In [1]:
```
import numpy as np
import pandas as pd
from scipy.optimize import curve_fit
import seaborn as sns

import matplotlib.pyplot as plt
import matplotlib.colors as colors
%matplotlib inline

import plotly.offline as py
py.init_notebook_mode(connected=True)
import plotly.graph_objs as go
import plotly.tools as tls
import plotly.figure_factory as ff
from wordcloud import WordCloud
import nltk
#nltk.download()
from nltk.sentiment import SentimentIntensityAnalyzer
from nltk.corpus import stopwords
from nltk import sent_tokenize, word_tokenize
from wordcloud import WordCloud, STOPWORDS

from collections import Counter
from nltk.tokenize import RegexpTokenizer
import re

en_stopwords = set(stopwords.words('english'))
```

```
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-1-ba228ed4a1bd> in <module>
      8 get_ipython().run_line_magic('matplotlib', 'inline')
      9
---> 10 import plotly.offline as py
     11 py.init_notebook_mode(connected=True)
     12 import plotly.graph_objs as go

ModuleNotFoundError: No module named 'plotly'
```

In [4]:
```
import os
print(os.listdir("/Users/Malitha/Desktop/IT418/Project/Dataset"))
```

```
['CAvideos.csv', 'CA_category_id.json', 'DEvideos.csv', 'DE_category_id.jso
n', 'FRvideos.csv', 'FR_category_id.json', 'GBvideos.csv', 'GB_category_id.js
on', 'INvideos.csv', 'IN_category_id.json', 'JPvideos.csv', 'JP_category_id.j
son', 'KRvideos.csv', 'KR_category_id.json', 'MXvideos.csv', 'MX_category_id.
json', 'RUvideos.csv', 'RU_category_id.json', 'Sorted Music Videos', 'USvideo
s.csv', 'US_category_id.json']
```

In [5]:
```
videos = pd.read_csv('/Users/Malitha/Desktop/IT418/Project/Dataset/USvideos.cs
v')
videos_categories = pd.read_json('/Users/Malitha/Desktop/IT418/Project/Datase
t/US_category_id.json')
```

In [6]:
```
videos.head()
```

Out[6]:

	video_id	trending_date	title	channel_title	category_id	publish_time	
0	2kyS6SvSYSE	17.14.11	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	
1	1ZAPwfrtAFY	17.14.11	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13T07:30:00.000Z	
2	5qpjK5DgCt4	17.14.11	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	sup
3	puqaWrEC7tY	17.14.11	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	2017-11-13T11:00:04.000Z	
4	d380meD0W0M	17.14.11	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	

In [7]:
```
videos.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 40949 entries, 0 to 40948
Data columns (total 16 columns):
video_id                  40949 non-null object
trending_date             40949 non-null object
title                     40949 non-null object
channel_title             40949 non-null object
category_id               40949 non-null int64
publish_time              40949 non-null object
tags                      40949 non-null object
views                     40949 non-null int64
likes                     40949 non-null int64
dislikes                  40949 non-null int64
comment_count             40949 non-null int64
thumbnail_link            40949 non-null object
comments_disabled         40949 non-null bool
ratings_disabled          40949 non-null bool
video_error_or_removed    40949 non-null bool
description               40379 non-null object
dtypes: bool(3), int64(5), object(8)
memory usage: 4.2+ MB
```

In [8]:
```
videos['trending_datetime'] = pd.to_datetime(videos['trending_date'], format=
'%y.%d.%m')
videos['trending_date'] = pd.to_datetime(videos['trending_date'], format='%y.%
d.%m').dt.date

# Transforming Trending date column to datetime format and splitting into two
 separate ones
publish_time = pd.to_datetime(videos['publish_time'], format='%Y-%m-%dT%H:%M:%
S.%fZ')
videos['publish_date'] = publish_time.dt.date
videos['publish_time'] = publish_time.dt.time
videos['publish_hour'] = publish_time.dt.hour
```

