Twitter-Bot Influencer

In [1]:
```
import tweepy
from tweepy import TweepError
from vaderSentiment.vaderSentiment import SentimentIntensityAnalyzer
import pandas as pd
pd.set_option('max_colwidth', 280)  #show at least 280 characters in col
umns, full tweets
import seaborn as sns
import csv
import string
import logging
import math
import random
import numpy as np
import matplotlib as mpl
import matplotlib.pyplot as plt
from IPython.core.display import Image, display
from threading import Thread, Condition
import time


# twitter API credentials on seperate csv file
file = open('new_keys.csv')
reader = csv.reader(file)
keys_list = list(reader)[0]
consumer_key = keys_list[0]
consumer_secret = keys_list[1]
access_key = keys_list[2]
access_secret = keys_list[3]


# authorize twitter, initialize tweepy
try:
    auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
    auth.set_access_token(access_key, access_secret)
    api = tweepy.API(auth)
    user_name = api.auth.get_username()
    print("Developer credentials have been accepted.")

except TweepError as e:
    logging.warning("There was a Tweepy error. Double check your API key
s and try again.")
    logging.warning(e)
```

```
Developer credentials have been accepted.
```

Build the Dataset

In [2]:
```
# need to loop if scale exceeds 200 followers

def follower_id_df(user_name):
    """parameter: twitter user_name
       return: a dataframe object with a follower_id column"""
    followers = api.followers(user_name, count=200)  #don't keep calling
api
    id_list = [follower.id for follower in followers]
    return pd.DataFrame(id_list, columns=["follower_id"])

dataset_df = follower_id_df(user_name)
dataset_df.tail(3)
```

Out[2]:

	follower_id
197	956120270
198	1114313824440659976
199	2322695744

In [3]:
```
# get some tweets from my sheep

def get_column_of_tweets(follower_id_ser, num_tweets):
    """follower_id_ser: is a series containing follower ids
       num_tweets: is the number of tweets to grab per each user id
       return: a list containing lists of num_tweets tweets for each fol
lower_id"""
    tweets_col = []
    for id in follower_id_ser:
        try:
            tweets = [api.user_timeline(user_id=id, count=num_tweets)]
        except tweepy.TweepError:
            tweets = [tweets_col[0]]
            print("Failed to run the command on that user, Skipping...")
        tweets_col += tweets
    return tweets_col


def tweets_to_text(tweets_list):
    """paramater: list containing x tweets
       return: list containing the text portion of the tweets in tweets_
list"""
    return [tweet.text for tweet in tweets_list]



#dataset_df["tweets"] = get_column_of_tweets(dataset_df["follower_id"],
 20)
#dataset_df["tweet_text"] = dataset_df["tweets"].apply(tweets_to_text)
#dataset_df.tail(3)
```

Vader Sentiment Analysis

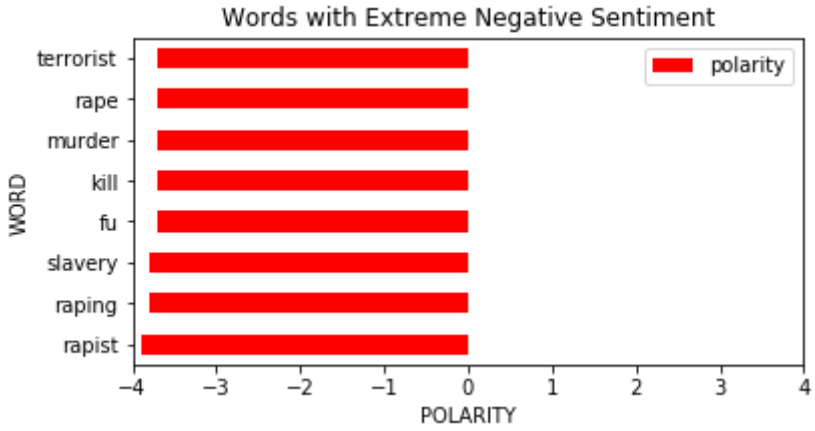
I built my sentiment analysis tool using the VADER lexicon (Valence Aware Dictionary for sEntiment Reasoning).

