photo","sizes":{"thumb":{"w":150,"h":150,"resize":"crop"},"medium":{"w":629,"h":487,"resize":"fit"},"large":{"w":629,"h":487,"resize":"fit"},"small":{"w":629,"h":487,"resize":"fit"}}},"id":1204836068329062401,"id_str":"1204836068329062401","indices":[275,298],"media_url":"http://pbs.twimg.com/media/ELhwBULVAAEuvFN.jpg","media_url_https":"https://pbs.twimg.com/media/ELhwBULVAAEuvFN.jpg","url":"https://t.co/sGDmFixvFg","display_url":"pic.twitter.com/sGDmFixvFg","expanded_url":"https://twitter.com/Nitintushir_1/status/1204836071130812416/photo/1","type":"photo","sizes":{"thumb":{"w":150,"h":150,"resize":"crop"},"large":{"w":655,"h":399,"resize":"fit"},"small":{"w":655,"h":399,"resize":"fit"},"medium":{"w":655,"h":399,"resize":"fit"}}}},"extended_entities":{"media":[{"id":1204836064860360704,"id_str":"1204836064860360704","indices":[275,298],"media_url":"http://pbs.twimg.com/media/ELhwBHQUAAUcz4.jpg","media_url_https":"https://pbs.twimg.com/media/ELhwBHQUAAUcz4.jpg","url":"https://t.co/sGDmFixvFg","display_url":"pic.twitter.com/sGDmFixvFg","expanded_url":"https://twitter.com/Nitintushir_1/status/1204836071130812416/photo/1","type":"photo","sizes":{"thumb":{"w":150,"h":150,"resize":"crop"},"medium":{"w":629,"h":487,"resize":"fit"},"large":{"w":629,"h":487,"resize":"fit"},"small":{"w":629,"h":487,"resize":"fit"}}},"id":1204836068329062401,"id_str":"1204836068329062401","indices":[275,298],"media_url":"http://pbs.twimg.com/media/ELhwBULVAAEuvFN.jpg","media_url_https":"https://pbs.twimg.com/media/ELhwBULVAAEuvFN.jpg","url":"https://t.co/sGDmFixvFg","display_url":"pic.twitter.com/sGDmFixvFg","expanded_url":"https://twitter.com/Nitintushir_1/status/1204836071130812416/photo/1","type":"photo","sizes":{"thumb":{"w":150,"h":150,"resize":"crop"},"medium":{"w":629,"h":487,"resize":"fit"},"large":{"w":629,"h":487,"resize":"fit"},"small":{"w":629,"h":487,"resize":"fit"}}}}]},"quote_count":0,"reply_count":0,"retweet_count":3,"favorite_count":2,"entities":{"hashtags":[],"urls":[{"url":"https://t.co/7px1AxttrRH","expanded_url":"https://twitter.com/i/web/status/1204836071130812416","display_url":"twitter.com/i/web/status/1\u2026","indices":[117,140]}],"user_mentions":[],"symbols":[],"favorited":false,"retweeted":false,"possibly_sensitive":false,"filter_level":"low","lang":"en"},"is_quote_status":false,"quote_count":0,"reply_count":0,"retweet_count":0,"favorite_count":0,"entities":{"hashtags":[],"urls":[],"user_mentions":[{"screen_name":"Nitintushir_1","name":"Nitin Tushir","id":288574565,"id_str":"288574565","indices":[3,17]}],"symbols":[],"favorited":false,"retweeted":false,"filter_level":"low","lang":"en","timestamp_ms":"1576090441231"}
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```

```
In [6]: tweets_data_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_coll
ect.txt'
```

```

tweets_data = []
tweets_file = open(tweets_data_path, "r")
for line in tweets_file:
    try:
        tweet = json.loads(line)
        tweets_data.append(tweet)
    except:
        continue

```

```
In [10]: print(len(tweets_data))
```

```
58612
```

```
In [15]: from wordcloud import WordCloud, STOPWORDS , ImageColorGenerator

tweet_All = " ".join(review for review in tweets.text)

fig, ax = plt.subplots(1, 1, figsize = (12,12))
# Create and generate a word cloud image:
wordcloud_ALL = WordCloud(max_font_size=50, max_words=100, background_color="white").generate(tweet_All)

# Display the generated image:
ax.imshow(wordcloud_ALL, interpolation='bilinear')
ax.set_title('Tweets Wordcloud', fontsize=15)
ax.axis('off')
```

Tweets Wordcloud




```
In [10]: import re
import operator
import json
from collections import Counter
from nltk.corpus import stopwords
from nltk import bigrams
import string
from collections import defaultdict
import sys
import requests

com = defaultdict(lambda: defaultdict(int))
fname = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweet_PP.json'
with open(fname, 'r', encoding='utf-8', errors='ignore') as f:
    #data = json.load(json_data, strict=False)
    count_all = Counter()
    for line in f:
        try:
            tweet = json.loads(line, strict=False)
            print(json.dumps(tweet, indent=4)) # pretty-print display
            terms_only = [term for term in preprocess(tweet['text']) if term not in stop and not term.startswith(('@', '#'))]
            count_all.update(terms_only)
        except:
            continue
```

```

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    "created_at": "Wed Sep 25 12:40:11 +0000 2019",
    "utc_offset": null,
    "time_zone": null,
    "geo_enabled": false,
    "lang": null,
    "contributors_enabled": false,
    "is_translator": false,
    "profile_background_color": "F5F8FA",
    "profile_background_image_url": "",
    "profile_background_image_url_https": "",
    "profile_background_tile": false,
    "profile_link_color": "1DA1F2",
    "profile_sidebar_border_color": "C0DEED",
    "profile_sidebar_fill_color": "DDEEF6",
    "profile_text_color": "333333",
    "profile_use_background_image": true,
  }
}

```

```

    "profile_image_url": "http://pbs.twimg.com/profile_images/11768405156
83176449/wQFuzPxx_normal.jpg",
    "profile_image_url_https": "https://pbs.twimg.com/profile_images/1176
840515683176449/wQFuzPxx_normal.jpg",
    "profile_banner_url": "https://pbs.twimg.com/profile_banners/11768387
65639168001/1569419339",
    "default_profile": true,
    "default_profile_image": false,
    "following": null,
    "follow_request_sent": null,
    "notifications": null
  },
  "geo": null,
  "coordinates": null,
  "place": null,
  "contributors": null,
  "is_quote_status": false,
  "extended_tweet": {
    "full_text": "\u092e\u0941\u0916\u094d\u092f\u092e\u0902\u0924\u094d
\u0930\u0940 \u0917\u0939\u0932\u094b\u0924 \u0928\u0947 \u0915\u093e\u0930\u094d\u092f\u0915\u0930\u094d\u0924\u093e\u0913\u0902 \u0915\u094b \u0915\u093f
\u092f\u093e \u0938\u0902\u092c\u094b\u0927\u093f\u0924\u090a0 https://t.co/b
GSsmU5Wde\n#digitalindiaexpress \n#KejriwalPhirSe #GoBackModi #HappyBirthdayR
avan #schingahlot #jaypur #rajasthan\n#news #Newstyle #newseason #gove #cricke
t #modi #bollywood #newspaper #newsingle",
    "display_text_range": [
      0,
      256
    ],
    "entities": {
      "hashtags": [
        {
          "text": "digitalindiaexpress",
          "indices": [
            75,
            95
          ]
        },
        {
          "text": "KejriwalPhirSe",
          "indices": [
            97,
            112
          ]
        },
        {
          "text": "GoBackModi",
          "indices": [
            113,
            124
          ]
        },
        {
          "text": "HappyBirthdayRavan",
          "indices": [
            125,
            144
          ]
        }
      ]
    }
  }
}