In [9]:
```
videos["trending_month"]=videos["trending_datetime"].dt.month
videos["trending_day"]=videos["trending_datetime"].apply(lambda time:time.day)
videos["trending_day_of_Week"]=videos["trending_datetime"].dt.dayofweek
```

In [10]:
```
videos["publish_month"]=publish_time.dt.month
videos["publish_day"]= publish_time.dt.day
videos["publish_day_of_week"]=publish_time.dt.dayofweek
```

In [11]:
```
categories = {category['id']: category['snippet']['title'] for category in vid
eos_categories['items']}

videos.insert(4, 'category', videos['category_id'].astype(str).map(categories
))
```

In [12]:
```
videos.head()
```

Out[12]:

	video_id	trending_date	title	channel_title	category	category_id	publish
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	People & Blogs	22	17
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	Entertainment	24	07
2	5qpjK5DgCt4	2017-11-14	Racist Superman | Rudy Mancuso, King Bach & Le...	Rudy Mancuso	Comedy	23	19
3	puqaWrEC7tY	2017-11-14	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	Entertainment	24	11
4	d380meD0W0M	2017-11-14	I Dare You: GOING BALD!?	nigahiga	Entertainment	24	18

5 rows × 26 columns

In [13]:
```
videos_last = videos.drop_duplicates(subset=['video_id'], keep='last', inplace=False)
videos_first = videos.drop_duplicates(subset=['video_id'], keep='first', inplace=False)
```

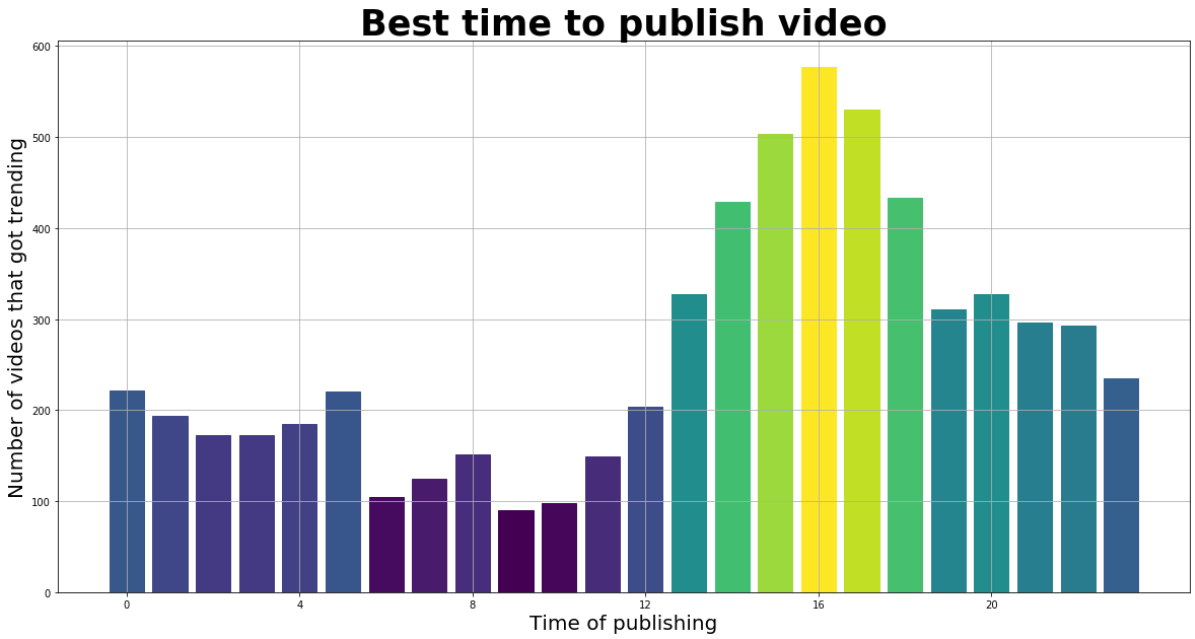
In [14]:
```
print("videos dataset contains {} videos".format(videos.shape[0]))
print("videos_first dataset contains {} videos".format(videos_first.shape[0]))
print("videos_last dataset contains {} videos".format(videos_last.shape[0]))
```

```
videos dataset contains 40949 videos
videos_first dataset contains 6351 videos
videos_last dataset contains 6351 videos
```