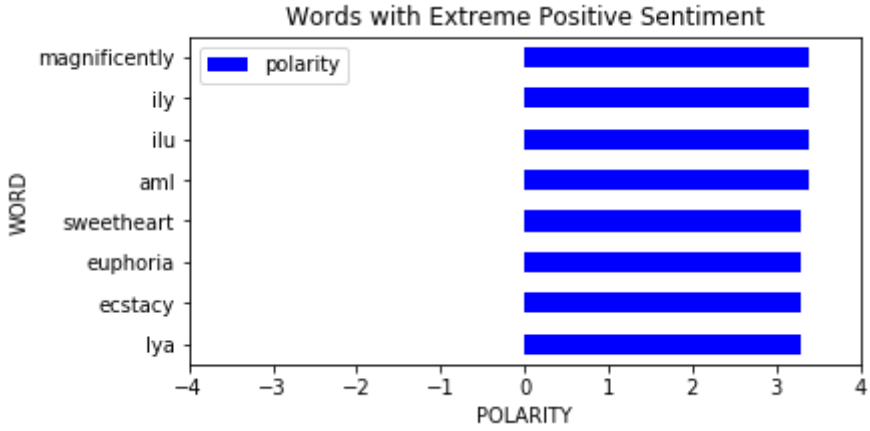
The text file can be found here: %%html "VADER lexicon textfile" (https://github.com/cjhutto/vaderSentiment/blob/master/vaderSentiment/vader_lexicon.txt)

More info on VADER can be found here: %%html "VADER Tutorial" (http://t-redactyl.io/blog/2017/04/using-vader-to-handle-sentiment-analysis-with-social-media-text.html)

In [4]:
```
darth_path = "/Users/mathewbuck/Desktop/dighum100/twitter_bot/darth.jpg"
display(Image(darth_path, width=450, unconfined=True))

vader_lex_df = pd.read_csv('vader_lexicon.txt', sep="\t", header=None)
vader_lex_df.columns = ['word', 'polarity', 'junk', 'trash']
vader_lex_df = vader_lex_df.drop(['junk', 'trash'], axis=1)
#vader_lex_df.iloc[2000 : 2005]
print("VADAR thinks that there are around 7,000 words that can help quan
tify the sentiment of a sentence.")

vader_lex_df.describe()
extreme_neg = (vader_lex_df[vader_lex_df['polarity']
                .agg(lambda x: (x <= -3.7))]
                .sort_values('polarity')
                .set_index("word"))

extreme_pos = (vader_lex_df[vader_lex_df['polarity']
                .agg(lambda x: (x >= 3.3))]
                .sort_values('polarity')
                .set_index("word"))

fig = extreme_neg.plot.barh(figsize=(6, 3), color = "red")
plt.xlim([-4, 4])
plt.xlabel("POLARITY")
plt.ylabel("WORD")
plt.title("Words with Extreme Negative Sentiment");
print()

fig = extreme_pos.plot.barh(figsize=(6, 3), color = "blue")
plt.xlim([-4, 4])
plt.xlabel("POLARITY")
plt.ylabel("WORD")
plt.title("Words with Extreme Positive Sentiment");
plt.show()


# methods ##################################################################
####################

analyser = SentimentIntensityAnalyzer()


def sentiment_score(tweet_str):
    """parameter: string representing the text of a single tweet
       return: the sentiment rating of sentence_str"""
    return analyser.polarity_scores(tweet_str)["compound"]


def mean_sentiment(tweet_text_ser):
    return pd.Series([sentiment_score(tweet_text) for tweet_text in twee
t_text_ser]).mean()

#dataset_df["sentiment_score"] = dataset_df["tweet_text"].apply(mean_sen
timent)
#dataset_df = dataset_df[dataset_df['sentiment_score'].notnull()]
#dataset_df.tail(3)
```

VADAR thinks that there are around 7,000 words that can help quantify t
he sentiment of a sentence.





