STOCK PRICE ANALYSIS

Presented by AJJAMPUR Amogh

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SUMMARY

INTRODUCTION

- Stock prices : Microsoft (MSFT), Tesla (TSLA), and Apple (AAPL).
- Moving Average Analysis:

  Short-term (20-day) and long-term (200-day) moving averages executed.

  Identifies trends and potential trading signals.
- Regression Analysis with S&P 500:

  Examines correlation between stock prices and the S&P 500 index (SPX).

  Determines market sensitivity using the beta coefficient.
- Stock Performance Comparison:

  Compares individual stock returns with the S&P 500 benchmark.

  Evaluates relative strength and market outperformance/underperformance.
- Volatility Analysis:

  Measures stock price fluctuations over time.

  Uses metrics like standard deviation.

DATASET OVERVIEW

- Source: Yahoo Finance.

- Companies Analyzed: Microsoft (MSFT), Tesla (TSLA), Apple (AAPL).

- Market Benchmark: S&P 500 Index (SPX).

- Time Period: 02/01/2018 − 30/01/2023.

- Variables: Date, Open, High, Low, Close, Adj Close, Volume, Daily returns

DESCRIPTIVE STATISTICS

	Microsoft	Tesla	Apple	SP500
Mean	$ 190.83	$ 131.88	$ 97.48	$ 3,458.41
Median	$ 198.82	$ 98.43	$ 94.37	$ 3,302.49
Min	$ 80.06	$ 11.93	$ 34.31	$ 2,237.40
Quantile 1	$ 115.68	$ 21.15	$ 49.68	$ 2,849.70
Quantile 2	$ 198.82	$ 98.43	$ 94.37	$ 3,302.49
Quantile 3	$ 252.51	$ 235.43	$ 142.16	$ 4,024.45
Max	$ 339.92	$ 409.97	$ 180.96	$ 4,796.56
Avg Vol	3.03E+07	1.33E+08	1.16E+08	4.23E+09

MOVING AVERAGE

- The moving average is a widely used technical indicator in stock analysis that helps smooth out price fluctuations and identify trends.

- It also indicates bullish and bearish signal.

- Comparing with the stock price, Momentum analysis is done.

 In this analysis,

- A short term moving average is defined as 20 days and long term moving average is defined as 200 days

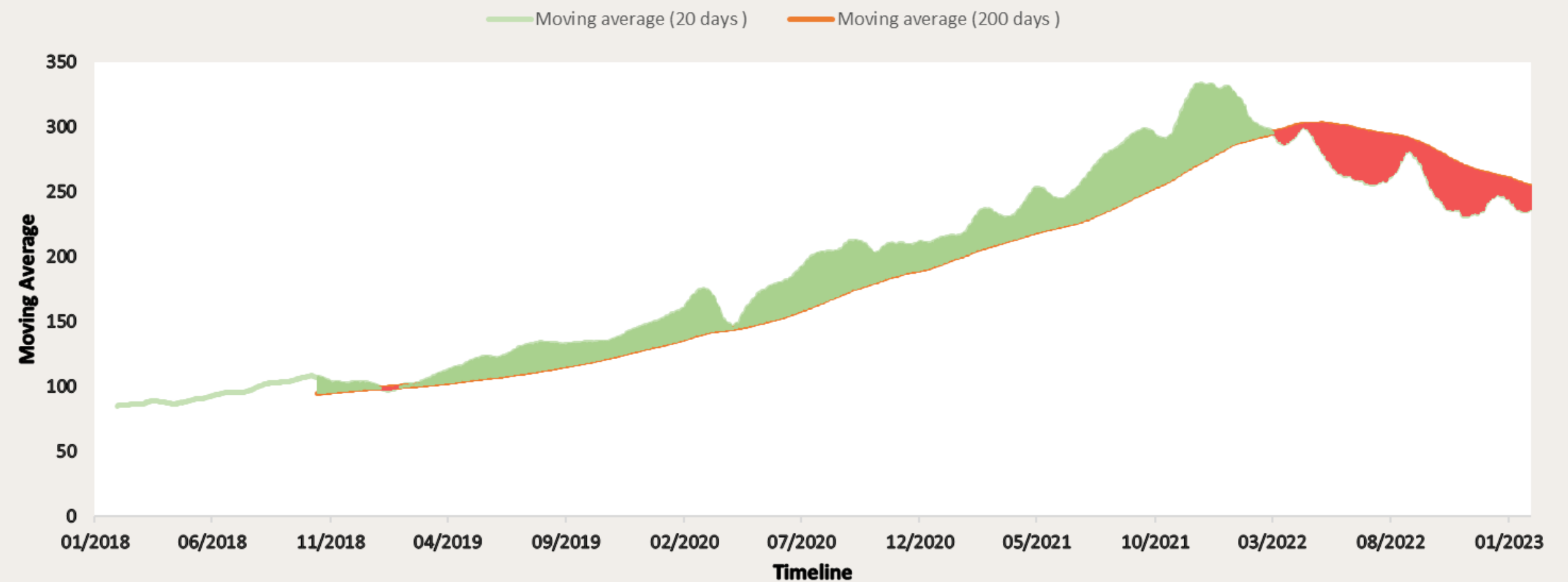- Green coded area indicates bullish signal and red coded area indicates bearish signal.

