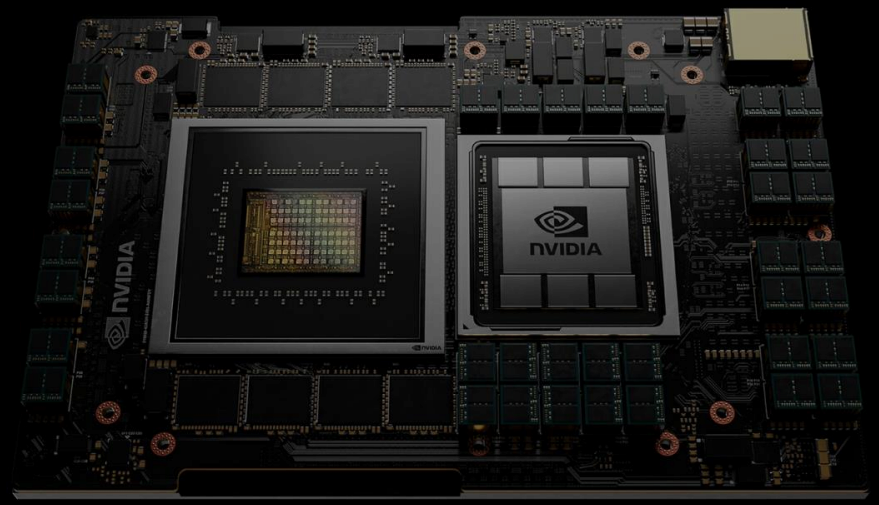

Danny Grozdev

Sentiment Analysis

NVIDIA

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