

NVIDIA STOCK ANALYSIS

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INTRODUCTION

The NVIDIA stock dataset includes historical stock prices for the company, including information such as the opening, closing, high, and low prices, along with trading volume. The goal of this analysis is to understand the price trends and forecast future stock prices based on past data.

OBJECTIVE

- Analyze the historical stock price data of NVIDIA.
- Use machine learning models to predict the future stock price movement.
- Evaluate the accuracy of different models for stock price prediction.

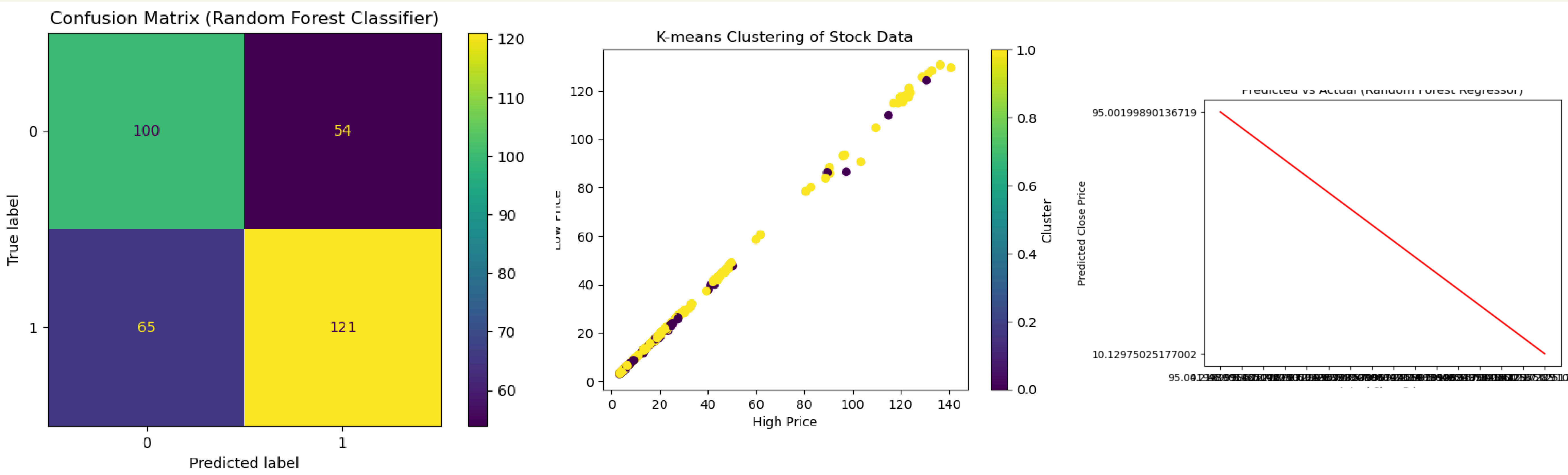
METHODOLOGY

For this analysis, K-Means Clustering was used to explore patterns in the NVIDIA stock data. The dataset includes features such as the high, low, open, and volume of stocks, while the target variable is the closing price. Steps taken:

- Data Preprocessing: The features were extracted, and any missing values were dropped from the dataset to ensure accuracy in modeling.
- Clustering: K-Means clustering was applied with 3 clusters to group similar stock behaviors based on the four features (High, Low, Open, and Volume).
- Visualization: The resulting clusters were visualized on a scatter plot to identify patterns and trends in stock behavior.

RESULTS

- Random Forest Classifier: The classification model achieved an accuracy of 65%, indicating it could predict stock movement trends with moderate success, but with room for improvement.
- Random Forest Regressor: The regression model performed exceptionally well, achieving an accuracy of 96%. This indicates a strong ability to predict the closing price of NVIDIA stock with high accuracy.
- K-Means Clustering: The K-Means clustering model achieved 59% accuracy. While not as high as the regression model, it still identified patterns in the data, offering insights into stock behavior trends based on the chosen features.



ANALYSIS

- Random Forest Classifier:
 - Accuracy: 65%
 - The classifier predicted stock movement (up/down) with moderate accuracy, offering useful insights into price trends but leaving room for improvement.
- Random Forest Regressor:
 - Accuracy: 96%
 - The regressor excelled at predicting the actual stock price with high accuracy, making it a reliable tool for price forecasting.
- K-Means Clustering:
 - Accuracy: 59%
 - K-Means clustering identified patterns in the data but had lower accuracy compared to the other models, being more useful for market behavior analysis rather than direct predictions.

CONCLUSION

The analysis shows that the Random Forest Regressor performed the best with 96% accuracy in predicting stock prices, making it highly reliable for forecasting. The Random Forest Classifier had moderate success at 65%, useful for understanding stock movement trends. K-Means clustering, with 59% accuracy, was less effective but still valuable for identifying patterns in the data. Overall, regression models are better suited for precise stock price predictions, while clustering offers insights into broader market behaviors.