Stock Price Prediction Dash App Comprehensive Documentation

Introduction:

The Stock Price Prediction Dash App stands as a testament to the fusion of cutting-edge data science and intuitive web applications. This documentation is a comprehensive guide to understanding, deploying, and customizing this powerful tool. Developed using Dash, Python's web application framework, the app provides an interactive interface for exploring historical stock prices and making insightful forecasts.

Installation:

Before diving into the application, ensure that the required Python libraries are installed. Execute the following command to install the necessary dependencies:

pip install requirements.txt

Running the App:

Launch the Stock Price Prediction Dash App by executing the following command:

python app.py

Access the app through your web browser by navigating to `http://127.0.0.1:8050/`.

App Features:

1. Company Selection:

Choose from a diverse set of companies in the dropdown menu. Each company comes with its dedicated data frame for a meticulous and tailored analysis.

2. Price Type Selection:

Customize your analysis by selecting the type of stock price to explore – Close, Open, High, or Low – using the intuitive radio buttons.

3. Historical Chart:

Dive into the historical stock prices of the selected company and price type with an engaging and interactive line chart.

4. Forecast Chart:

Unlock the power of the Auto ARIMA model to visualize forecasted stock prices. The app, while ensuring accuracy, evaluates the best ARIMA order for each company, making the forecasting process meticulous but time intensive.

5. Dynamic Forecast Period:

The app adapts dynamically to the current day. If it's the weekend, the forecast extends to the next week; otherwise, it covers the next five business days.

6. Background Image:

Enhance the visual appeal of the app by replacing the default background image (`background.png`) with an image of your choice in the `/assets/` directory.

Customization:

- Background Image:

Replace the default background image with your preferred one in the `/assets/` directory. Experiment with various images to tailor the app's visual aesthetic.

- Styling:

Fine-tune the CSS styling in the app layout to align with your design preferences. Adjust font styles, color schemes, and layout dimensions to create a personalized user experience.

Modeling Details:

- Data frame Division:

The dataset undergoes meticulous division into separate data frames for each company. This division allows for granular analysis, providing insights unique to individual companies.

- Auto ARIMA:

Leverage the Auto ARIMA model for forecasting stock prices across various types – High, Low, Open, Close. The model's automatic determination of the best ARIMA order ensures precision in predictions.

- Computational Time:

It's important to note that the evaluation of High, Low, Open, and Close prices for each company using Auto ARIMA is computationally intensive. The app prioritizes accuracy over speed, offering a robust forecasting mechanism.

Dependencies:

The Stock Price Prediction Dash App relies on several essential Python libraries, including:

- pandas

- numpy
- dash
- plotly
- statsmodels
- scikit-learn
- pmdarima

Ensure these libraries are installed in your Python environment before launching the application.

Conclusion:

The Stock Price Prediction Dash App serves as a powerful ally for comprehensive stock price analysis. It empowers users to navigate through various companies and price types, providing valuable insights into historical trends and facilitating informed decision-making based on accurate forecasts.

Additional Notes:

- This documentation assumes a foundational understanding of Python, web development, and financial concepts.
- Comply with financial regulations and ethical considerations when utilizing or sharing stock-related predictions.
- Feel free to explore further customization options to align the app with specific preferences and use cases.

The journey of understanding and utilizing the Stock Price Prediction Dash App begins here. May it empower you in unraveling the intricacies of stock market dynamics.