MICROSOFT
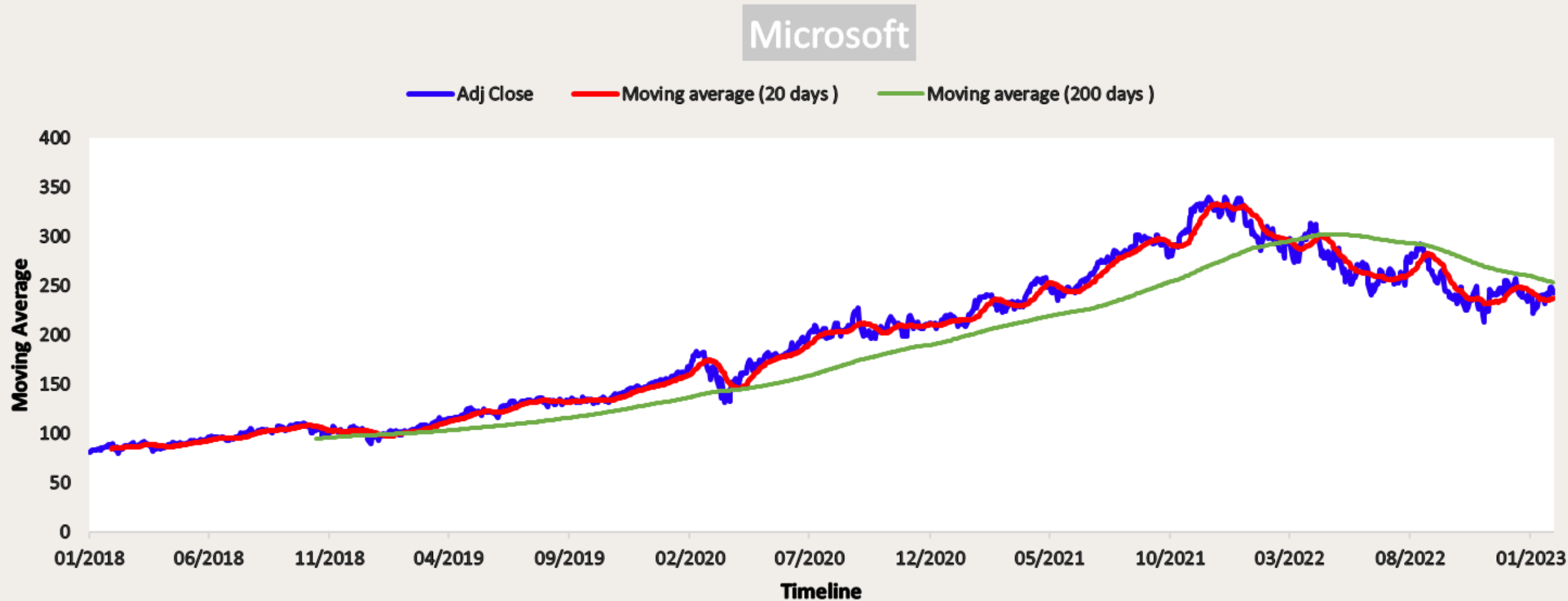
- Microsoft was bullish from Nov 2018 to Apr 2022
- Great momentum.
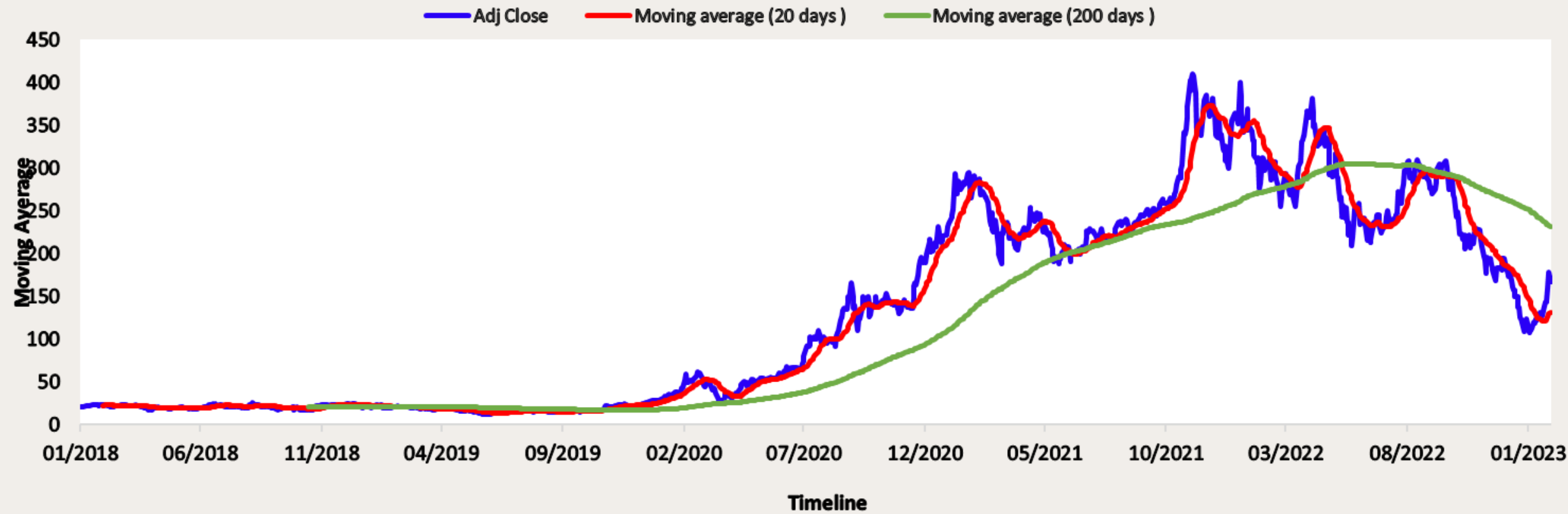- In month of Mar 2020 there was big fall.

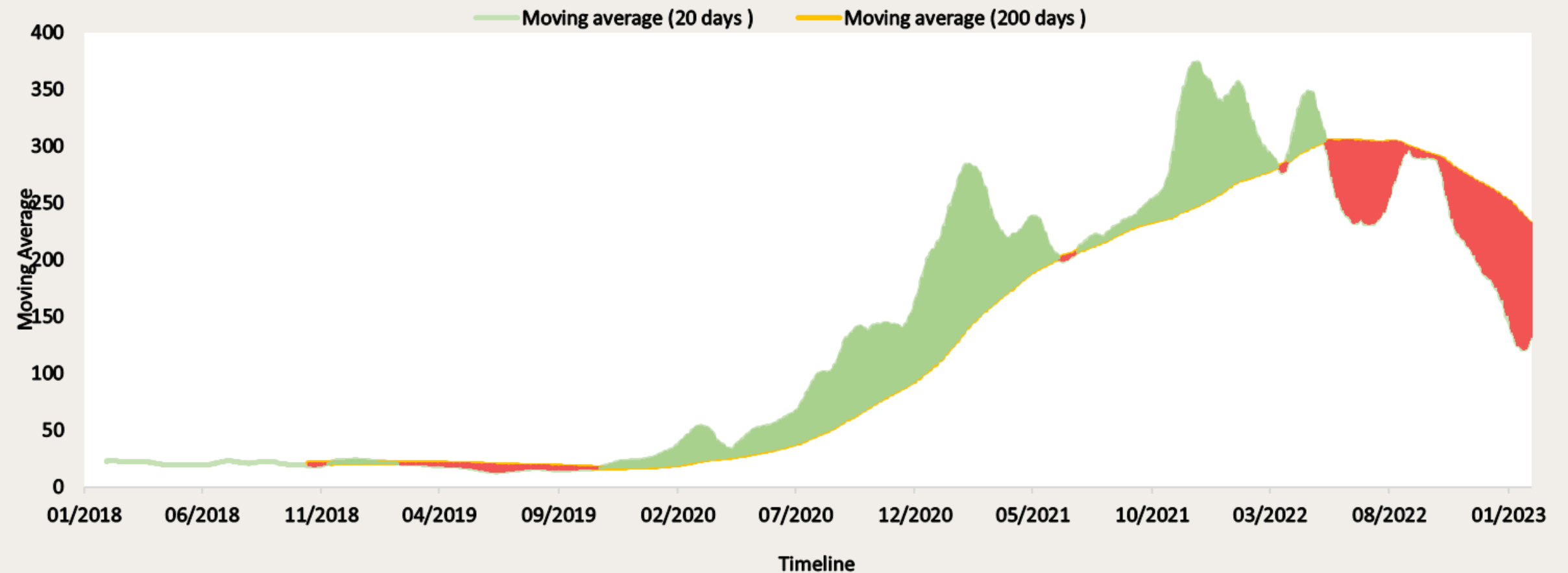Green coded area indicates bullish signal and red coded area indicates bearish signal.