```

```
]
},
{
  "text": "schingahlot",
  "indices": [
    145,
    157
  ]
},
{
  "text": "jaypur",
  "indices": [
    158,
    165
  ]
},
{
  "text": "rajsthan",
  "indices": [
    166,
    175
  ]
},
{
  "text": "news",
  "indices": [
    176,
    181
  ]
},
{
  "text": "Newstyle",
  "indices": [
    182,
    191
  ]
},
{
  "text": "newseason",
  "indices": [
    192,
    202
  ]
},
{
  "text": "gove",
  "indices": [
    203,
    208
  ]
},
{
  "text": "cricket",
  "indices": [
    209,
    217
  ]
}
```

```

    },
    {
      "text": "modi",
      "indices": [
        218,
        223
      ]
    },
    {
      "text": "bollywood",
      "indices": [
        224,
        234
      ]
    },
    {
      "text": "newspaper",
      "indices": [
        235,
        245
      ]
    },
    {
      "text": "newsingle",
      "indices": [
        246,
        256
      ]
    }
  ],
  "urls": [
    {
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      "expanded_url": "https://digitalindiaexpress.co/rajya/chief-minister-gehlot-addressed-the-workers/",
      "display_url": "digitalindiaexpress.co/rajya/chief-mi\u2020
26",
      "indices": [
        51,
        74
      ]
    }
  ],
  "user_mentions": [],
  "symbols": []
},
"quote_count": 0,
"reply_count": 0,
"retweet_count": 0,
"favorite_count": 0,
"entities": {
  "hashtags": [
    {
      "text": "digitalindiaexpress",
      "indices": [
        75,

```

```

        95
      ]
    },
    {
      "text": "KejriwalPhirSe",
      "indices": [
        97,
        112
      ]
    }
  ],
  "urls": [
    {
      "url": "https://t.co/bGSsmU5Wde",
      "expanded_url": "https://digitalindiaexpress.co/rajya/chief-minister-gehlot-addressed-the-workers/",
      "display_url": "digitalindiaexpress.co/rajya/chief-mi\u2026",
      "indices": [
        51,
        74
      ]
    },
    {
      "url": "https://t.co/WV8LHIQh8K",
      "expanded_url": "https://twitter.com/i/web/status/1201742579882061824",
      "display_url": "twitter.com/i/web/status/1\u2026",
      "indices": [
        114,
        137
      ]
    }
  ],
  "user_mentions": [],
  "symbols": []
},
"favorited": false,
"retweeted": false,
"possibly_sensitive": false,
"filter_level": "low",
"lang": "hi",
"timestamp_ms": "1575352732998"
}
{
  "created_at": "Tue Dec 03 05:59:04 +0000 2019",
  "id": 1201742627697123328,
  "id_str": "1201742627697123328",
  "text": "Joe Denly's dropped catch for the ages for England lets NZ skipper Kane Williamson off in second Test draw:\u2026 https://t.co/MEekvn0cta",
  "display_text_range": [
    0,
    140
  ],
  "source": "<a href=\"https://about.twitter.com/products/tweetdeck\" rel=\"nofollow\">TweetDeck</a>",
  "truncated": true,
  "in_reply_to_status_id": null,

```

```

"in_reply_to_status_id_str": null,
"in_reply_to_user_id": null,
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"in_reply_to_screen_name": null,
"user": {
  "id": 17331252,
  "id_str": "17331252",
  "name": "ABC Grandstand",
  "screen_name": "abcgrandstand",
  "location": "Australia",
  "url": "https://www.abc.net.au/radio/grandstand/",
  "description": "Your home of live sport.",
  "translator_type": "none",
  "protected": false,
  "verified": true,
  "followers_count": 143963,
  "friends_count": 1224,
  "listed_count": 1505,
  "favourites_count": 2300,
  "statuses_count": 128335,
  "created_at": "Wed Nov 12 04:17:19 +0000 2008",
  "utc_offset": null,
  "time_zone": null,
  "geo_enabled": true,
  "lang": null,
  "contributors_enabled": false,
  "is_translator": false,
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  "profile_background_image_url": "http://abs.twimg.com/images/themes/t
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  "profile_background_image_url_https": "https://abs.twimg.com/images/t
hemes/theme6/bg.gif",
  "profile_background_tile": false,
  "profile_link_color": "6ABAE6",
  "profile_sidebar_border_color": "000000",
  "profile_sidebar_fill_color": "081F2B",
  "profile_text_color": "007488",
  "profile_use_background_image": true,
  "profile_image_url": "http://pbs.twimg.com/profile_images/10303658243
24755456/6hKgBg5m_normal.jpg",
  "profile_image_url_https": "https://pbs.twimg.com/profile_images/1030
365824324755456/6hKgBg5m_normal.jpg",
  "profile_banner_url": "https://pbs.twimg.com/profile_banners/1733125
2/1569898098",
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  "default_profile_image": false,
  "following": null,
  "follow_request_sent": null,
  "notifications": null
},
"geo": null,
"coordinates": null,
"place": null,
"contributors": null,
"is_quote_status": false,
"extended_tweet": {
  "full_text": "Joe Denly's dropped catch for the ages for England lets

```

```

NZ skipper Kane Williamson off in second Test draw: https://t.co/6Gn8aTmNAT #
cricket #NZvENG (Pic:AP) https://t.co/MIQmp8Cr80",
  "display_text_range": [
    0,
    157
  ],
  "entities": {
    "hashtags": [
      {
        "text": "cricket",
        "indices": [
          132,
          140
        ]
      },
      {
        "text": "NZvENG",
        "indices": [
          141,
          148
        ]
      }
    ],
    "urls": [
      {
        "url": "https://t.co/6Gn8aTmNAT",
        "expanded_url": "http://ab.co/2DBrIgT",
        "display_url": "ab.co/2DBrIgT",
        "indices": [
          108,
          131
        ]
      }
    ],
    "user_mentions": [],
    "symbols": [],
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        "id_str": "1201742361572691968",
        "indices": [
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          181
        ],
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jpg",
        "media_url_https": "https://pbs.twimg.com/media/EK1yT40UU
AARC-H.jpg",
        "url": "https://t.co/MIQmp8Cr80",
        "display_url": "pic.twitter.com/MIQmp8Cr80",
        "expanded_url": "https://twitter.com/abcgrandstand/statu
s/1201742627697123328/photo/1",
        "type": "photo",
        "sizes": {
          "thumb": {
            "w": 150,
            "h": 150,

```



```

        "resize": "crop"
    },
    "large": {
        "w": 700,
        "h": 394,
        "resize": "fit"
    },
    "small": {
        "w": 680,
        "h": 383,
        "resize": "fit"
    },
    "medium": {
        "w": 700,
        "h": 394,
        "resize": "fit"
    }
}
    ]
},
"extended_entities": {
    "media": [
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            "id": 1201742361572691968,
            "id_str": "1201742361572691968",
            "indices": [
                158,
                181
            ],
            "media_url": "http://pbs.twimg.com/media/EK1yT40UUAARC-H.
jpg",
            "media_url_https": "https://pbs.twimg.com/media/EK1yT40UU
AARC-H.jpg",
            "url": "https://t.co/MIQmp8Cr80",
            "display_url": "pic.twitter.com/MIQmp8Cr80",
            "expanded_url": "https://twitter.com/abcgrandstand/statu
s/1201742627697123328/photo/1",
            "type": "photo",
            "sizes": {
                "thumb": {
                    "w": 150,
                    "h": 150,
                    "resize": "crop"
                },
                "large": {
                    "w": 700,
                    "h": 394,
                    "resize": "fit"
                },
                "small": {
                    "w": 680,
                    "h": 383,
                    "resize": "fit"
                },
                "medium": {
                    "w": 700,

```

```

        "h": 394,
        "resize": "fit"
    }
}
}
    ],
    },
    "quote_count": 0,
    "reply_count": 0,
    "retweet_count": 0,
    "favorite_count": 0,
    "entities": {
        "hashtags": [],
        "urls": [
            {
                "url": "https://t.co/MEekvn0cta",
                "expanded_url": "https://twitter.com/i/web/status/12017426276
97123328",
                "display_url": "twitter.com/i/web/status/1\u2026",
                "indices": [
                    109,
                    132
                ]
            }
        ],
        "user_mentions": [],
        "symbols": []
    },
    "favorited": false,
    "retweeted": false,
    "possibly_sensitive": false,
    "filter_level": "low",
    "lang": "en",
    "timestamp_ms": "1575352744398"
}