In [5]:
```
# This cell saves the DataFrame object I created above to text_df.csv in
the project file.
#dataset_df.to_csv("dataset_df.csv", sep=',', encoding='utf-8', index=Fa
lse)
```

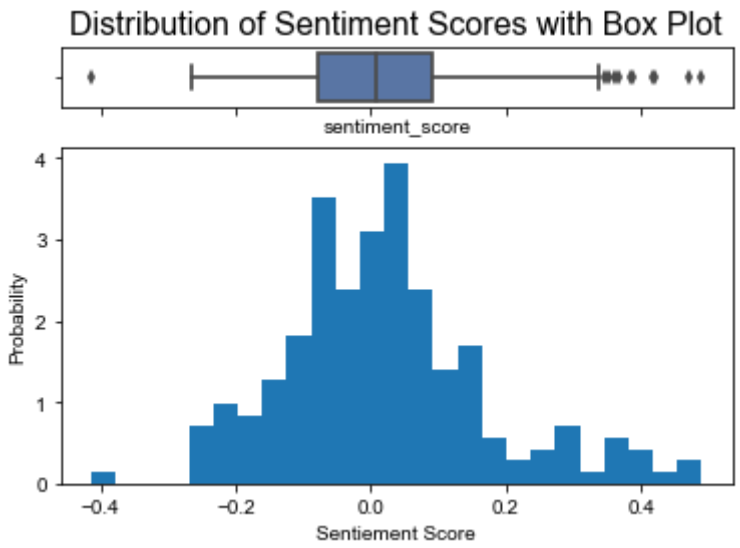
In [6]:
```
# This cell reads in the text_df.csv file I created earlier to speed up
 processing.
dataset_df_path = "/Users/mathewbuck/Desktop/dighum100/twitter_bot/datas
et_df.csv"
dataset_df = pd.read_csv(dataset_df_path)
dataset_df.tail(3)
```

Out[6]:

	follower_id	tweets	
194	1025626087307575296	[Status(_api=<tweepy.api.API object at 0x7fbe94a00be0>, _json= {'created_at': 'Tue Jun 16 06:43:39 +0000 2020', 'id': 1272781871064027136, 'id_str': '1272781871064027136', 'text': 'RT @EKOtoons: I WILL FOLLOW\nTHIS WOMAN\nINTO BATTLE\n\nhttps://t.co/w0G0qS7lz5', 'truncated': F...	['RT @EKOtoons: I WILL FOLLOW\nTHIS WOMAN\n BATTLE\n\nhttps://t.co/w0 '@pulte Thank god for @pu brother out please.', '@pult out please.', 'RT @pcbrynn the only thing you need to today. 💙 💙 💙 https://t.co/j1IA7pJbsf', 'R @CallMeC...
195	1041349589842878464	[Status(_api=<tweepy.api.API object at 0x7fbe94a00be0>, _json= {'created_at': 'Thu May 07 12:10:04 +0000 2020', 'id': 1258368502450307072, 'id_str': '1258368502450307072', 'text': '@CombatPhot I'd love to snag one of your pins! Please DM me details. Thank you!', 'truncated': F...	['@CombatPhot I'd love to of your pins! Please DM m Thank you!', 'THIS: Has be resounding with me lately. positive, and keep fighting. https://t.co/KxMshTKJ0J', @HistoricDET: #OTD 98 ye the first steel was lifted int the @mason...
196	2585686880	[Status(_api=<tweepy.api.API object at 0x7fbe94a00be0>, _json= {'created_at': 'Sat Jun 20 15:18:52 +0000 2020', 'id': 1274361078194081792, 'id_str': '1274361078194081792', 'text': 'Twitter Tantrum in 3-2-1...\nJudge Rejects Trump Request for Order Blocking Bolton's Memoir http...	['Twitter Tantrum in 3-2-1... Rejects Trump Request for Blocking Bolton's Memoir https://t.co/1fENCF1ero', ' watching Derek on Netflix. @rickygervais! If I'm not cr laughter, I'm crying from ki 'https://t.co/ECeyQkgZBL' '@GovWhi...