TESLA   MOVING AVERAGE

Tesla

- Tesla was bullish from Nov 2019 to Mar 2022
- Great momentum until Arp 2022.
- stock prices fell from Apr 2022.
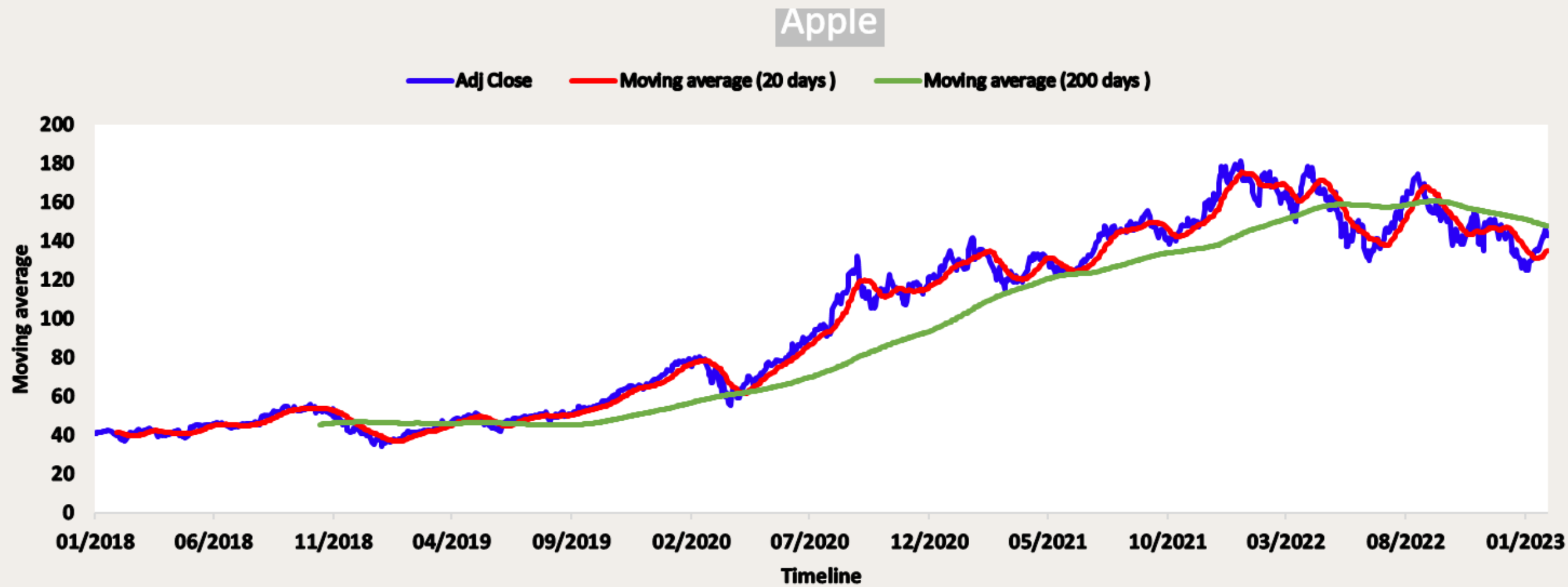- In month of 03/2020 there was big fall.