```

```

In [ ]: import re

emoticons_str = r"""
    (?
        [:=;] # Eyes
        [oO\~]? # Nose (optional)
        [D\)\]\(\[/\OpP] # Mouth
    )"""

regex_str = [
    emoticons_str,
    #r'<[^>]+>', # HTML tags
    #r'(?:@[\w_]+)', # @-mentions
    #r'(?:\#[\w_]+[\w\'_-]*[\w_]+)', # hash-tags
    #r'http[s]?://(?:[a-z]|[0-9]|[$-@.&+]|[*\(\),]|(?:%[0-9a-f][0-9a-f]))+', # URLs

    r'(?:(?:\d+,?)+(?:\.?\d+)?)', # numbers
    r'(?:[a-z][a-z\'-_]+[a-z])', # words with - and '
    r'(?:[\w_]+)', # other words
    r'(?:\S)' # anything else
]

tokens_re = re.compile(r'('+'.join(regex_str)+')', re.VERBOSE | re.IGNORECASE)
emoticon_re = re.compile(r'^'+emoticons_str+'$', re.VERBOSE | re.IGNORECASE)

punctuation = list(string.punctuation)
stop = stopwords.words('english') + punctuation + ['rt', '3', '25', '5', '6',
'7', '8', '9', ':/', 'Don\'t', '10', '4', '1', '2', 'us', 'It\'s', 'via', 'oI',
'', 'RT',
'', 'I', '', 'The', 'wha
t', 'What', 'You', 'Your', 'A', 'new', 'https', 'Hi', 'We', 'My', 'Now', 'plea
se', 'get', 'amp', 'like', '#SmallBizSaturday', '#smallbizsaturday', 'How',
'first']
print(stop)
def tokenize(s):
    return tokens_re.findall(s)

def preprocess(s, lowercase=False):
    tokens = tokenize(s)
    if lowercase:
        tokens = [token if emoticon_re.search(token) else token.lower() for token in tokens]
    return tokens

tweet_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_1.json'
tweet_data = []
tweet_file = open(tweet_path, 'r')
count_all = Counter()
for line in tweet_file:
    try:
        tweet = json.loads(line)
        #tweet_data.append(searched_tweets)
        tokens = preprocess(tweet['text'])

```

```

        terms_only = [term for term in preprocess(tweet['text']) if term not in stop and not term.startswith(('@', '#'))]
        count_all.update(terms_only)
    except:
        continue
print(count_all.most_common(15))
#print(tokens)
#print(tweet['text'])
#print(tweet)

```

```

In [23]: import operator
import json
from collections import Counter
from nltk.corpus import stopwords
import string

punctuation = list(string.punctuation)
stop = stopwords.words('english') + punctuation + ['rt', 'via']
terms_stop = [term for term in preprocess(tweet['text']) if term not in stop]
#print(stop)
fname = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_1.json'
#tweet_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_collect1.json'
tweet_data = []
tweet_file = open(fname, 'r')
count_all = Counter()
for line in tweet_file:
    try:
        tweet = json.loads(line)
        # Create a list with all the terms
        terms_all = [term for term in preprocess(tweet['text'])]
        terms_single = set(terms_all)
        # Count hashtags only
        terms_hash = [term for term in preprocess(tweet['text']) if term.startswith('#')]
        terms_mentions = [term for term in preprocess(tweet['text']) if term.startswith('@')]

        count_all.update(terms_all)
        count_all.update(terms_single)
        count_all.update(terms_hash)
        count_all.update(terms_mentions)
        # Print the first 15 most frequent words
    except:
        continue
print(count_all.most_common(15))

[('@', 22044), (',', 15650), ('...', 14053), (':', 13834), ('.', 11969), ('/', 11442), ('RT', 11276), ('his', 9941), ('#', 9599), ('a', 8834), ('this', 7895), ('https', 7394), (':/', 7357), ('and', 7137), ('t', 7004)]

```

```
In [24]: from collections import defaultdict
# remember to include the other import from the previous post

com = defaultdict(lambda : defaultdict(int))

fname = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_1.json'
tweet_data = []
tweet_file = open(fname, 'r')
count_all = Counter()
# f is the file pointer to the JSON data set
for line in tweet_file:
    try:
        tweet = json.loads(line)
        terms_only = [term for term in preprocess(tweet['text'])
                        if term not in stop
                        and not term.startswith(('#', '@'))]

        # Build co-occurrence matrix
        for i in range(len(terms_only)-1):
            for j in range(i+1, len(terms_only)):
                w1, w2 = sorted([terms_only[i], terms_only[j]])
                if w1 != w2:
                    com[w1][w2] += 1
    except:
        continue
```

```
In [26]: com_max = []
# For each term, look for the most common co-occurrent terms
for t1 in com:
    t1_max_terms = sorted(com[t1].items(), key=operator.itemgetter(1), reverse=True)[:5]
    for t2, t2_count in t1_max_terms:
        com_max.append(((t1, t2), t2_count))
# Get the most frequent co-occurrences
terms_max = sorted(com_max, key=operator.itemgetter(1), reverse=True)
print(terms_max[:15])
```

```
[(('RT', '...'), 5293), (('/:/', 'https'), 4520), (('co', 'https'), 4209),
('/:/', 'co'), 4190), (('I', '...'), 3004), (('I', 'RT'), 2781), (('racist',
'...'), 2614), (('RT', 'racist'), 2568), (('What', '...'), 2533), (('RT', 'Wha
t'), 2501), (('I', 'racist'), 2459), (('season', '...'), 2456), (('I', 'love'),
2454), (('love', '...'), 2453), (('RT', 'love'), 2447)]
```

```
In [29]: #stemming
from nltk.stem.porter import *
stemmer = PorterStemmer()

tweet = tweets['text'].apply(lambda x: [stemmer.stem(i) for i in x]) # stemming
tweet.head()
```

```
Out[29]: 0    [R, T, , @, I, n, d, o, s, t, r, a, n, s, f, ...
1    [R, T, , @, c, r, i, c, k, e, t, c, o, m, a, ...
2    [R, T, , @, A, o, u, a, r, i, s, t, e, :, , ...
3    [[, , L, I, V, E, , ], , 7, :, 0, 0, , P, ...
4    [R, T, , @, A, o, u, a, r, i, s, t, e, :, , ...
Name: text, dtype: object
```

```
In [28]: fname = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_1.json'
#tweet_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_collect1.
json'
dates_cricket = []
dates_football = []
tweet_file = open(fname, 'r')
for line in tweet_file:
    try:
        tweet = json.loads(line)
        terms_hash = [term for term in preprocess(tweet['text']) if term.start
swith('cricket')]
        terms_hash1 = [term for term in preprocess(tweet['text']) if term.star
tswith('football')]
        if 'cricket' in terms_hash:
            dates_cricket.append(tweet['created_at'])
        if 'football' in terms_hash1:
            dates_football.append(tweet['created_at'])
    except:
        continue

ones = [1]*len(dates_cricket)
twos = [2]*len(dates_football)
# the index of the series
idx = pd.DatetimeIndex(dates_cricket)
idy = pd.DatetimeIndex(dates_football)
# the actual series for analysis
cricket = pd.Series(ones, index=idx)
football = pd.Series(twos, index=idy)
print('cr', cricket)
print('ft', football)

per_minute = cricket.resample('1Min', how='sum').fillna(0)
per_min = football.resample('1Min', how='sum').fillna(0)
print('c', per_minute)
print('f', per_min)
```

```
cr 2019-12-08 00:42:14+00:00    1
2019-12-08 00:46:00+00:00    1
2019-12-08 01:02:19+00:00    1
2019-12-08 01:10:34+00:00    1
2019-12-08 01:11:32+00:00    1
2019-12-08 01:13:42+00:00    1
2019-12-08 01:39:10+00:00    1
2019-12-08 01:53:41+00:00    1
2019-12-08 01:59:10+00:00    1
2019-12-08 01:59:56+00:00    1
2019-12-08 02:00:37+00:00    1
2019-12-08 02:02:52+00:00    1
2019-12-08 02:04:18+00:00    1
2019-12-08 02:14:09+00:00    1
2019-12-08 02:43:03+00:00    1
2019-12-08 02:50:37+00:00    1
2019-12-08 02:52:21+00:00    1
2019-12-08 02:52:42+00:00    1
2019-12-08 02:56:41+00:00    1
2019-12-08 03:00:24+00:00    1
2019-12-08 03:05:30+00:00    1
2019-12-08 03:07:48+00:00    1
2019-12-08 03:13:13+00:00    1
2019-12-08 03:13:33+00:00    1
2019-12-08 03:15:03+00:00    1
2019-12-08 03:25:54+00:00    1
2019-12-08 03:26:57+00:00    1
2019-12-08 03:27:17+00:00    1
2019-12-08 03:27:53+00:00    1
2019-12-08 03:28:35+00:00    1
..
2019-12-08 15:58:27+00:00    1
2019-12-08 15:59:19+00:00    1
2019-12-08 16:00:01+00:00    1
2019-12-08 16:00:38+00:00    1
2019-12-08 16:02:16+00:00    1
2019-12-08 16:06:35+00:00    1
2019-12-08 16:07:16+00:00    1
2019-12-08 16:07:37+00:00    1
2019-12-08 16:09:11+00:00    1
2019-12-08 16:09:27+00:00    1
2019-12-08 16:09:49+00:00    1
2019-12-08 16:12:14+00:00    1
2019-12-08 16:12:14+00:00    1
2019-12-08 16:14:26+00:00    1
2019-12-08 16:24:27+00:00    1
2019-12-08 16:24:45+00:00    1
2019-12-08 16:25:25+00:00    1
2019-12-08 16:25:58+00:00    1
2019-12-08 16:26:06+00:00    1
2019-12-08 16:27:48+00:00    1
2019-12-08 16:29:06+00:00    1
2019-12-08 16:29:34+00:00    1
2019-12-08 16:29:59+00:00    1
2019-12-08 16:30:06+00:00    1
2019-12-08 16:32:29+00:00    1
2019-12-08 16:32:29+00:00    1
```



```

2019-12-08 16:34:10+00:00    1
2019-12-08 16:34:21+00:00    1
2019-12-08 16:37:04+00:00    1
2019-12-08 16:37:37+00:00    1
Length: 451, dtype: int64
ft 2019-12-07 23:59:27+00:00    2
2019-12-07 23:59:37+00:00    2
2019-12-08 00:00:31+00:00    2
2019-12-08 00:00:52+00:00    2
2019-12-08 00:00:57+00:00    2
2019-12-08 00:01:33+00:00    2
2019-12-08 00:01:40+00:00    2
2019-12-08 00:01:43+00:00    2
2019-12-08 00:02:23+00:00    2
2019-12-08 00:02:32+00:00    2
2019-12-08 00:02:34+00:00    2
2019-12-08 00:02:46+00:00    2
2019-12-08 00:03:59+00:00    2
2019-12-08 00:04:58+00:00    2
2019-12-08 00:08:06+00:00    2
2019-12-08 00:08:50+00:00    2
2019-12-08 00:09:14+00:00    2
2019-12-08 00:10:30+00:00    2
2019-12-08 00:10:50+00:00    2
2019-12-08 00:11:17+00:00    2
2019-12-08 00:12:02+00:00    2
2019-12-08 00:12:05+00:00    2
2019-12-08 00:12:34+00:00    2
2019-12-08 00:14:24+00:00    2
2019-12-08 00:14:56+00:00    2
2019-12-08 00:15:28+00:00    2
2019-12-08 00:15:28+00:00    2
2019-12-08 00:15:57+00:00    2
2019-12-08 00:17:24+00:00    2
2019-12-08 00:17:49+00:00    2
..
2019-12-08 16:30:56+00:00    2
2019-12-08 16:31:46+00:00    2
2019-12-08 16:31:50+00:00    2
2019-12-08 16:33:24+00:00    2
2019-12-08 16:34:52+00:00    2
2019-12-08 16:35:56+00:00    2
2019-12-08 16:37:25+00:00    2
2019-12-08 16:37:25+00:00    2
2019-12-08 16:37:31+00:00    2
2019-12-08 16:37:31+00:00    2
2019-12-08 16:37:40+00:00    2
2019-12-08 16:37:43+00:00    2
2019-12-08 16:37:43+00:00    2
2019-12-08 16:37:43+00:00    2
2019-12-08 16:37:43+00:00    2
2019-12-08 16:37:43+00:00    2
2019-12-08 16:37:45+00:00    2
2019-12-08 16:37:45+00:00    2
2019-12-08 16:37:45+00:00    2
2019-12-08 16:37:45+00:00    2
2019-12-08 16:37:45+00:00    2

