Step 12: Deployment Solution Architecture

Project Overview

The goal of this project is to develop a web application that allows users to explore Zoom stock prices alongside Twitter sentiment data related to the stock. By providing an interactive visualization, users can gain insights into how social media sentiment may impact stock prices over time.

Data Sources

1. **Zoom Stock Prices ($ZM):** Historical stock prices from April 1st, 2019 to December 11th, 2022 in a CSV file, sourced from Yahoo Finance using the pandas_datareader.data module.
2. **Zoom Twitter Sentiment Data:** 7-day average Positive, Neutral, and Negative sentiment counts for tweets with $ZM cashtag from April 1st, 2019 to December 11th, 2022 in a CSV file. Tweets were collected using the snscrape module, and sentiment analysis was performed with the twitter-roberta-base-sentiment-latest model from Hugging Face.

Web Application

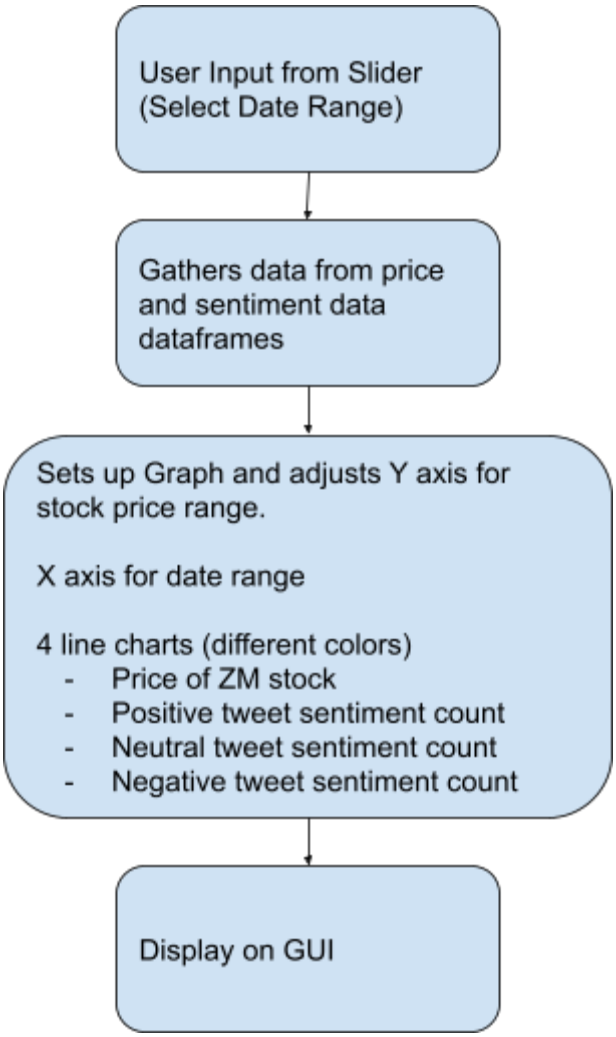
The web application will be built using the Streamlit library, which is well-suited for quickly developing interactive data-driven applications in Python.

User Interface:

The web application's user interface will feature a date range slider, allowing users to select a specific time period for analysis. Upon adjusting the date range, the application will display two charts:

1. Bar chart: Represents the Zoom stock price for each day within the selected date range.
2. Line chart: Plots the 7-day average sentiment for Positive, Neutral, and Negative sentiments for each day within the selected date range.

These visualizations will enable users to explore the relationship between stock prices and social media sentiment over time, potentially uncovering interesting patterns or correlations.



Deployment Platform

The web application will be deployed on the Paperspace Gradient platform. Paperspace Gradient was chosen for several reasons:

1. Native Streamlit support: The platform natively supports Streamlit applications, simplifying the deployment process and ensuring compatibility.
2. Machine learning capabilities: As a machine learning platform, Paperspace Gradient offers the ability to rent GPUs and expand the project with additional ML features in the future.
3. Storage: The free tier provides 5GB of storage, which is more than sufficient for the current project size (below 1GB).

By leveraging the Paperspace Gradient platform, the web application can be easily deployed, maintained, and updated to include new features or improvements as needed.

Conclusion

This deployment solutions architecture document outlines the design and implementation of a web application that enables users to explore the relationship between Zoom stock prices and Twitter sentiment data. By utilizing Streamlit for the user interface and Paperspace Gradient for deployment, the application will provide an interactive and insightful experience for users interested in understanding the potential impact of social media sentiment on stock prices.