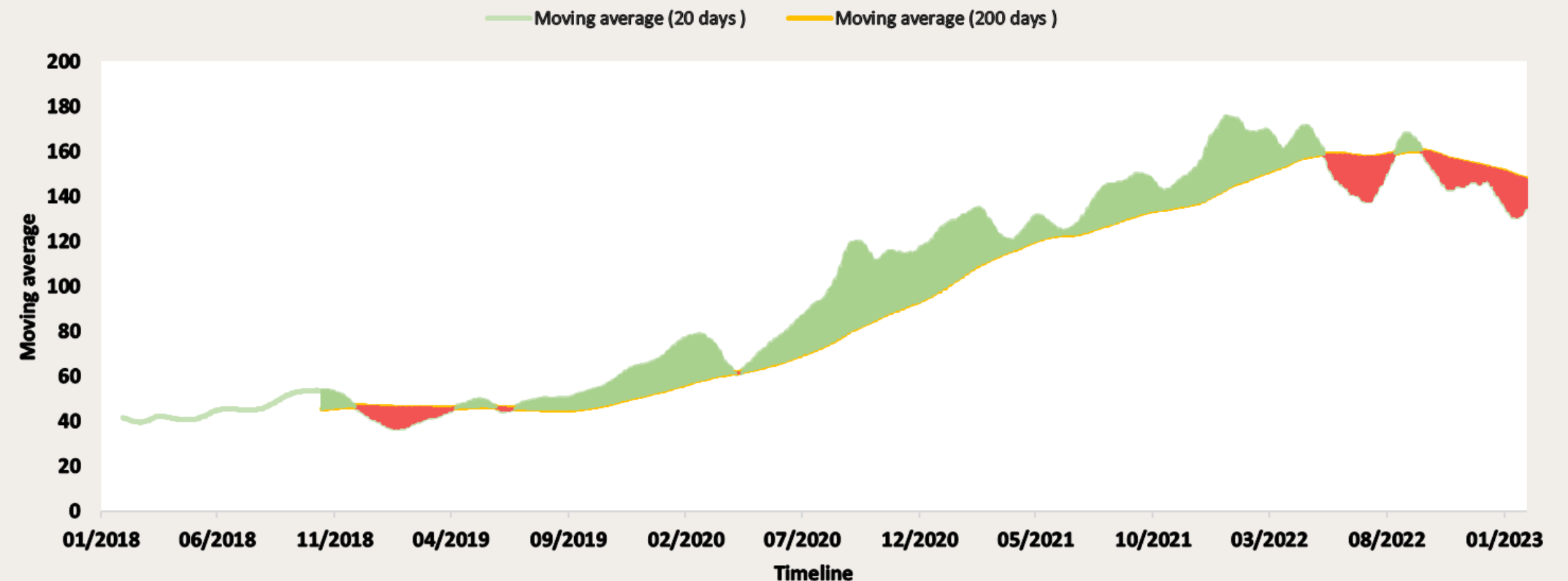Green coded area indicates bullish signal and red coded area indicates bearish signal.
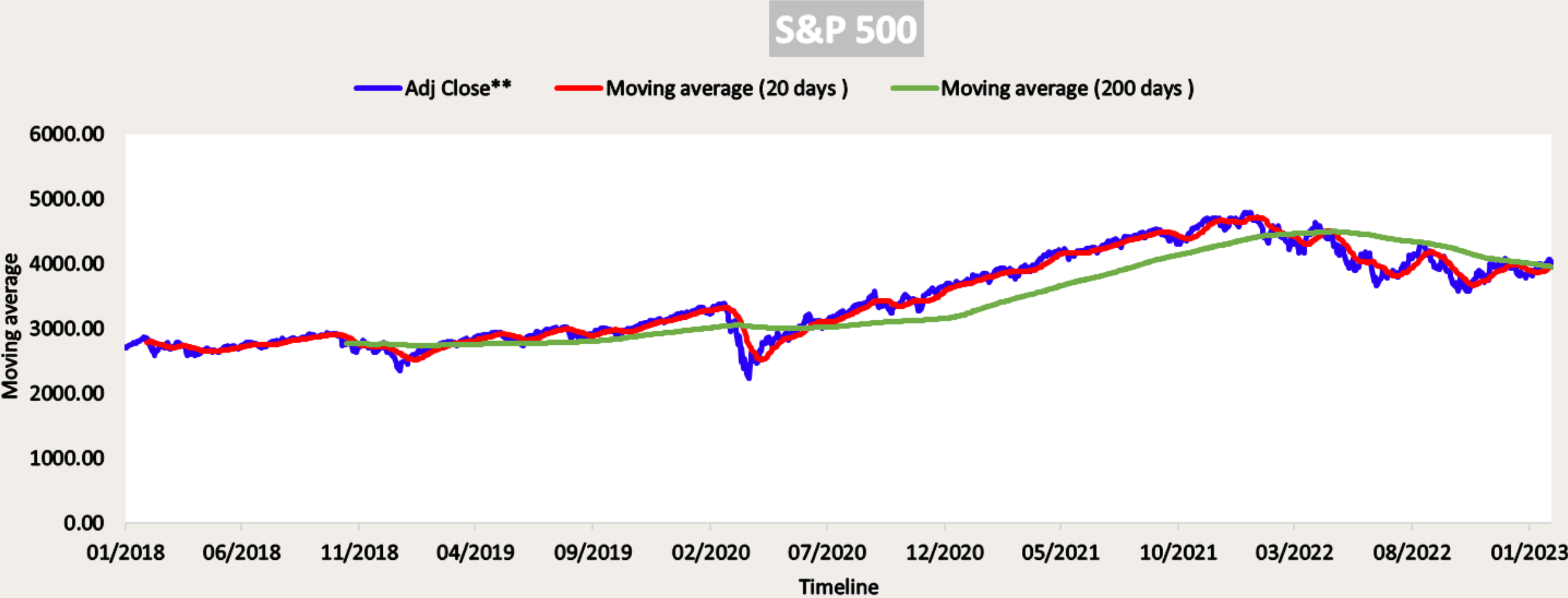

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APPLE MOVING AVERAGE

- Apple was bullish from Aug 2019 to Apr 2022.
- Great momentum until Apr 2022.
- In month of Mar 2020 there was big fall.

Green coded area indicates bullish signal and red coded area indicates bearish signal.
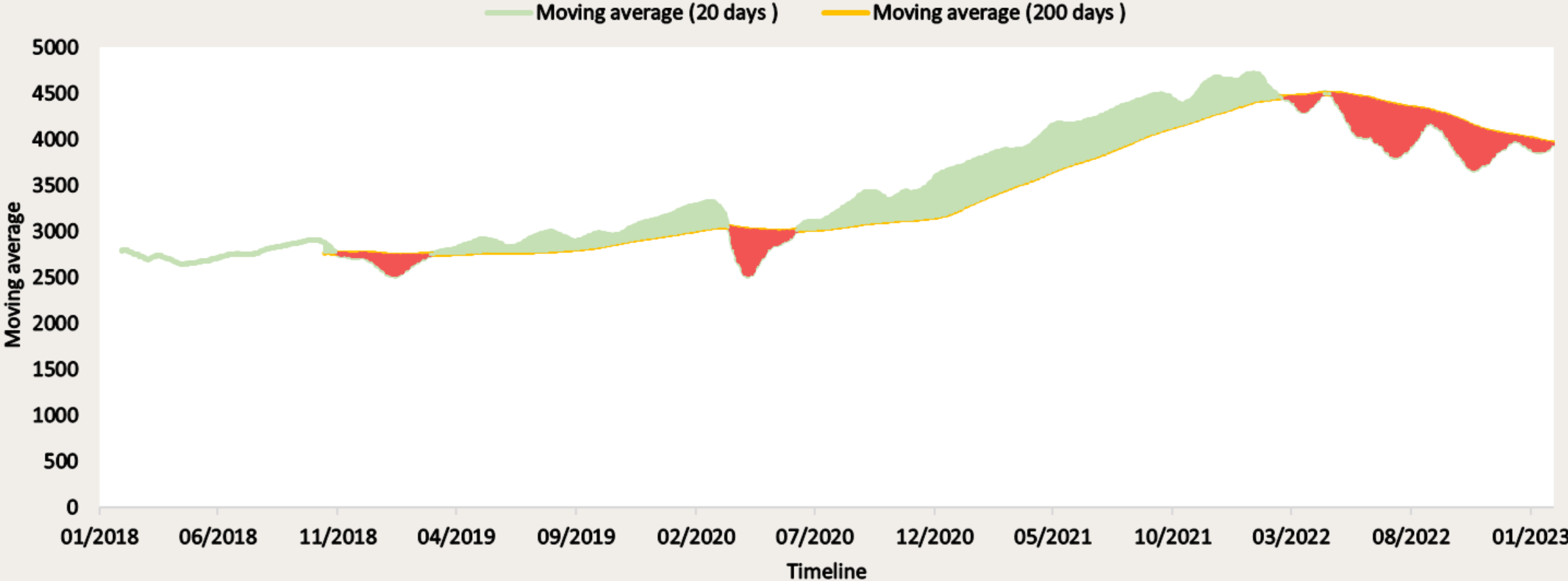
S&P 500 MOVING AVERAGE

- Trend of S&P 500 index fpr 2018 to 2023.