```

```

2019-12-08 16:38:04+00:00    2
2019-12-08 16:38:05+00:00    2
2019-12-08 16:38:11+00:00    2
2019-12-08 16:38:53+00:00    2
2019-12-08 16:39:12+00:00    2
2019-12-08 16:39:26+00:00    2
2019-12-08 16:39:37+00:00    2
2019-12-08 16:39:45+00:00    2
2019-12-08 16:40:17+00:00    2
Length: 1571, dtype: int64
c 2019-12-08 00:42:00+00:00    1
2019-12-08 00:43:00+00:00    0
2019-12-08 00:44:00+00:00    0
2019-12-08 00:45:00+00:00    0
2019-12-08 00:46:00+00:00    1
2019-12-08 00:47:00+00:00    0
2019-12-08 00:48:00+00:00    0
2019-12-08 00:49:00+00:00    0
2019-12-08 00:50:00+00:00    0
2019-12-08 00:51:00+00:00    0
2019-12-08 00:52:00+00:00    0
2019-12-08 00:53:00+00:00    0
2019-12-08 00:54:00+00:00    0
2019-12-08 00:55:00+00:00    0
2019-12-08 00:56:00+00:00    0
2019-12-08 00:57:00+00:00    0
2019-12-08 00:58:00+00:00    0
2019-12-08 00:59:00+00:00    0
2019-12-08 01:00:00+00:00    0
2019-12-08 01:01:00+00:00    0
2019-12-08 01:02:00+00:00    1
2019-12-08 01:03:00+00:00    0
2019-12-08 01:04:00+00:00    0
2019-12-08 01:05:00+00:00    0
2019-12-08 01:06:00+00:00    0
2019-12-08 01:07:00+00:00    0
2019-12-08 01:08:00+00:00    0
2019-12-08 01:09:00+00:00    0
2019-12-08 01:10:00+00:00    1
2019-12-08 01:11:00+00:00    1
..
2019-12-08 16:08:00+00:00    0
2019-12-08 16:09:00+00:00    3
2019-12-08 16:10:00+00:00    0
2019-12-08 16:11:00+00:00    0
2019-12-08 16:12:00+00:00    2
2019-12-08 16:13:00+00:00    0
2019-12-08 16:14:00+00:00    1
2019-12-08 16:15:00+00:00    0
2019-12-08 16:16:00+00:00    0
2019-12-08 16:17:00+00:00    0
2019-12-08 16:18:00+00:00    0
2019-12-08 16:19:00+00:00    0
2019-12-08 16:20:00+00:00    0
2019-12-08 16:21:00+00:00    0
2019-12-08 16:22:00+00:00    0
2019-12-08 16:23:00+00:00    0

```

```

2019-12-08 16:24:00+00:00    2
2019-12-08 16:25:00+00:00    2
2019-12-08 16:26:00+00:00    1
2019-12-08 16:27:00+00:00    1
2019-12-08 16:28:00+00:00    0
2019-12-08 16:29:00+00:00    3
2019-12-08 16:30:00+00:00    1
2019-12-08 16:31:00+00:00    0
2019-12-08 16:32:00+00:00    2
2019-12-08 16:33:00+00:00    0
2019-12-08 16:34:00+00:00    2
2019-12-08 16:35:00+00:00    0
2019-12-08 16:36:00+00:00    0
2019-12-08 16:37:00+00:00    2
Freq: T, Length: 956, dtype: int64
f 2019-12-07 23:59:00+00:00    4
2019-12-08 00:00:00+00:00    6
2019-12-08 00:01:00+00:00    6
2019-12-08 00:02:00+00:00    8
2019-12-08 00:03:00+00:00    2
2019-12-08 00:04:00+00:00    2
2019-12-08 00:05:00+00:00    0
2019-12-08 00:06:00+00:00    0
2019-12-08 00:07:00+00:00    0
2019-12-08 00:08:00+00:00    4
2019-12-08 00:09:00+00:00    2
2019-12-08 00:10:00+00:00    4
2019-12-08 00:11:00+00:00    2
2019-12-08 00:12:00+00:00    6
2019-12-08 00:13:00+00:00    0
2019-12-08 00:14:00+00:00    4
2019-12-08 00:15:00+00:00    6
2019-12-08 00:16:00+00:00    0
2019-12-08 00:17:00+00:00    4
2019-12-08 00:18:00+00:00    0
2019-12-08 00:19:00+00:00    2
2019-12-08 00:20:00+00:00    2
2019-12-08 00:21:00+00:00    0
2019-12-08 00:22:00+00:00    0
2019-12-08 00:23:00+00:00    2
2019-12-08 00:24:00+00:00    0
2019-12-08 00:25:00+00:00    6
2019-12-08 00:26:00+00:00    2
2019-12-08 00:27:00+00:00    0
2019-12-08 00:28:00+00:00    0
..
2019-12-08 16:11:00+00:00   10
2019-12-08 16:12:00+00:00    6
2019-12-08 16:13:00+00:00    6
2019-12-08 16:14:00+00:00    6
2019-12-08 16:15:00+00:00   12
2019-12-08 16:16:00+00:00    6
2019-12-08 16:17:00+00:00   10
2019-12-08 16:18:00+00:00    4
2019-12-08 16:19:00+00:00    4
2019-12-08 16:20:00+00:00    6
2019-12-08 16:21:00+00:00    0

```

```

2019-12-08 16:22:00+00:00    4
2019-12-08 16:23:00+00:00    2
2019-12-08 16:24:00+00:00   12
2019-12-08 16:25:00+00:00    4
2019-12-08 16:26:00+00:00    0
2019-12-08 16:27:00+00:00    4
2019-12-08 16:28:00+00:00    0
2019-12-08 16:29:00+00:00    4
2019-12-08 16:30:00+00:00    4
2019-12-08 16:31:00+00:00    4
2019-12-08 16:32:00+00:00    0
2019-12-08 16:33:00+00:00    2
2019-12-08 16:34:00+00:00    2
2019-12-08 16:35:00+00:00    2
2019-12-08 16:36:00+00:00    0
2019-12-08 16:37:00+00:00   30
2019-12-08 16:38:00+00:00    8
2019-12-08 16:39:00+00:00    8
2019-12-08 16:40:00+00:00    2
Freq: T, Length: 1002, dtype: int64

```

```

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\ipykernel_launcher.py:3
1: FutureWarning: how in .resample() is deprecated
the new syntax is .resample(...).sum()
C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\ipykernel_launcher.py:3
2: FutureWarning: how in .resample() is deprecated
the new syntax is .resample(...).sum()

```

```

In [31]: def word_in_text(word, text):
          word = word.lower()
          text = text.lower()
          match = re.search(word, text)
          if match:
              return True
          return False

#URL extraction
def extract_link(text):
    regex = r'http[s]?://(?:[a-z]|[0-9]|[$-_.&+]|[*\(\)\,]|(?:%[0-9a-f][0-9a-f]))+', r'https?://[^\s<>"]+|www\.[^\s<>"]+http?://[^\s<>"]+'
    match = re.search(regex, text)
    if match:
        return match.group()
    return ''

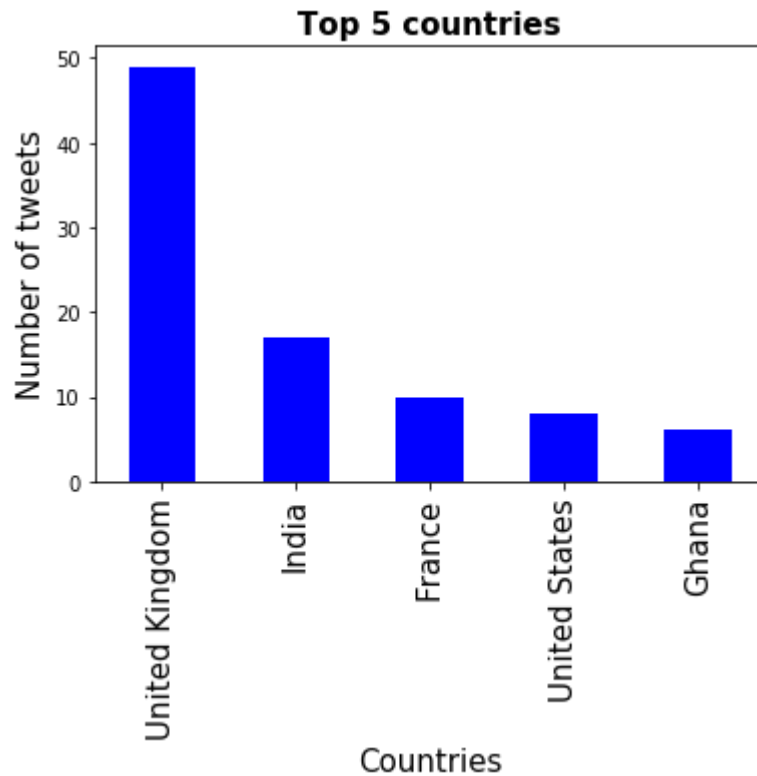
```

```
In [32]: def main():
# Reading Tweets
print('Reading Tweets\n')
tweets_data_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_
1.txt'

tweets_data = []
tweets_file = open(tweets_data_path, "r")
for line in tweets_file:
    try:
        tweet = json.loads(line)
        tweets_data.append(tweet)
    except:
        continue
```

```
In [129]: #Structuring Tweets
tweets = pd.DataFrame()
tweets['text'] = list([tweet['text'] for tweet in tweets_data])
tweets['lang'] = list([tweet['lang'] for tweet in tweets_data])
tweets['country'] = list([tweet['place']['country'] if tweet['place'] != None
else None for tweet in tweets_data])
```

```
In [130]: tweets_by_country = tweets['country'].value_counts()
fig, ax = plt.subplots()
ax.tick_params(axis='x', labels=15)
ax.tick_params(axis='y', labels=10)
ax.set_xlabel('Countries', fontsize=15)
ax.set_ylabel('Number of tweets', fontsize=15)
ax.set_title('Top 5 countries', fontsize=15, fontweight='bold')
tweets_by_country[:5].plot(ax=ax, kind='bar', color='blue')
plt.savefig('tweet_by_country', format='png')
```

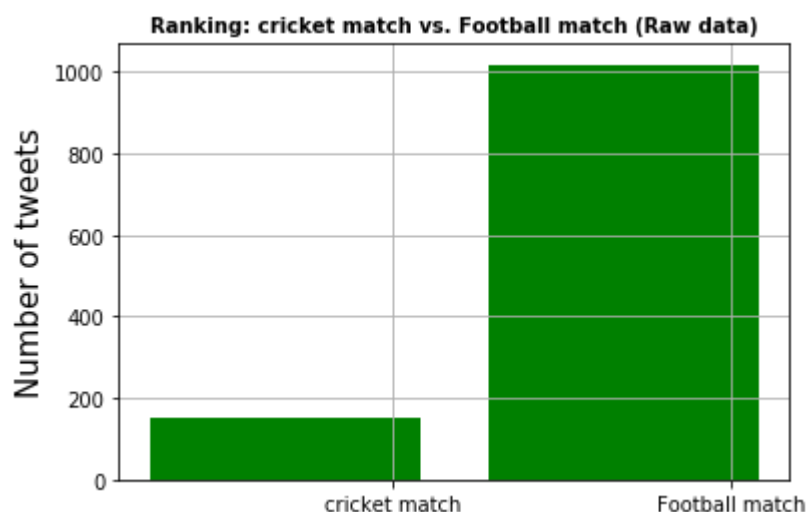


```
In [131]: # Adding keywords columns to the tweets DataFrame

tweets['cricket match'] = tweets['text'].apply(lambda tweet: word_in_text('cricket match', tweet))
tweets['Football match'] = tweets['text'].apply(lambda tweet: word_in_text('Football match', tweet))
```

```
In [36]: # Analyzing Tweets by keyword: raw attempt

sport_key = ['cricket match', 'Football match']
tweets_by_key = [tweets['cricket match'].value_counts()[True], tweets['Football match'].value_counts()[True]]
x_pos = list(range(len(sport_key)))
width = 0.8
fig, ax = plt.subplots()
plt.bar(x_pos, tweets_by_key, width, alpha=1, color='g')
ax.set_ylabel('Number of tweets', fontsize=15)
ax.set_title('Ranking: cricket match vs. Football match (Raw data)', fontsize=10, fontweight='bold')
ax.set_xticks([p + 0.4 * width for p in x_pos])
ax.set_xticklabels(sport_key)
plt.grid()
plt.savefig('tweet_by_sport_1', format='png')
```



```
In [37]: # Targeting relevant tweets
#print('Targeting relevant tweets\n')
tweets['cricketworldcup'] = tweets['text'].apply(lambda tweet: word_in_text('cricketworldcup', tweet))
tweets['ICC'] = tweets['text'].apply(lambda tweet: word_in_text('ICC', tweet))
tweets['Football Tweet'] = tweets['text'].apply(lambda tweet: word_in_text('Football Tweet', tweet))
tweets['relevant'] = tweets['text'].apply(lambda tweet: word_in_text('cricketworldcup', tweet) or word_in_text('ICC', tweet) or word_in_text('Football Tweet', tweet))
```

Targeting relevant tweets

```
In [38]: print(tweets['cricketworldcup'].value_counts())
print(tweets['ICC'].value_counts())
print(tweets['Football Tweet'].value_counts())
print(tweets['relevant'].value_counts())
```

