**Notes**

**From Gemini:**

**‘i think i want to create and deploy a stock ticker that will predict the next two weeks. give me some guidance’**

**1. Data Acquisition and Preparation:**

* **~~Reliable Data Source:~~** ~~Utilize APIs like Yahoo Finance, Alpha Vantage, or Quandl to fetch historical and real-time stock data.~~
* **Data Cleaning:** Handle missing values, outliers, and inconsistencies.
* **Feature Engineering:** