crisis_feelings

July 13, 2019

1 The Feelings of the Crisis

While reading news articles normally the title is the hook, perhaps a negative title could lead you to skip reading an article if you don't want to be in a bad mood. But is this fair enough?

On this activity you are tasked to corroborate if a news title with a negative sentiment leads or not to a negative content. You will use VADER sentiment to accomplish this work using the news articles that you previously download on *The Voice of the Crisis* activity.

[1]:

```python
# Initial imports
import os
from path import Path
import pandas as pd
from newsapi import NewsApiClient
import nltk
from nltk.sentiment.vader import SentimentIntensityAnalyzer

get_ipython().run_line_magic("matplotlib", "inline")
```

1.1 Instructions

Just for convenience download the `vader_lexicon` in order to initialize the VADER sentiment analyzer

[2]:

```python
# Download/Update the VADER Lexicon
nltk.download("vader_lexicon")

# Initialize the VADER sentiment analyzer
analyzer = SentimentIntensityAnalyzer()
```

```
[nltk_data] Downloading package vader_lexicon to
[nltk_data]     /Users/josearturomorasoto/nltk_data...
[nltk_data]   Package vader_lexicon is already up-to-date!
```

1.1.1 Load the News Articles from the CSV File as a DataFrame

Pick the CSV file you created on *The Voice of the Crisis* activity and load it as a DataFrame, remember to specify the `encoding='utf-8-sig'` parameter.

[3]:
```
# Load news from CSV file
file_path = Path("Data/crisis_news_en_es.csv")
news_df = pd.read_csv(file_path, encoding="utf-8-sig")
news_df.head()
```

[3]:
```
         date                                        description language  \
0  2019-07-08  Technology has been used to manage regulatory ...       en
1  2019-06-15  Who doesnt love making signs and getting angr...       en
2  2019-07-09  A probability model used by the New York Fed t...       en
3  2019-06-28  What is the G20, and what do they do when they...       en
4  2019-07-07  How entrepreneur Andy Scott was able to rebuil...       en

                                                text  \
0  Technology has been used to manage regulatory ...
1  Having never attended my high school prom (I b...
2  David Karp/AP\r\n<ul><li>A probability model u...
3  Image copyrightGetty ImagesImage caption\r\n A...
4  Image copyrightAndy ScottImage caption\r\n And...

                                               title
0  The startups creating the future of RegTech an...
1           I Dont Go to Parties. I Go to Protests.
2  A critical recession indicator used by the Fed...
3  What is the G20 summit, and what do world lead...
4  'I got wiped out, but I was determined to make...
```

The VADER sentiment module is only trained to score sentiment on English language, so create a new DataFrame only with news in English. You will learn how to score sentiment in multiple languages later.

[4]:
```
# Fetch only English news
news_en_df = news_df[news_df["language"] == "en"]
news_en_df.head()
```

[4]:
```
         date                                        description language  \
0  2019-07-08  Technology has been used to manage regulatory ...       en
1  2019-06-15  Who doesnt love making signs and getting angr...       en
2  2019-07-09  A probability model used by the New York Fed t...       en
3  2019-06-28  What is the G20, and what do they do when they...       en
4  2019-07-07  How entrepreneur Andy Scott was able to rebuil...       en

                                                text  \
0  Technology has been used to manage regulatory ...
1  Having never attended my high school prom (I b...
2  David Karp/AP\r\n<ul><li>A probability model u...
3  Image copyrightGetty ImagesImage caption\r\n A...
4  Image copyrightAndy ScottImage caption\r\n And...

                                               title
```

```
0  The startups creating the future of RegTech an...
1           I Dont Go to Parties. I Go to Protests.
2  A critical recession indicator used by the Fed...
3  What is the G20 summit, and what do world lead...
4  'I got wiped out, but I was determined to make...
```

1.1.2 Calculating VADER Sentiment Score for News Titles and Text

As you know the `compound` score could be used to get a normalized score for a sentiment, in this section you have to create a function called `get_sentiment(score)` that will return a normalized value of sentiment for the `score` parameter based on the rules you learn. This function should return `1` for positive sentiment, `-1` for negative sentiment, and `0` for neutral sentiment.

[5]:
```python
# Sentiment calculation based on compound score
def get_sentiment(score):
    """
    Calculates the sentiment based on the compound score.
    """
    result = 0  # Neutral by default
    if score >= 0.05:  # Positive
        result = 1
    elif score <= -0.05:  # Negative
        result = -1

    return result
```

Use the the VADER sentiment module from `NLTK` to score the sentiment of every news article title and text in english; you should append ten new columns to the English news DataFrame to store the results as follows.