In [15]:
```
videos_first["time_to_trend"] = (videos_first.trending_date - videos_first.publish_date) / np.timedelta64(1, 'D')
```

```
C:\Users\Malitha\Anaconda3\lib\site-packages\ipykernel_launcher.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html#indexing-view-versus-copy
  """Entry point for launching an IPython kernel.
```

In [16]:
```
publish_h = [0] * 24

for index, row in videos_first.iterrows():
    publish_h[row["publish_hour"]] += 1

values = publish_h
ind = np.arange(len(values))


# Creating new plot
fig = plt.figure(figsize=(20,10))
ax = fig.add_subplot(111)
ax.yaxis.grid()
ax.xaxis.grid()
bars = ax.bar(ind, values)

# Sampling of Colormap
for i, b in enumerate(bars):
    b.set_color(plt.cm.viridis((values[i] - min(values))/(max(values)- min(val
ues))))

plt.ylabel('Number of videos that got trending', fontsize=20)
plt.xlabel('Time of publishing', fontsize=20)
plt.title('Best time to publish video', fontsize=35, fontweight='bold')
plt.xticks(np.arange(0, len(ind), len(ind)/6), [0, 4, 8, 12, 16, 20])

plt.show()
```



In [17]:
```
from IPython.display import HTML, display

# We choose the 10 most trending videos
selected_columns = ['title', 'channel_title', 'thumbnail_link', 'publish_date'
, 'category']

most_frequent = videos.groupby(selected_columns)['video_id'].agg(
    {"code_count": len}).sort_values(
    "code_count", ascending=False
).head(10).reset_index()

# Construction of HTML table with miniature photos assigned to the most popula
r movies
table_content = ''
max_title_length = 50

for date, row in most_frequent.T.iteritems():
    HTML_row = '<tr>'
    HTML_row += '<td><img src="' + str(row[2]) + '"style="width:100px;height:1
00px;"></td>'
    HTML_row += '<td>' + str(row[1]) + '</td>'
    HTML_row += '<td>' + str(row[0])  + '</td>'
    HTML_row += '<td>' + str(row[4]) + '</td>'
    HTML_row += '<td>' + str(row[3]) + '</td>'

    table_content += HTML_row + '</tr>'

display(HTML(
    '<table><tr><th>Photo</th><th>Channel Name</th><th style="width:250px;">Ti
tle</th><th>Category</th><th>Publish Date</th></tr>{}</table>'.format(table_co
ntent))
)
```

```
C:\Users\Malitha\Anaconda3\lib\site-packages\ipykernel_launcher.py:7: FutureW
arning: using a dict on a Series for aggregation
is deprecated and will be removed in a future version
  import sys
```

Photo	Channel Name	Title	Category	Publish Date
	Lucas and Marcus	WE MADE OUR MOM CRY...HER DREAM CAME TRUE!	Entertainment	2018-05-13
	Charlie Puth	Charlie Puth - BOY [Official Audio]	Music	2018-05-11
	Rooster Teeth	Rooster Teeth Animated Adventures - Millie So Serious	Film & Animation	2018-05-14
	grav3yardgirl	Why I'm So Scared (being myself and crying too much)	Howto & Style	2018-05-14
	SamSmithWorldVEVO	Sam Smith - Pray (Official Video) ft. Logic	Music	2018-05-09
	Unbox Therapy	The ULTIMATE $30,000 Gaming PC Setup	Science & Technology	2018-05-13
	Complex	YoungBoy Never Broke Again Goes Sneaker Shopping With Complex	Entertainment	2018-05-14
	nigahiga	FORTNITE The Movie (Official Fake Trailer)	Entertainment	2018-05-11

		Selena Gomez	Selena Gomez - Back To You (Lyric Video)	Film & Animation	2018-05-10
		BostonDynamics	Getting some air, Atlas?	Science & Technology	2018-05-10

In [ ]: