Stock-Stalkers Web Page Development Report

The **Stock-Stalkers** web application is a comprehensive stock analysis platform designed to empower users with data-driven insights. Built using **HTML, CSS, and JavaScript**, the platform provides a user-friendly interface for visualizing stock data, performing technical analysis, making machine learning-based predictions, and extracting sentiment from financial articles and news.

1. **Web Page Design and Menu Structure**

The web page design follows a clean, intuitive layout to ensure seamless navigation and accessibility. The platform consists of the following menu options:

- **Home:** The landing page, featuring a brief introduction to the platform and quick access to key features along with user-registration and login.

- **Chart Patterns:** Displays common stock chart patterns (e.g., candlestick) for visual reference.

- **Technical Analysis:** Includes essential indicators like:

  - **Exponential Moving Average (EMA)**

  - **Simple Moving Average (SMA)**

  - **Relative Strength Index (RSI)**

  - **Moving Average Convergence Divergence (MACD)**

- **Stock Prediction:** Utilizes a machine learning model to forecast stock price movements based on historical data.

- **Sentiment Analysis:** Extracts and displays the sentiment (positive, negative, or neutral) of stock-related articles and news.

- **Chat Assistant:** An interactive assistant to answer queries and assist with navigation.

2. Charting and Technical Indicators with Alpha Vantage API

2.1 Integration with Alpha Vantage API

The platform uses the **Alpha Vantage API** to fetch real-time and historical stock data. By calling the /query endpoint, it retrieves time-series data, including open, high, low, close, and volume values. The data is then visualized using **JavaScript charting libraries** like Chart.js.

2.2 Visualization of Technical Indicators

The platform displays key technical indicators:

- **EMA:** Tracks recent price changes, making it responsive to new data.
- **SMA:** Shows average closing prices over a set period, helping identify trends.
- **RSI:** Measures stock momentum on a 0–100 scale, indicating overbought or oversold conditions.
- **MACD:** Analyzes trend direction and momentum with a line crossover and histogram.

2.3 Chart Rendering and User Interaction

The charts offer **dynamic interactivity**, allowing users to zoom, pan, and toggle indicators. Tooltips display precise data points, while users can select custom timeframes for detailed analysis.

2.4 Error Handling and Data Accuracy

To ensure reliability, the platform manages **API rate limits** and handles errors gracefully. Invalid stock symbols trigger appropriate error messages, ensuring smooth user experience and data accuracy.

2.5 Timeframe: Daily Advantage

The **daily timeframe** provides consistent and reliable data, reducing intraday noise. It enhances the accuracy of technical indicators, making the platform ideal for **swing traders and long-term investors**.