- Title's compound score
- Title's positive score
- Title's neutral score
- Title's negative score
- Title's normalized score (using the `get_sentiment()` function)
- Text's compound score
- Text's positive score
- Text's neutral score
- Text's negative score
- Text's normalized score (using the `get_sentiment()` function)

Hint: You can use the `iterrows()` method from the Pandas DataFrame to iterate across the rows to score the sentiment for the title an the text of each news article.

[6]:
```python
# Sentiment scores dictionaries
title_sent = {
    "title_compound": [],
    "title_pos": [],
    "title_neu": [],
    "title_neg": [],
    "title_sent": [],
}
text_sent = {
    "text_compound": [],
    "text_pos": [],
    "text_neu": [],
    "text_neg": [],
    "text_sent": [],
}

# Get sentiment for the text and the title
for index, row in news_en_df.iterrows():
    try:
        # Sentiment scoring with VADER
        title_sentiment = analyzer.polarity_scores(row["title"])
        title_sent["title_compound"].append(title_sentiment["compound"])
        title_sent["title_pos"].append(title_sentiment["pos"])
        title_sent["title_neu"].append(title_sentiment["neu"])
        title_sent["title_neg"].append(title_sentiment["neg"])
        title_sent["title_sent"].
 ↪append(get_sentiment(title_sentiment["compound"]))

        text_sentiment = analyzer.polarity_scores(row["text"])
        text_sent["text_compound"].append(text_sentiment["compound"])
        text_sent["text_pos"].append(text_sentiment["pos"])
        text_sent["text_neu"].append(text_sentiment["neu"])
        text_sent["text_neg"].append(text_sentiment["neg"])
        text_sent["text_sent"].append(get_sentiment(text_sentiment["compound"]))
    except AttributeError:
        pass

# Attaching sentiment columns to News DataFrame
title_sentiment_df = pd.DataFrame(title_sent)
text_sentiment_df = pd.DataFrame(text_sent)
news_en_df = news_en_df.join(title_sentiment_df).join(text_sentiment_df)

news_en_df.head()
```

[6]:

```
         date                                        description language  \
0  2019-07-08  Technology has been used to manage regulatory ...       en
1  2019-06-15   Who doesnt love making signs and getting angr...       en
2  2019-07-09  A probability model used by the New York Fed t...       en
3  2019-06-28  What is the G20, and what do they do when they...       en
4  2019-07-07  How entrepreneur Andy Scott was able to rebuil...       en

                                                text  \
0  Technology has been used to manage regulatory ...
```

```
1  Having never attended my high school prom (I b...
2  David Karp/AP\r\n<ul><li>A probability model u...
3  Image copyrightGetty ImagesImage caption\r\n A...
4  Image copyrightAndy ScottImage caption\r\n And...

                                               title  title_compound  \
0  The startups creating the future of RegTech an...          0.2960
1           I Dont Go to Parties. I Go to Protests.          0.2023
2  A critical recession indicator used by the Fed...         -0.8481
3  What is the G20 summit, and what do world lead...          0.0000
4  'I got wiped out, but I was determined to make...          0.4767

   title_pos  title_neu  title_neg  title_sent  text_compound  text_pos  \
0      0.196      0.804      0.000           1        -0.7351      0.00
1      0.281      0.521      0.198           1         0.6542      0.17
2      0.000      0.586      0.414          -1        -0.4215      0.00
3      0.000      1.000      0.000           0         0.0000      0.00
4      0.237      0.763      0.000           1         0.0000      0.00

   text_neu  text_neg  text_sent
0     0.863     0.137       -1.0
1     0.724     0.106        1.0
2     0.938     0.062       -1.0
3     1.000     0.000        0.0
4     1.000     0.000        0.0
```

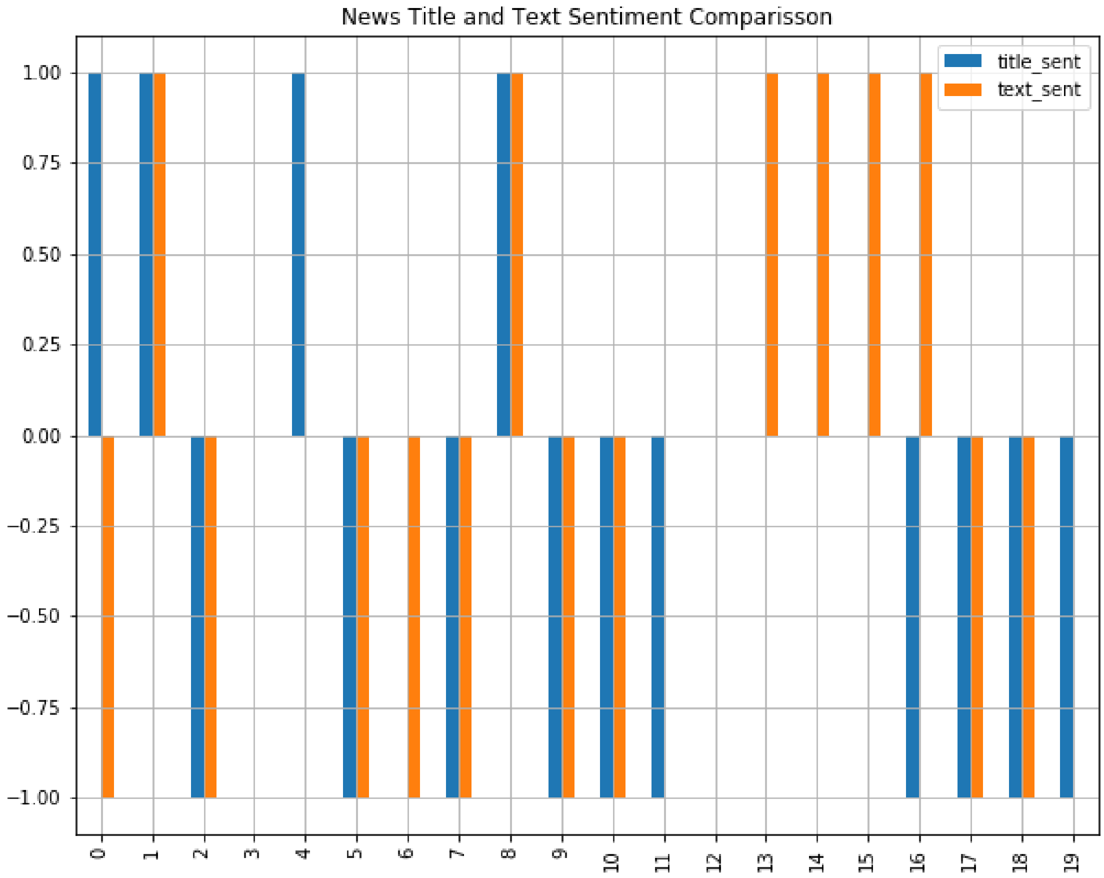
1.1.3 Analyzing Sentiments Results

How the sentiment of the title and the text differs on news articles?

To answer this question, on this section you will create a bar chart contrasting the normalized sentiment for the title and the text of each news article. Use the build-in `plot()` method of the Pandas DataFrame to create a bar chart like the one bellow. Be aware that you chart might differ from this one due to is made from a different news DataFrame.

[7]:
```python
news_en_df.plot(
    y=["title_sent", "text_sent"],
    kind="bar",
    title="News Title and Text Sentiment Comparisson",
    figsize=(10, 8),
    grid=True,
)
```

[7]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x1a2191a278>
```



Finally get the descriptive statistics from the English news DataFrame and discuss the analysis results with your partners.

```
[8]: news_en_df.describe()
```

```
[8]:        title_compound  title_pos  title_neu  title_neg  title_sent  \
     count       20.000000  20.000000  20.000000  20.000000   20.000000
     mean        -0.217880   0.063800   0.772850   0.163350   -0.300000
     std          0.392709   0.100048   0.174684   0.173608    0.801315
     min         -0.848100   0.000000   0.431000   0.000000   -1.000000
     25%         -0.615525   0.000000   0.639750   0.000000   -1.000000
     50%         -0.025800   0.000000   0.774000   0.184500   -0.500000
     75%          0.006450   0.111500   0.927250   0.293250    0.000000
     max          0.476700   0.281000   1.000000   0.569000    1.000000

            text_compound   text_pos   text_neu   text_neg  text_sent
     count      19.000000  19.000000  19.000000  19.000000  19.000000
     mean       -0.063389   0.076158   0.836421   0.087421  -0.157895
     std         0.538478   0.073592   0.108026   0.073031   0.898342
     min        -0.891000   0.000000   0.683000   0.000000  -1.000000
     25%        -0.461900   0.000000   0.742000   0.023000  -1.000000
```

```
50%          0.000000   0.049000   0.840000   0.079000   0.000000
75%          0.411550   0.129500   0.919000   0.135000   1.000000
max          0.765000   0.235000   1.000000   0.250000   1.000000
```