Coca-Cola Stock Analysis using Machine Learning

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# 1. Objective

The objective of this project is to analyze Coca-Cola’s stock performance using machine learning techniques. The goal is to predict stock price trends, assess financial health, and provide visual insights that can help in making investment decisions.

# 2. Tools and Technologies Used

- Python  
- yFinance API  
- Streamlit (for dashboard deployment)  
- Backtesting.py  
- Scikit-learn (for machine learning models)  
- Pandas, NumPy, Matplotlib, Seaborn (for data analysis and visualization)

# 3. Machine Learning Techniques

In this project, we used supervised machine learning techniques to model and forecast Coca-Cola stock prices. We applied regression models (like Linear Regression) and trend analysis. We also used backtesting strategies to evaluate investment signals.

# 4. Data Sources

The stock data was fetched using the yFinance API, which provides historical data such as Open, Close, High, Low prices, and Volume.

# 5. Project Workflow

1. Data Collection using yFinance  
2. Data Cleaning and Preprocessing  
3. Exploratory Data Analysis (EDA)  
4. Feature Engineering  
5. Model Selection and Training  
6. Backtesting the Investment Strategy  
7. Visualization and Dashboard creation using Streamlit

# 6. Results and Insights

The model showed how Coca-Cola stock has behaved over time and allowed us to simulate trading strategies. With Streamlit, we created an interactive dashboard to visualize trends, test scenarios, and interpret outcomes.

# 7. Conclusion

This project demonstrates the power of machine learning in financial analytics. By combining stock data, ML models, and an interactive dashboard, we created a powerful tool for understanding and predicting market behavior. This could be further improved using deep learning or live data APIs.