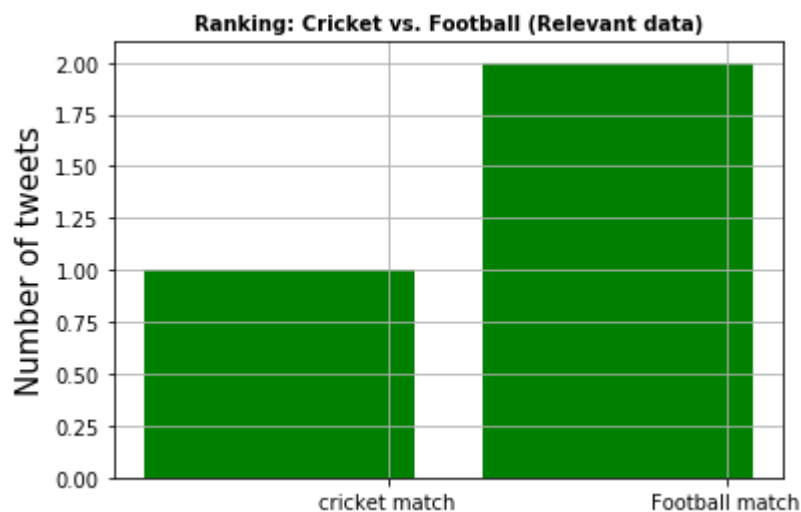
```
False    9104
Name: cricketworldcup, dtype: int64
False    8987
True      117
Name: ICC, dtype: int64
False    9102
True         2
Name: Football Tweet, dtype: int64
False    8985
True      119
Name: relevant, dtype: int64
```

```
In [39]: def get_value_counts(tweets, language):
    try:
        return tweets[tweets['relevant'] == True][sports].value_counts()[True]
    except KeyError:
        return 0
```



```
In [40]: #tweets_by_prg_lang = [tweets[tweets['relevant'] == True]['cricketworldcup'].value_counts(),
#               tweets[tweets['relevant'] == True]['Football Tweet'].value_counts()]

tweets_by_key = [get_value_counts(tweets, 'cricket match'), get_value_counts(tweets, 'Football Tweet')]
x_pos = list(range(len(prg_langs)))
width = 0.8
fig, ax = plt.subplots()
plt.bar(x_pos, tweets_by_key, width, alpha=1, color='g')
ax.set_ylabel('Number of tweets', fontsize=15)
ax.set_title('Ranking: Cricket vs. Football (Relevant data)', fontsize=10, fontweight='bold')
ax.set_xticks([p + 0.4 * width for p in x_pos])
ax.set_xticklabels(sport_key)
plt.grid()
plt.savefig('tweet_by_sport_2', format='png')
```



```
In [44]: def extract_link(text):
#regex = r'((www\.[^\s]+)|(https?://[^\s]+)|(http?://[^\s]+))'
#r'https?://[^\s<>"]+|www\.[^\s<>"]+http?://[^\s<>"]' r'(?:@[\w_]+)', r"
(?:\#+[\w_]+[\w\'_-]*[\w_]+)", # hash-tags
regex_str = r'http[s]?://(?:[a-z]|[0-9]|[$-_.&+]|[*\(\),]|(?:%[0-9a-f][0-9a-f])|<[^\>]+>)+'
#match = re.search(regex, text)
match = re.search(regex_str, text)
if match:
    return match.group()
return
```

```
In [50]: tweets['link'] = tweets['text'].apply(lambda tweet: extract_link(tweet))
tweets_relevant = tweets[tweets['relevant'] == True]
tweets_relevant_with_link = tweets_relevant[tweets_relevant['link'] != ' ']

print('\nBelow are some of links that we extracted\n')
print(tweets_relevant_with_link[tweets_relevant_with_link['cricket match'] ==
True]['link'])
print(tweets_relevant_with_link[tweets_relevant_with_link['ICC'] == True]['link'])
print(tweets_relevant_with_link[tweets_relevant_with_link['Football match'] ==
True]['link'])
```

Below are some of links that we extracted

```

7532    https://t.co/6y3mc5vEk4
Name: link, dtype: object
495     https://t.co/uI5CUIQtIS
806     https://t.co/xvY14szXED
1062    https://t.co/UmSyQDCAaz
1395    https://t.co/t5ZAY8MRZX
1427    https://t.co/vPvR8DEvWK
1435     None
1705    https://t.co/Z1ZnKZAq04
1712    https://t.co/FvpxmE7qIP
1829    https://t.co/DKSNpTebw6
1947     None
2388    https://t.co/REoz5ytCBa
2390     None
2411     None
2611    https://t.co/bo9H2yQZpj
2673     None
3124     None
3723    https://t.co/2001pza18x
3724    https://t.co/fgXiSvBGq0
3725    https://t.co/p78B5WLCQg
3726    https://t.co/fcB6XPhTPE
3727    https://t.co/LDwjgOU18C
3728    https://t.co/FBQwOhi7RV
3729    https://t.co/QxrFh7BLcJ
3730    https://t.co/8ZnjwATG49
3731    https://t.co/kQpfY37nKn
3732    https://t.co/iGu63eeP3s
3733    https://t.co/TArXEN40hP
3734    https://t.co/ZAqx19vIPT
3735    https://t.co/8tUwcWUwks
3736    https://t.co/sDD8sG5hlz
...
3801    https://t.co/sx1lb1LGp1
3802    https://t.co/Jtcy2iIOW3
3803    https://t.co/uE5l0fsFKJ
3805    https://t.co/opRDWZryH2
3806    https://t.co/JKUHLRqSr1
3807    https://t.co/FPA0QSMsyi
3808    https://t.co/lVSuoRg4Tm
3809    https://t.co/8lHwUYerLC
3810    https://t.co/gDD1ucQFDw
3811    https://t.co/fKYdZhHdFM
3812    https://t.co/huc06RZi23
3813    https://t.co/NEAlQBKsU8
3814    https://t.co/q51Gr477JV
3815    https://t.co/32NzEqxd4E
3816    https://t.co/brgVE1nUGi
4683    https://t.co/RMRpQJelDa
4689     None
5366     None
5738    https://t.co/VIvyMQMD0t
5746     None
5819     None
7439    https://t.co/8eUqsMsdGN

```

```
7525      None
7532      https://t.co/6y3mc5vEk4
7539      https://t.co/5PFDQx8998
7588      None
8088      None
8094      None
8921      https://t.co/JmnoB5bhPb
9074      None
Name: link, Length: 117, dtype: object
Series([], Name: link, dtype: object)
```

```
In [54]: t = pd.DataFrame(tweets_relevant_with_link)
t
```

Out[54]:

	text	lang	country	cricket match	Football match	cricketworldcup	ICC	Football Tweet
495	Boxing Day day/night test in #Adelaide InYou k...	en	None	False	False	False	True	False
806	Top Viral News ICC Cricket World cup 2019, t...	en	None	False	False	False	True	False
1062	UAE vs USA, 1st Match, ICC Cricket World Cup L...	en	None	False	False	False	True	False
1199	RT @KhadeejahRS: @RanveerOfficial i miss your ...	en	None	False	False	False	False	True
1226	RT @KhadeejahRS: @RanveerOfficial i miss your ...	en	None	False	False	False	False	True
1395	@GolilM @BDCricTime @ICC @Isam84 Whilst we are...	en	None	False	False	False	True	False
1427	#LatestSportsNews #IndiaODITeam #sportsplaymag...	en	None	False	False	False	True	False
1435	Build a serious statement Of Two Match Day Of ...	en	None	False	False	False	True	False
1705	Top Viral News ICC Cricket World cup 2019, t...	en	None	False	False	False	True	False
1712	Build a serious statement Of Two Match Day Of ...	en	None	False	False	False	True	False
1829	Stand by...#UAE #Cricket v @usacricicket @ICC #...	en	None	False	False	False	True	False
1947	RT @EmiratesCricket: Stand by...#UAE #Cricket...	en	None	False	False	False	True	False
2388	ICC Men's Cricket World Cup League 2: The matc...	en	None	False	False	False	True	False
2390	RT @cricbuzz: ICC Men's Cricket World Cup Leag...	en	None	False	False	False	True	False
2411	RT @cricbuzz: ICC Men's Cricket World Cup Leag...	en	None	False	False	False	True	False
2611	cricbuzz: ICC Men's Cricket World Cup League 2...	en	None	False	False	False	True	False
2673	RT @cricbuzz: ICC Men's Cricket World Cup Leag...	en	None	False	False	False	True	False