Green coded area indicates bullish signal and red coded area indicates bearish signal.
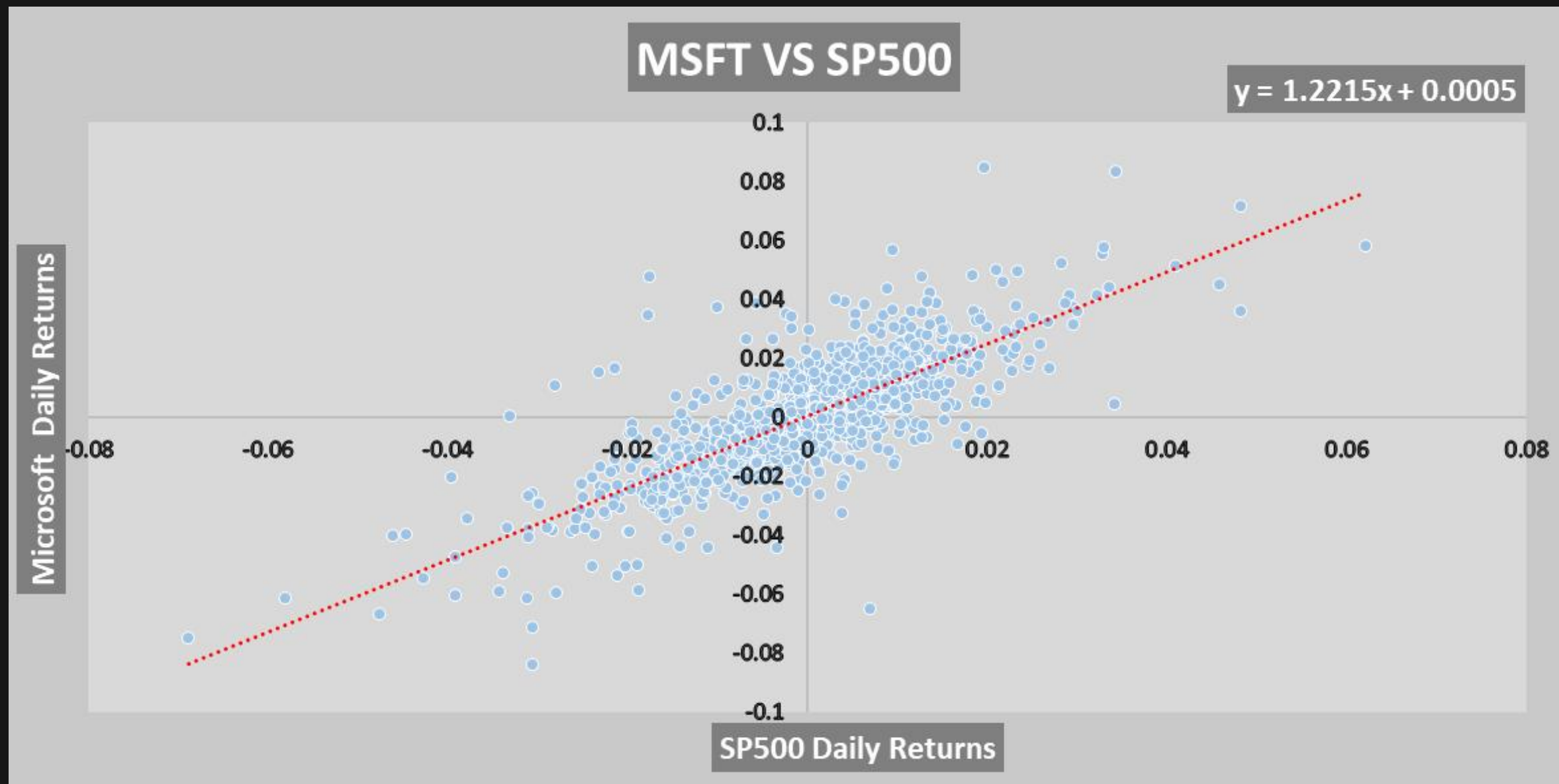
REGRESSION ANALYSIS

- Regression analysis is done with S&P 500 Stock price, which is represents the weighted average performance of 500 large U.S. companies.

- Companies Analyzed: Microsoft (MSFT), Tesla (TSLA), and Apple (AAPL).

  Scatter plot of daily returns of each company and S&P 500 is plotted.
  Linear equation is calculated to understand linearity and correlation.

- R-squared score is a measures how well the independent variables explain the variance in the dependent variable.

REGRESSION ANALYSIS

MICROSOFT
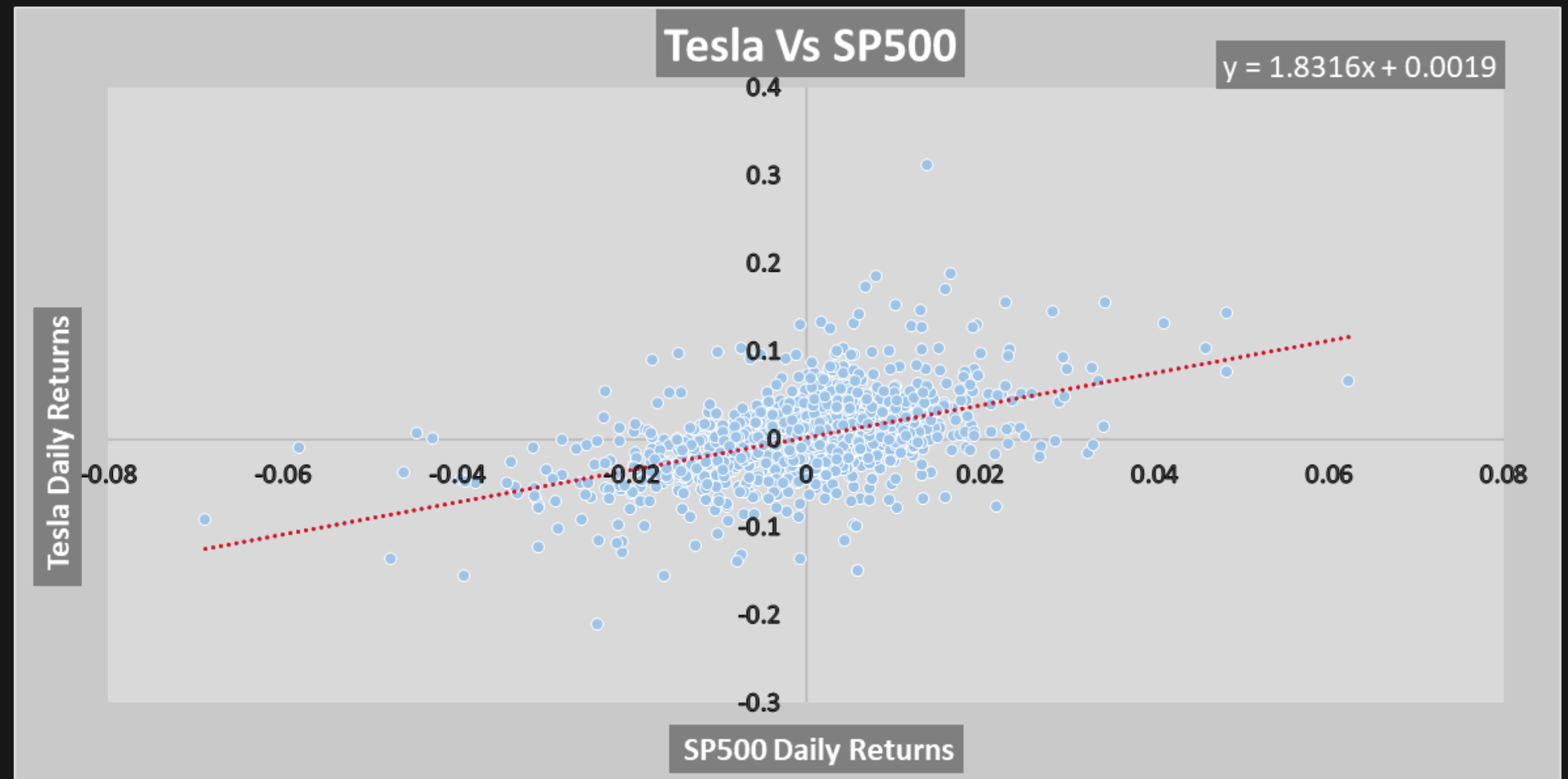

- Correlation coefficient =0.77.

- Regression Equation:
y = 1.2215x + 0.0005.
x = Daily returns of S&P 500.
y = Daily returns of Microsoft.
Beta = 1.2215 > 1
- R squared score :0.604,which is moderate relationship.
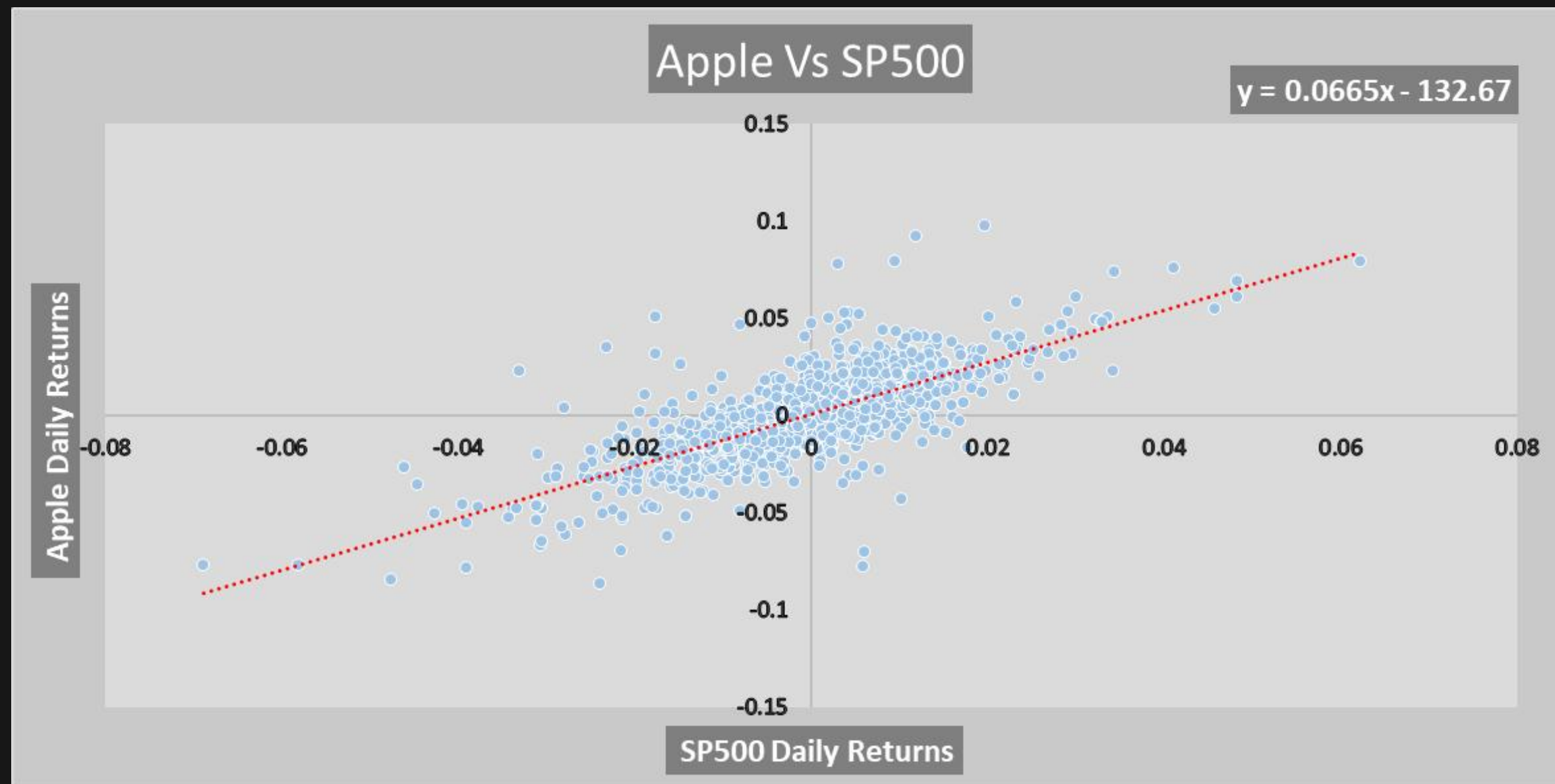
REGRESSION ANALYSIS

TESLA

- Correlation coefficient =0.481.

- Regression Equation:
y = 1.8316x + 0.0019.
x = Daily returns of S&P 500.
y = Daily returns of Tesla.
Beta = 1.8316 >1
- R squared score :0.231, which is week relationship

REGRESSION ANALYSIS

APPLE

- Correlation coefficient = 0.741

- Regression Equation:
  y = 1.3382x + 0.0007.
  x = Daily returns of S&P 500.
  y = Daily returns of Apple.
  Beta = 1.3382 > 1
- R squared score :0.549 ,which is moderate relationship

VOLATILITY ANALYSIS

Standard Deviation of Log Returns is a common measure of historical volatility.