Conclusions / Statistics

In [7]:
```
print()
print()

fig, (ax_box, ax_hist) = plt.subplots(2, sharex=True, gridspec_kw={"heig
ht_ratios": (.15, .85)})
sns.set(rc={"figure.figsize": (8, 4)}); np.random.seed(0)

# Add a graph in each part
fig = sns.boxplot(dataset_df["sentiment_score"], ax=ax_box)
plt.hist(dataset_df["sentiment_score"], density=True, bins=25)  # `densi
ty=False` would make counts
plt.ylabel('Probability')
plt.xlabel('Sentiement Score');

# Change figure size
fig = sns.set(rc={'figure.figsize':(11.7, 8.27)})

# Move title up on y axis
plt.title("Distribution of Sentiment Scores with Box Plot", y=1.3, fonts
ize = 16);
plt.show()

dataset_df["sentiment_score"].describe()
```



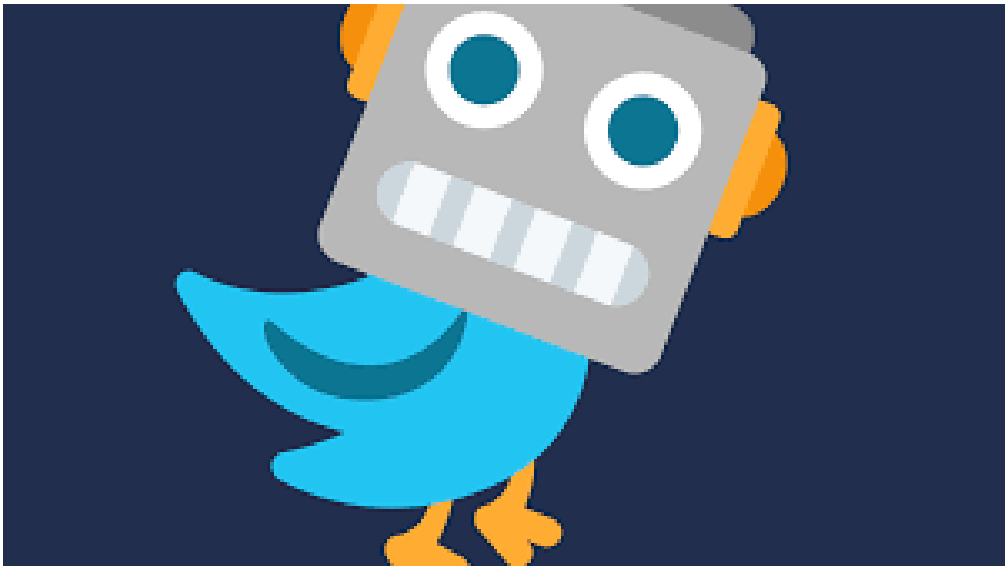
Out[7]:
```
count    197.000000
mean       0.017984
std        0.151877
min       -0.413280
25%       -0.078885
50%        0.006160
75%        0.089355
max        0.488880
Name: sentiment_score, dtype: float64
```