	text	lang	country	cricket match	Football match	cricketworldcup	ICC	Football Tweet
3124	RT @HistoryVille: In November 2019, an Italian...	en	None	False	False	False	True	False
3723	Cricket News (Amazing Brathwaite 100! West I...	en	None	False	False	False	True	False
3724	Cricket News (Amazing Brathwaite 100! West I...	en	None	False	False	False	True	False
3725	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3726	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3727	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3728	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3729	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3730	Cricket News (Malinga Stars In Big Upset! En...	en	None	False	False	False	True	False
3731	Cricket News (Dhawan Strikes Super Century! ...	en	None	False	False	False	True	False
3732	Cricket News (Dhawan Strikes Super Century! ...	en	None	False	False	False	True	False
3733	Cricket News (Dhawan Strikes Super Century! ...	en	None	False	False	False	True	False
3734	Cricket News (Dhawan Strikes Super Century! ...	en	None	False	False	False	True	False
...
3801	Cricket News (World Record For Sixes! Englan...	en	None	False	False	False	True	False
3802	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3803	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3805	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False

	text	lang	country	cricket match	Football match	cricketworldcup	ICC	Football Tweet
3806	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3807	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3808	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3809	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3810	Cricket News (Pakistan Win in Last Over! Pak...	en	None	False	False	False	True	False
3811	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
3812	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
3813	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
3814	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
3815	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
3816	Cricket News (Wahab Stuns Hosts! England vs ...	en	None	False	False	False	True	False
4683	https://t.co/RMRpQJelDa From 'poor' ICC rating...	en	None	False	False	False	True	False
4689	RT @cricbuzz: ICC Men's Cricket World Cup Leag...	en	None	False	False	False	True	False
5366	@ICC In@vijayanpinarayi In@imVkohli In@KieronP...	und	None	False	False	False	True	False
5738	That thing where you unexpectedly find yoursel...	en	Germany	False	False	False	True	False
5746	RT @cstross: That thing where you unexpectedly...	en	None	False	False	False	True	False
5819	RT @cstross: That thing where you unexpectedly...	en	None	False	False	False	True	False
7439	West Indies have won the toss and elected to b...	en	None	False	False	False	True	False

	text	lang	country	cricket match	Football match	cricketworldcup	ICC	Football Tweet
7525	RT @cstross: That thing where you unexpectedly...	en	None	False	False	False	True	False
7532	@ICC Now I am sure cricket match in India is p...	en	None	True	False	False	True	False
7539	ICC Men's Cricket World Cup League 2\...\n#UAEvs...	en	None	False	False	False	True	False
7588	Looking at Messi showcasing his #BallonDor tro...	en	None	False	False	False	True	False
8088	RT @cstross: That thing where you unexpectedly...	en	None	False	False	False	True	False
8094	RT @UmarFarooqGL: Aleem Dar is going to offici...	en	None	False	False	False	True	False
8921	Build a serious statement Of Two Match Day Of ...	en	None	False	False	False	True	False
9074	RT @cstross: That thing where you unexpectedly...	en	None	False	False	False	True	False

119 rows × 10 columns



```
In [60]: positive_vocab = [
    'good', 'nice', 'great', 'awesome', 'outstanding',
    'fantastic', 'terrific', ':)', ':-)', 'like', 'love',
    # shall we also include game-specific terms?
    # 'triumph', 'triumphal', 'triumphant', 'victory', etc.
]
negative_vocab = [
    'bad', 'terrible', 'crap', 'useless', 'hate', ':(', ':-(',
    # 'defeat', etc.
]
```

```
In [61]: pmi = defaultdict(lambda : defaultdict(int))
    for t1 in p_t:
        for t2 in com[t1]:
            denom = p_t[t1] * p_t[t2]
            pmi[t1][t2] = math.log2(p_t_com[t1][t2] / denom)

    semantic_orientation = {}
    for term, n in p_t.items():
        positive_assoc = sum(pmi[term][tx] for tx in positive_vocab)
        negative_assoc = sum(pmi[term][tx] for tx in negative_vocab)
        semantic_orientation[term] = positive_assoc - negative_assoc
```

```
In [59]: tweets_data_path = 'G:/Yamuna docs/College docs/Info Ret/Project 2/tweets_collect.txt'

tweets_data = []
tweets_file = open(tweets_data_path, "r")
for line in tweets_file:
    try:
        tweet = json.loads(line)
        tweets_data.append(tweet)
    except:
        continue
```

```
In [108]: twt = pd.DataFrame(tweets_data)
twt.head()
twt.to_csv(r'G:\Yamuna docs\College docs\Info Ret\Project 2\tweets_collect.csv')
```

```
In [72]: from textblob import TextBlob

pos_string = 'I love.'
neg_string = 'lose'
meh_string = 'game'

print(TextBlob(pos_string).sentiment.polarity)
print(TextBlob(neg_string).sentiment.polarity)
print(TextBlob(meh_string).sentiment.polarity)
```

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```
In [109]: from googletrans import Translator

count = 0
def translate_text(x):
    global count
    count += 1
    print(count)

    if x['lang'] != 'en':
        translator = Translator()
        return translator.translate(str(x['text'])).text
    else:
        return x['text']

def clean(x):
    return str(x).encode('ascii', 'ignore').decode('UTF-8')

def get_polarity(s):
    return TextBlob(s).sentiment.polarity
```

```
In [110]: df = pd.read_csv(r'G:\Yamuna docs\College docs\Info Ret\Project 2\tweets_colle
ct.csv', low_memory=False)

df['text'] = df['text'].apply(clean)
df['translated'] = df.apply(translate_text, axis=1)
df['polarity'] = df['translated'].apply(get_polarity)
fp = 'G:\Yamuna docs\College docs\Info Ret\Project 2\Clean.csv'
df.to_csv(fp)
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-----
JSONDecodeError                                Traceback (most recent call last)
<ipython-input-110-e0f62efb7827> in <module>
      2
      3 df['text'] = df['text'].apply(clean)
----> 4 df['translated'] = df.apply(translate_text, axis=1)
      5 df['polarity'] = df['translated'].apply(get_polarity)
      6 fp = 'G:\Yamuna docs\College docs\Info Ret\Project 2\Clean.csv'

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\pandas\core\frame.py in
apply(self, func, axis, broadcast, raw, reduce, result_type, args, **kwargs)
    6485             args=args,
    6486             kwargs=kwargs)
-> 6487         return op.get_result()
    6488
    6489     def applymap(self, func):

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\pandas\core\apply.py in
get_result(self)
    149         return self.apply_raw()
    150
--> 151         return self.apply_standard()
    152
    153     def apply_empty_result(self):

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\pandas\core\apply.py in
apply_standard(self)
    255
    256         # compute the result using the series generator
--> 257         self.apply_series_generator()
    258
    259         # wrap results

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\pandas\core\apply.py in
apply_series_generator(self)
    284         try:
    285             for i, v in enumerate(series_gen):
--> 286                 results[i] = self.f(v)
    287                 keys.append(v.name)
    288             except Exception as e:

<ipython-input-109-a1be32eaa13d> in translate_text(x)
      9     if x['lang'] != 'en':
     10         translator = Translator()
--> 11         return translator.translate(str(x['text'])).text
     12     else:
     13         return x['text']

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\googletrans\client.py in
translate(self, text, dest, src)
    170
    171         origin = text
--> 172         data = self._translate(text, dest, src)
    173
    174         # this code will be updated when the format is changed.

```

```

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\googletrans\client.py in

```

```

_translate(self, text, dest, src)
    79         r = self.session.get(url, params=params)
    80
---> 81         data = utils.format_json(r.text)
    82         return data
    83

```

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\googletrans\utils.py in format_json(original)

```

    60         converted = json.loads(original)
    61     except ValueError:
---> 62         converted = legacy_format_json(original)
    63
    64     return converted

```

C:\ProgramData\Anaconda3\envs\py36\lib\site-packages\googletrans\utils.py in legacy_format_json(original)

```

    52         text = text[:p] + states[j][1] + text[nxt:]
    53
---> 54     converted = json.loads(text)
    55     return converted
    56

```

C:\ProgramData\Anaconda3\envs\py36\lib\json__init__.py in loads(s, encoding, cls, object_hook, parse_float, parse_int, parse_constant, object_pairs_hook, **kw)

