

Stock Market Sentiment Analysis

(1) Import Python Libraries

```
In [45]: import numpy as np
import pandas as pd

from urllib.request import urlopen, Request
from bs4 import BeautifulSoup

import nltk
from nltk.sentiment.vader import SentimentIntensityAnalyzer

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

(2) Loading the Data Set

```
In [2]: finviz_url = 'https://finviz.com/quote.ashx?t='
```

```
In [76]: tickers = ['AMZN', 'META', 'AAPL']
```

```
In [77]: news_tables = {}

▼ for ticker in tickers:

    url = finviz_url + ticker

    req = Request(url=url, headers={'user-agent': 'my-app'})
    response = urlopen(req)
    html = BeautifulSoup(response, 'html')

    news_table = html.find(id='news-table')
    news_tables[ticker] = news_table
```

(3) Parsing and Manipulating Data

```
In [78]: parsed_data = []

for ticker, news_table in news_tables.items():
    for row in news_table.findAll('tr'):
        title = row.a.text
        timestamp = row.td.text.strip()
        date_data = timestamp.split(' ')

        if len(date_data) == 1:
            time = date_data[0]
            date = ""
        else:
            date = date_data[0]
            time = date_data[1]

        parsed_data.append([ticker, date, time, title])
```

(4) Applying Sentiment Analysis

```
In [79]: df = pd.DataFrame(parsed_data, columns=['ticker', 'date', 'time', 'title'])
df
```

```
Out[79]:
```

	ticker	date	time	title
0	AMZN	Aug-23-23	12:39PM	Generative AI Battle Forms. Should Big Tech Co...
1	AMZN		10:30AM	3 Top Growth Stocks to Buy Before the Next Bul...
2	AMZN		10:15AM	2 Top Stocks Billionaires Can't Stop Buying in...
3	AMZN		09:58AM	Billionaire Ken Fisher and Corporate Insiders ...
4	AMZN		09:42AM	Qatar Wealth Fund Invests \$1 Billion in Ambani...
...
295	AAPL		10:56AM	This Wall Street Strategist Predicted Apple's ...
296	AAPL		10:24AM	U.S. Steel, the First \$1 Billion Company, Is N...
297	AAPL		10:07AM	2 Growth Stocks to Buy in August
298	AAPL		09:53AM	Is Apple Stock a Buy?
299	AAPL		09:51AM	Amazons \$593 Billion Rally Faces Endurance Test

300 rows × 4 columns

```
In [53]: nltk.download('vader_lexicon')
vader = SentimentIntensityAnalyzer()

[nltk_data] Downloading package vader_lexicon to
[nltk_data] C:\Users\SHBHAM\AppData\Roaming\nltk_data...
[nltk_data] Package vader_lexicon is already up-to-date!
```

```
In [80]: f = lambda title: vader.polarity_scores(title)['compound']
df['compound'] = df['title'].apply(f)
df
```

```
Out[80]:
```

	ticker	date	time	title	compound
0	AMZN	Aug-23-23	12:39PM	Generative AI Battle Forms. Should Big Tech Co...	-0.3818
1	AMZN		10:30AM	3 Top Growth Stocks to Buy Before the Next Bul...	0.5267
2	AMZN		10:15AM	2 Top Stocks Billionaires Can't Stop Buying in...	0.3995
3	AMZN		09:58AM	Billionaire Ken Fisher and Corporate Insiders ...	0.0000
4	AMZN		09:42AM	Qatar Wealth Fund Invests \$1 Billion in Ambani...	0.4939
...
295	AAPL		10:56AM	This Wall Street Strategist Predicted Apple's ...	0.8591
296	AAPL		10:24AM	U.S. Steel, the First \$1 Billion Company, Is N...	0.0000
297	AAPL		10:07AM	2 Growth Stocks to Buy in August	0.3818
298	AAPL		09:53AM	Is Apple Stock a Buy?	0.0000
299	AAPL		09:51AM	Amazons \$593 Billion Rally Faces Endurance Test	-0.0258

300 rows × 5 columns

(5) Visualization of Sentiment Analysis

```
In [81]: df['date'] = pd.to_datetime(df.date).dt.date
```

```
In [82]: mean_df = df.groupby(['ticker', 'date']).mean()
mean_df = mean_df.unstack()
mean_df = mean_df.xs('compound', axis='columns').transpose()
mean_df
```

```
Out[82]:
```

	ticker	AAPL	AMZN	META
	date			
2023-08-12		NaN	NaN	-0.5413
2023-08-13		NaN	NaN	0.0000
2023-08-14		NaN	NaN	0.0000
2023-08-15		0.4939	NaN	0.0000
2023-08-16		0.3182	NaN	0.0000
2023-08-17		0.0000	0.0000	NaN
2023-08-18		-0.2500	-0.2960	-0.3400
2023-08-19		0.7845	0.7845	0.0000
2023-08-20		0.5574	0.3818	0.2960
2023-08-21		-0.3182	0.6249	0.2023
2023-08-22		0.0000	-0.6486	0.2023
2023-08-23		0.0000	-0.3818	-0.4019

```
In [83]: plt.figure(figsize=(10,8))
mean_df.plot(kind='bar')
plt.show()
```

<Figure size 720x576 with 0 Axes>