The Twitter Bot

In [8]:
```
##########################################################################
########################################
# TWITTER-BOT CODE ######################################################
########################################
# DON'T RUN THE BOT MORE THAN ONCE A DAY TO AVOID SUSPENSIONS
 !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
##########################################################################
########################################

# SMART LIST DOESN N0T YIELD MANY NEW FOLLOWERS AT ALL
# users_to_retweet = (["AndrewYang","jimmy_dore", "JimmyDoreShow", "mtai
bbi", "EricRWeinstein", "ZachandMattShow",
#                      "KatTimpf", "RealCandaceO", "thrashermag", "joero
gan", "DanCrenshawTX", "RepDanCrenshaw",
#                      "TulsiGabbard", "hilltvlive", "Krystallball", "kt
halps", "esaagar", "Timcast", "CHSommers",
#                      "SamHarrisOrg", "elonmusk", "Space_Station", "Spa
ceX", "VanJones68", "PlanetTyrus",
#                      "HumanityForward", "RussForUs2020", "WilliamShatn
er"])


# DUMB LIST GETS ABOUT 50-75 SHEEP TO FOLLOW THE BOT EACH DAY BY POSTING
(mostly) MAINSTREAM NEWS
users_to_retweet = (["AndrewYang", "CNNPolitics", "ZachandMattShow", "MS
NBC", "cnnbrk", "cnni",
                     "JoeBiden", "MSN_Money", "MichelleObama", "BernieSa
nders", "Krystallball",
                     "kthalps", "esaagar", "BarackObama", "ABC", "NBCNew
s", "CBSNews", "NBCNews",
                     "VanJones68", "MSNBC_Breaking", "HumanityForward",
"RussForUs2020", "WilliamShatner",
                     "GeorgeTakei"])


def build_retweet_list(user_list, max_tweets_per_user):
    """user_list: list of user_names
       max_tweets_per_user: maximum number of retweets that will be post
ed for any user_name
       return: a list containing 1 or more tweet.id objects for each use
r_name in user_list """
    # make initial request for most recent tweets (20 is the maximum all
owed count)
    tweet_ids_list = []
    for user in users_to_retweet:
        tweets = api.user_timeline(id=user, count=random.randint(1, max_
tweets_per_user))
        tweet_ids = [tweet.id for tweet in tweets]
        tweet_ids_list += tweet_ids

    random.shuffle(tweet_ids_list)
    print("Number of tweets that the bot will attempt to post: ", len(tw
eet_ids_list))
    return tweet_ids_list
```

```
def run_twitter_bot(users_to_retweet, max_tweets_per_user, min_seconds,
max_seconds):
    """users_to_tetweet: list of twitter user_names associated with the
 users that the bot will retweet
       max_tweets_per_user: maximum number of retweets that will be post
ed for any user_name
       min_seconds: minimum time between tweets/follows
       max_seconds: maximum time between tweets/follows
       return: True upon completion"""
    bot_path = "/Users/mathewbuck/Desktop/dighum100/twitter_bot/twitter_
bot.png"
    display(Image(bot_path, width=500, unconfined=True))
    num_follows = 0
    num_tweets_made = 0

    for id in build_retweet_list(users_to_retweet, max_tweets_per_user):
        first_100 = api.retweets(id, 100)  # get the first 100 retweets
 for each tweet

        # only retweet FAIRLY POPULAR posts
        if len(first_100) > 75:

            try:
                api.retweet(id)
                num_tweets_made += 1
                print()
                print("NEW TWEET NUMBER: ", num_tweets_made)

            # catch 'You have already retweeted this Tweet.' errors
            except tweepy.TweepError as e:
                print()
                print(e)

            #follow some peeps, some will follow back
            end_range = random.randint(61, 70)  # HARD CODE, GOAL IS 400
NEW FOLLOWS PER DAY
            potential_followers = first_100[60 : end_range]
            potential_screen_names = [sheep.user.screen_name for sheep i
n potential_followers]

            if len(potential_screen_names) > 0:
                for screen_name in potential_screen_names:
                    num_seconds = random.randint(min_seconds, max_second
s)  #adjust time period between re-tweets
                    try:
                        api.create_friendship(screen_name)  # follow som
e peeps
                        num_follows += 1
                        print("Number of new follows: ", num_follows)

                    except tweepy.TweepError as e:
                        print(e)

                    print("Minutes until next follow: ", num_seconds / 6
0)
                    time.sleep(num_seconds)
```

```
    return True


# RUN THE TWITTER-BOT
bot_path = "/Users/mathewbuck/Desktop/dighum100/twitter_bot/twitter_bot.
png"
display(Image(bot_path, width=500, unconfined=True))
#print(run_twitter_bot(users_to_retweet, max_tweets_per_user=3, min_seco
nds=31, max_seconds=61))
```



In [ ]:
```
# DON'T RUN ON THE SAME DAY AS YOU RUN THE BOT OR TWITTER WILL SUSPEND Y
OU AGAIN!!!!!!!!!!!!!!

def unfollow_users():
    """This method unfollows between 50 and 99 users.
    The number x and time intervals are chosen randomly to avoid creatin
g detectable patterns.
    return: True"""
    x = random.randint(50, 99)
    last_x_friends = api.friends(count=x)
    last_x_screen_names = [user.screen_name for user in last_x_friends]
    for name in last_x_screen_names:
        try:
            api.destroy_friendship(name)
            num_seconds = random.randint(31, 63)  #adjust time period
            time.sleep(num_seconds)
        except tweepy.TweepError as e:
            print(e)
    print("Number of users that have been unfollowed:", x)
    return True


for _ in range(0, 3):
    print(unfollow_users())
```