Coca-Cola Stock Analysis & Prediction

- A Data-Driven Approach to Stock Price Forecasting
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Introduction

- Library Used: yfinance, pandas, numpy, matplotlib, seaborn
- Data Fields: Date, Open, High, Low, Close, Volume, Dividends, Stock Splits
- Data Range: 2014 – 2024
- Data Cleaning Steps: - Checked for missing values
  - Feature engineering (Moving Averages, Daily Returns, Volatility)

Data Collection

- Objective: Predict Coca-Cola's stock price and analyze trends
- Data Sources: Yahoo Finance API (yfinance), historical stock data
- Key Deliverables: - Insights from historical stock data
  - Machine Learning model for stock price prediction
  - Live-updating system for real-time forecasting

Exploratory Data Analysis (EDA)

- Key Metrics:- Average Closing Price: $43.44
  -52-Week High: $71.96
  -52-Week Low: $26.21

- Visualizations: - Time-series plot for closing prices
  - Moving averages (20-day, 50-day)
  - Correlation heatmap of stock features

Stock Price Prediction Model

- **Algorithm Used**: Random Forest Regressor
- **Training Data**: 80% of historical data
- **Test Data**: 20% of historical data
- **Performance Metrics**: - Mean Squared Error (MSE): 1.52
  - Mean Absolute Error (MAE): 1.52

Live Prediction System

- **Data Fetching**: Real-time stock data via yfinance
- **Feature Engineering on Live Data**:- Moving Averages, Daily Returns, Volatility
- **Prediction Output**: Forecasted Closing Price = $60.69
- **Deployment**: Implemented using Streamlit for real-time interaction

Insights & Conclusion

- Stock Price Trends: Steady growth with volatility in certain periods
- Feature Importance: Volume and Moving Averages have high impact
- Limitations: - Model does not consider external factors (news, economic changes)
  - Prediction accuracy depends on past trends
- Future Work: - Enhance model using Deep Learning (LSTMs)
  - Incorporate sentiment analysis from financial news
  - Improve UI for better user experience