- **Microsoft**
  - Standard deviation of log returns = **0.31.**
  - **Beta = 1.2215**
- **Tesla**
  - Standard deviation of log returns = **0.66.**
  - **Beta = 1.8316**
- **Apple**
  - Standard deviation of log returns = **0.33.**
  - **Beta = 1.3382**

Conclusion

- Microsoft performed well during the bullish trend.
- Tesla stocks shows low correlation with S&P 500, which says it doesn't follow the index.
- All 3 stocks are more volatile since their beta values are greater than 1.
- Tesla is more volatile compare to Microsoft and Apple stocks.
- Apple stocks had very good support during the bullish trend.

- Standard deviation of returns of stock prices suggests volatility. Microsoft with 31%, Apple with 33% are moderately volatile where Tesla is highly volatile with 66%
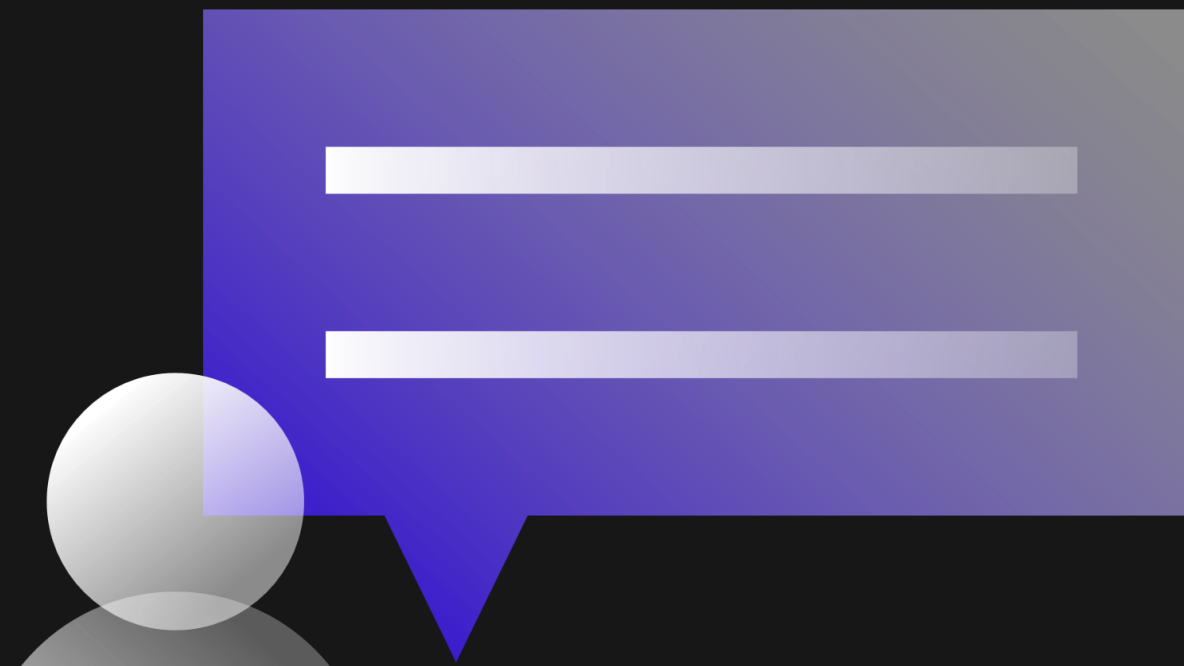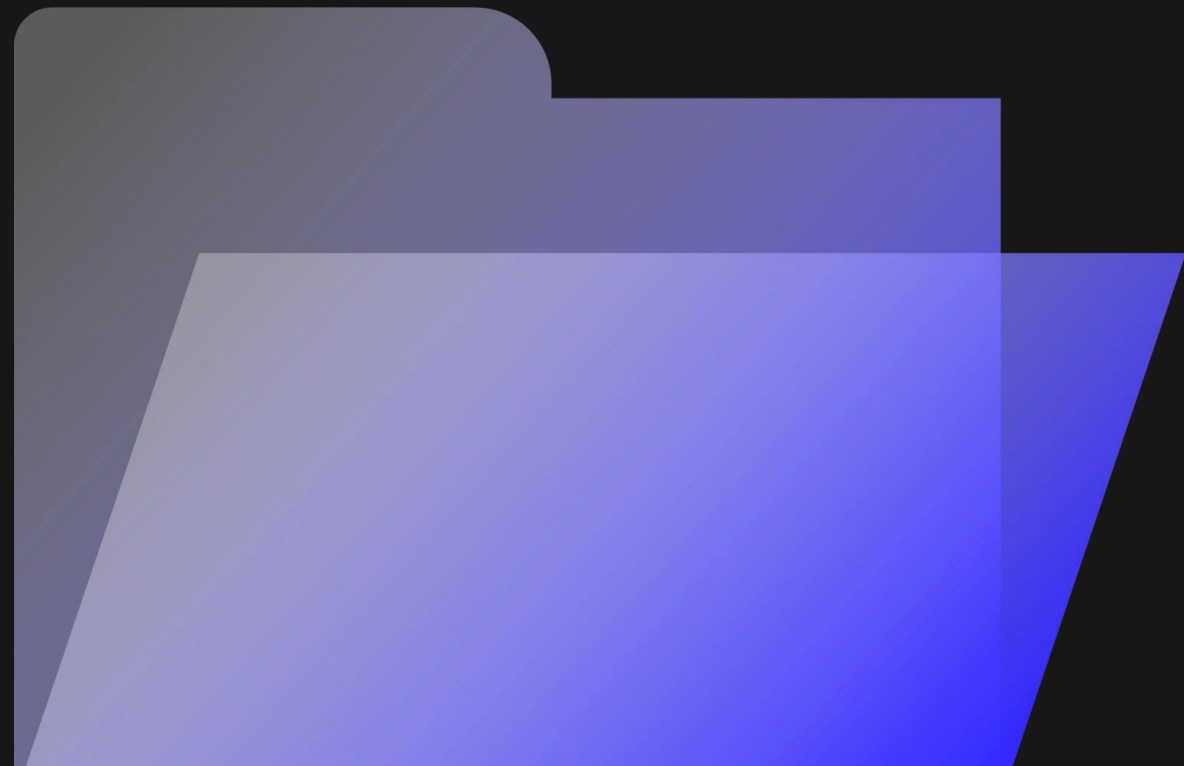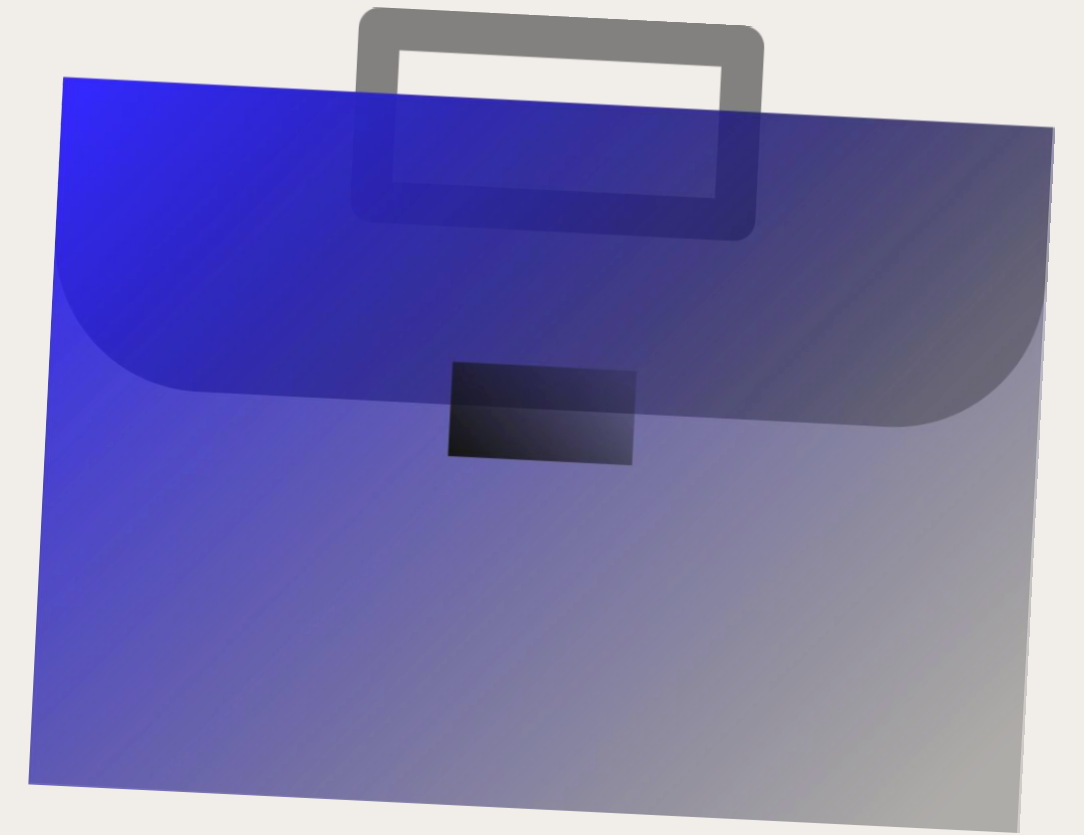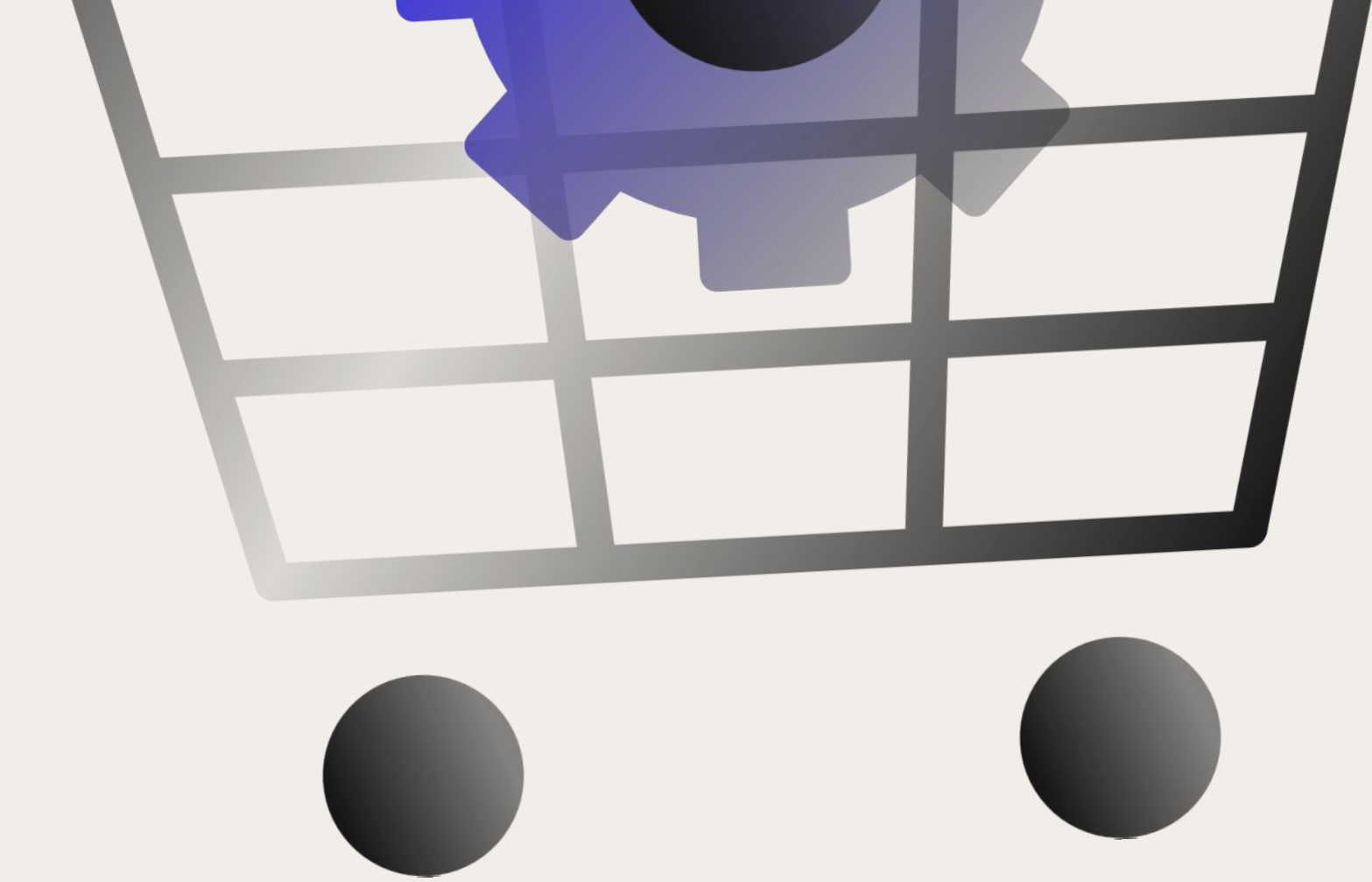
Profile

I am AJJAMPUR Amogh, a data analyst with strong skills in Excel, Python, SQL, and Power BI, passionate about turning data into actionable insight.

Thank You

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