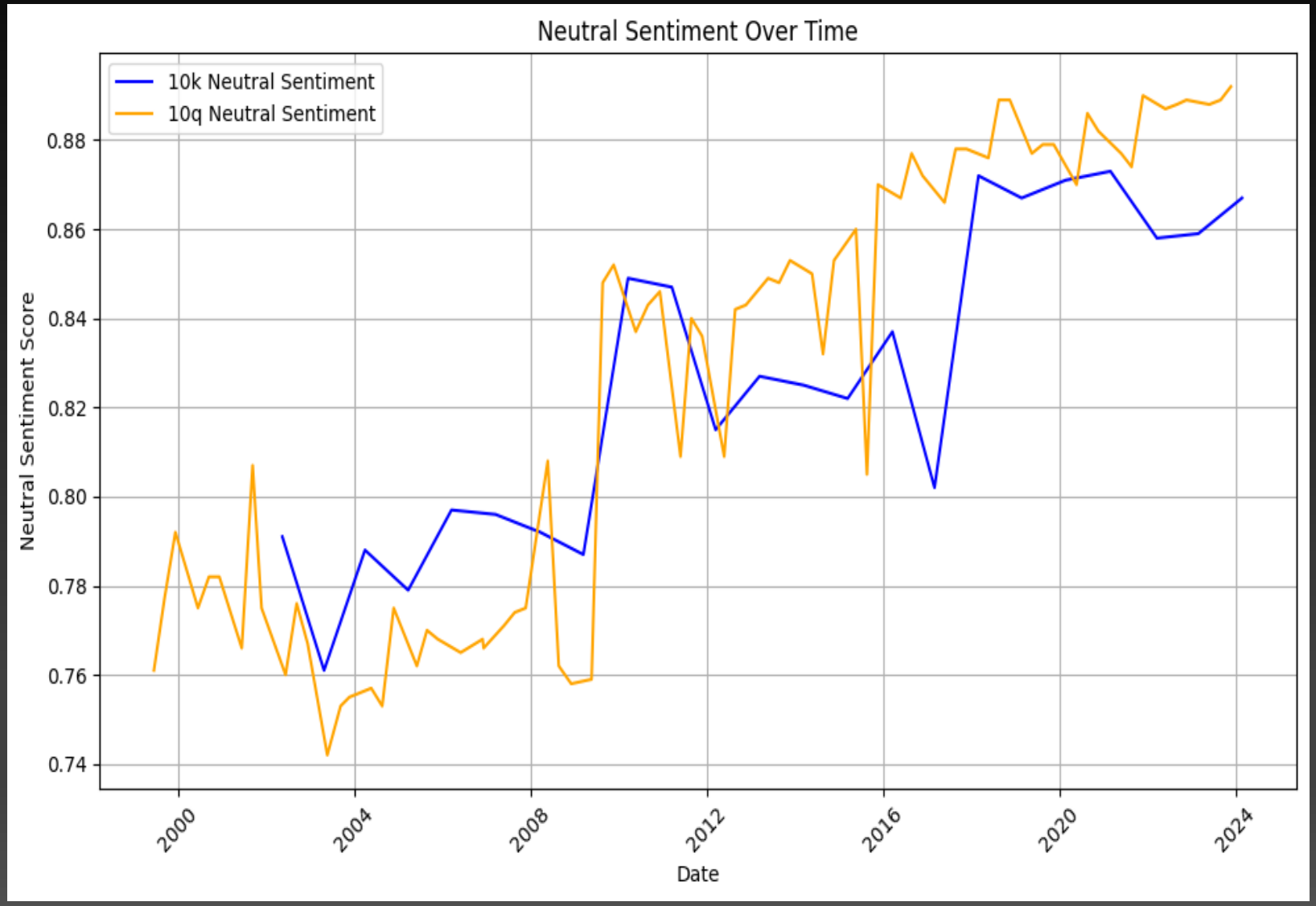
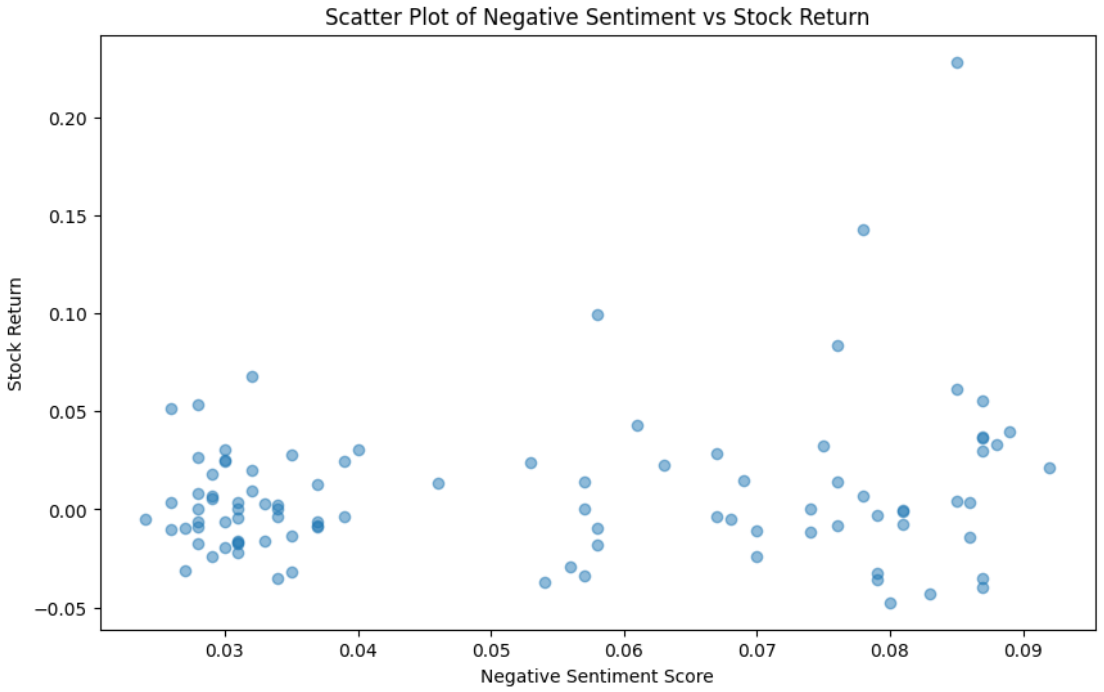
My plan

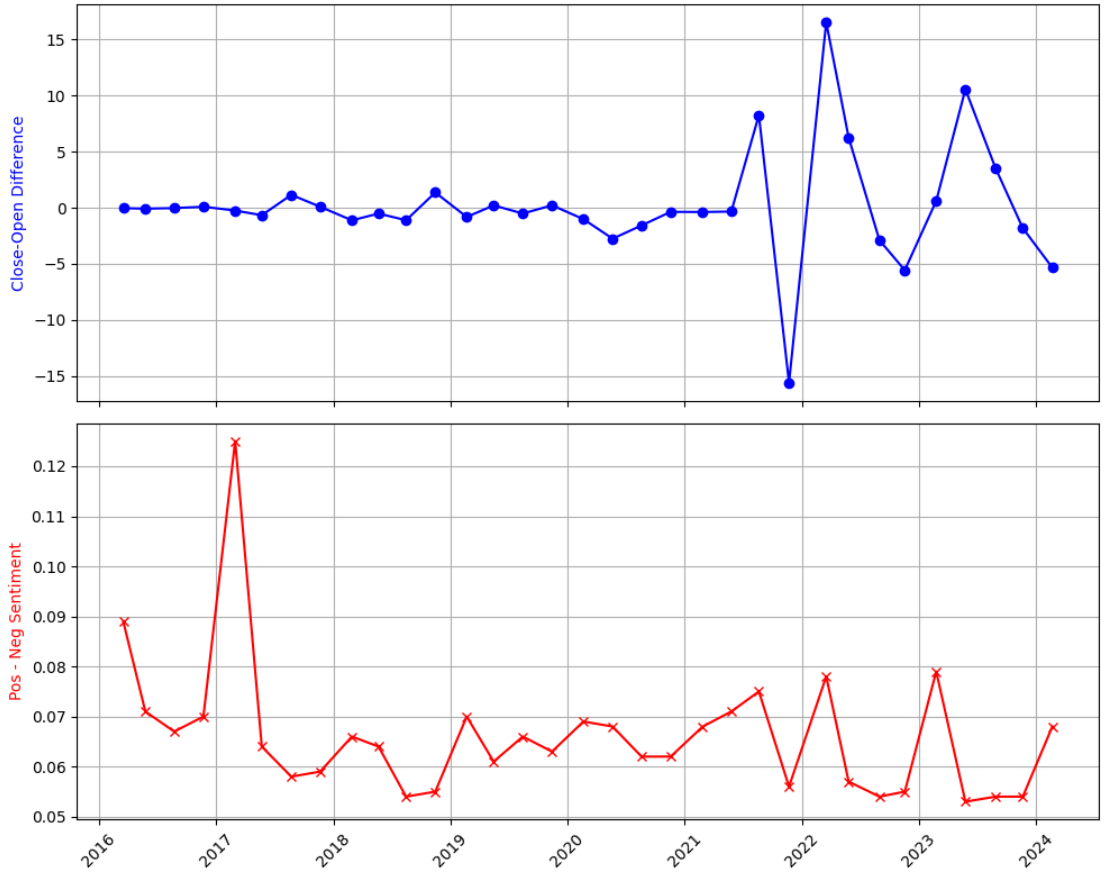
- Obtain all Nvidia's 10Ks and 10Qs
- Perform sentiment analysis using the VADER and stop words sentiment analyzer to get sentiment scores (pos, neu, neg, overall)
- Merge the scores with dates and stock return data
- Plot charts and find insights to determine if changes in negative sentiment can predict stock returns
- Find additional insights using sentiment data
- Form overall conclusion

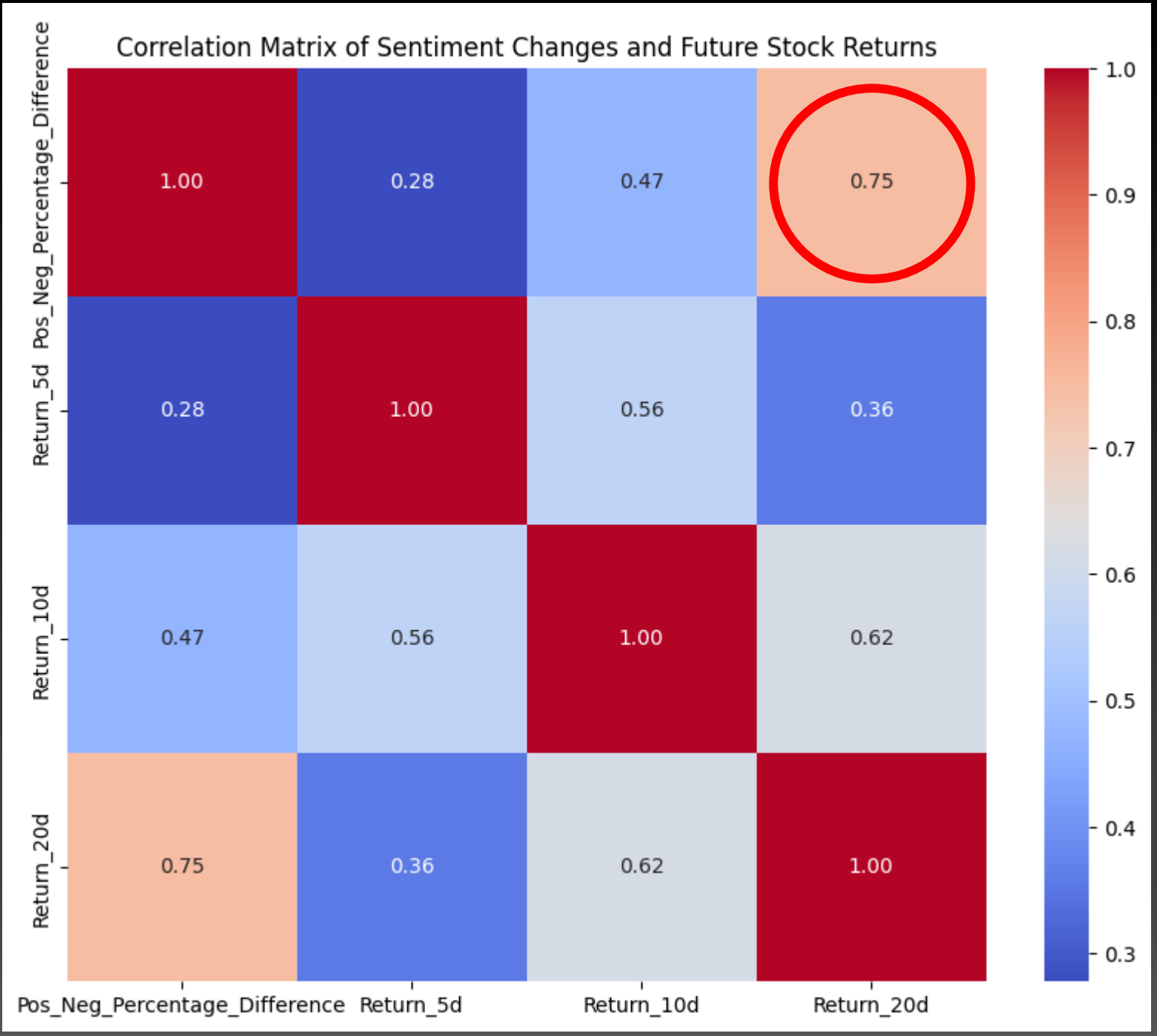


	Negative	Neutral	Positive
Mean	5.25%	82.49%	12.26%
Std dev	2.31%	4.69%	3.26%
Min	2.40%	74.20%	6.00%
Max	9.20%	89.20%	18.50%

- Highest **Positive** occurred on April 25th, 2003
- Lowest Positive occurred on November 19th, 2009
- Highest **Negative** occurred on May 5th, 2021
- Lowest Negative occurred on August 21st, 2013


Scatter Plot of Negative Sentiment vs Stock Return
Stock Return
Negative Sentiment Score
0.20
0.15
0.10
0.05
0.00
−0.05
0.03
0.04
0.05
0.06
0.07
0.08
0.09


Close-Open Difference
15
10
5
0
−5
−10
−15
Pos - Neg Sentiment
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
2016
2017
2018
2019
2020
2021
2022
2023
2024



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- The correlation between sentiment score changes and short-term returns (5 and 10 days) is low (0.28 and 0.47)

- However, after 20 trading days (one month), a stronger correlation emerges (0.75), indicating a possible delayed impact of sentiment on stock prices

- This may suggest that it takes time for sentiment scores to influence stock prices, with a notable alignment occurring after 20 days

- Therefore, sentiment analysis is more effective for longer-term strategies like monthly trading rather than day trading

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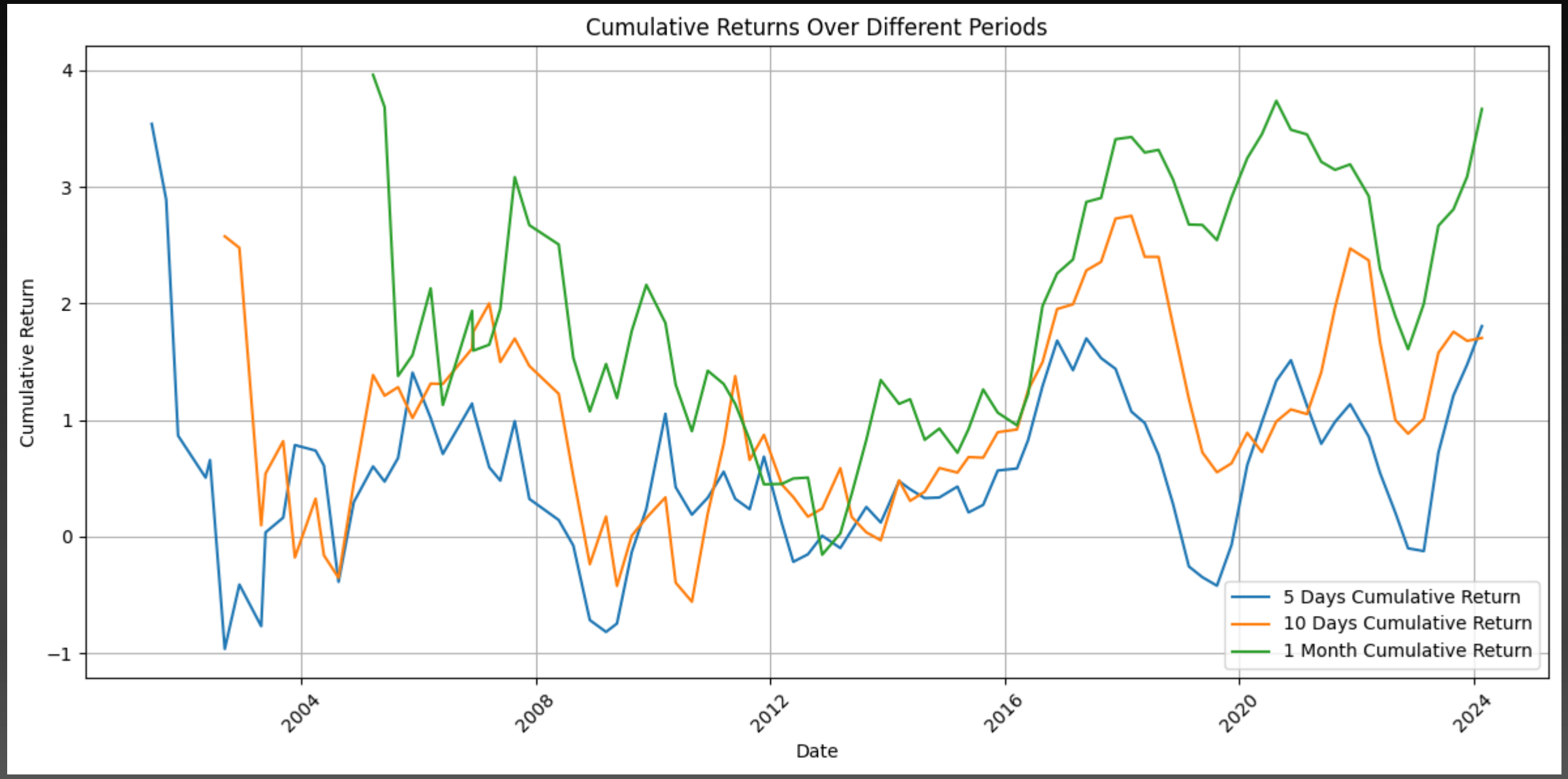
Cumulative Returns Over Different Periods
Cumulative Return
4
3
2
1
0
−1
2004
2008
2012
2016
2020
2024
Date
5 Days Cumulative Return
10 Days Cumulative Return
1 Month Cumulative Return

Conclusion

- Weak correlation across all charts with it only being slightly more positive above 0.1
- **More** positive sentiment than negative on average (12.26% > 5.25%)
- The strongest correlation is found between 1 month (20 trading days) cumulative returns and sentiment change
- The overall sentiment score rounded was positive with occurrences where it was negative only 8 times out 97 (8.25%)
- Sentiment analysis does not appear to be as useful as we thought it could be, but more data is needed for it to be proven