```

    352         parse_int is None and parse_float is None and
    353         parse_constant is None and object_pairs_hook is None and
not kw):
--> 354     return _default_decoder.decode(s)
    355     if cls is None:
    356         cls = JSONDecoder

```

C:\ProgramData\Anaconda3\envs\py36\lib\json\decoder.py in decode(self, s, _w)

```

    337
    338     """
--> 339     obj, end = self.raw_decode(s, idx=_w(s, 0).end())
    340     end = _w(s, end).end()
    341     if end != len(s):

```

C:\ProgramData\Anaconda3\envs\py36\lib\json\decoder.py in raw_decode(self, s, idx)

```

    355         obj, end = self.scan_once(s, idx)
    356     except StopIteration as err:
--> 357         raise JSONDecodeError("Expecting value", s, err.value) fr
om None
    358     return obj, end

```

JSONDecodeError: ('Expecting value: line 1 column 1 (char 0)', 'occurred at index 2')

```
In [119]: data = pd.read_csv('G:\Yamuna docs\College docs\Info Ret\Project 2\Clean.csv',
low_memory=False)
data = data.loc[data['polarity'] != 0]
data.dropna(axis=1, inplace=True)
data.set_index(pd.DatetimeIndex(data['created_at']), inplace=True)

data_crk = data[data['text'].str.contains('cricket match', case=False) == False]
data_crk = data_crk[data_crk['text'].str.contains('football match', case=False) == False]

data_foot = data[data['text'].str.contains('cricket match', case=False) == False]
data_foot = data_foot[data_foot['text'].str.contains('cricket match', case=False) == False]
```

```
In [120]: polarity_crk = data_crk['polarity']
polarity_crk = polarity_crk.resample('2Min').mean()

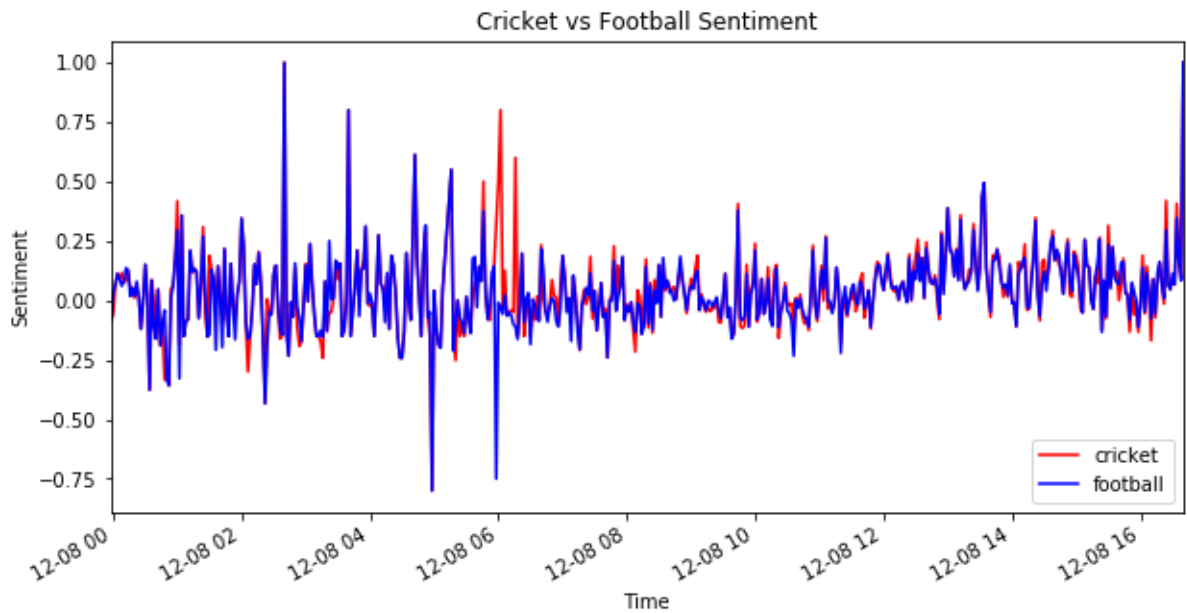
polarity_foot = data_foot['polarity']
polarity_foot = polarity_foot.resample('2Min').mean()

polarity_crk.dropna(inplace=True)
polarity_foot.dropna(inplace=True)
```

```
In [121]: fig = plt.figure(figsize=(10, 5))
ax = fig.add_subplot(111)
ax.set_title('Cricket vs Football Sentiment')

polarity_crk.plot(ax=ax, color='red', label='cricket')
polarity_foot.plot(ax=ax, color='Blue', label='football')
ax.legend(loc='lower right')
ax.set_xlabel('Time')
ax.set_ylabel('Sentiment')
```

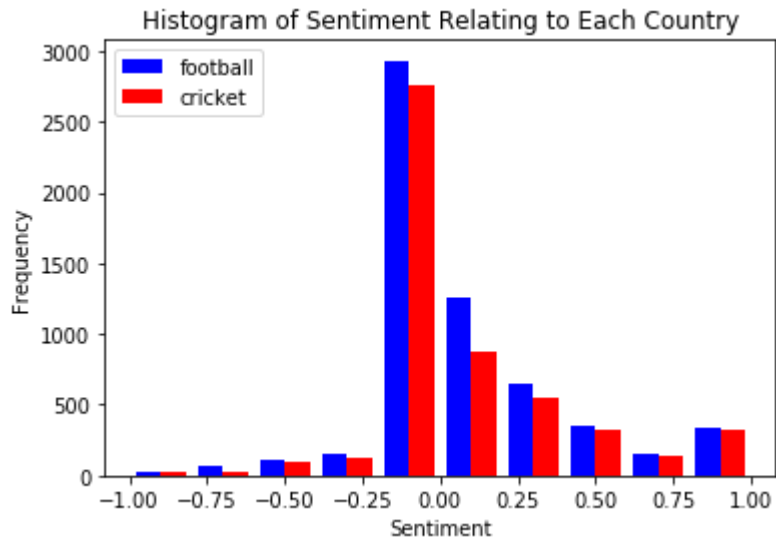
```
Out[121]: Text(0, 0.5, 'Sentiment')
```




```
In [124]: foot = data_foot['polarity'].values
          crk = data_crk['polarity'].values

          fig = plt.figure()
          ax = fig.add_subplot(111)

          ax.hist([foot, crk], color=['blue', 'red'], label=['football', 'cricket'])
          ax.legend(loc='upper left')
          ax.set_xlabel('Sentiment')
          ax.set_ylabel('Frequency')
          ax.set_title('Histogram of Sentiment Relating to Each Country')
          plt.show()
```



```
In [127]: foot = data_foot['polarity']
          crk = data_crk['polarity']

          print('Cricket sentiment mean: ' + str(round(foot.mean(), 3)))
          print('Football sentiment mean: ' + str(round(crk.mean(), 3)))
          print('\n')

          print('cricket sentiment standard deviation: ' + str(round(foot.std(), 3)))
          print('Football sentiment standard deviation: ' + str(round(crk.std(), 3)))
```

Cricket sentiment mean: 0.054
Football sentiment mean: 0.06

cricket sentiment standard deviation: 0.337
Football sentiment standard deviation: 0.341

```
In [126]: fra_pos = fra[fra > 0].size
fra_neg = fra[fra < 0].size
cro_pos = cro[cro > 0].size
cro_neg = cro[cro < 0].size

print('Football:\n')
print('Positive tweets: ' + str(foot_pos))
print('Negative tweets: ' + str(foot_neg))
print('Percentage of tweets positive: ' + str(round((foot_pos/(foot_neg+foot_pos))*100, 1)) + '%\n')

print('Cricket:\n')
print('Positive tweets: ' + str(crk_pos))
print('Negative tweets: ' + str(crk_neg))
print('Percentage of tweets positive: ' + str(round((crk_pos/(crk_neg+crk_pos))*100, 1)) + '%\n')

print('TOTAL:\n')
print('Positive tweets: ' + str(crk_pos + foot_pos))
print('Negative tweets: ' + str(crk_neg + foot_neg))
print('Percentage of tweets positive: ' + str(round((foot_pos+crk_pos)/(foot_pos+crk_pos+foot_neg+crk_neg)*100, 1)) + '%')
```

Football:

Positive tweets: 2743

Negative tweets: 3290

Percentage of tweets positive: 45.5%

Cricket:

Positive tweets: 2204

Negative tweets: 3026

Percentage of tweets positive: 42.1%

TOTAL:

Positive tweets: 4947

Negative tweets: 6316

Percentage of tweets positive: 43.9%

In []: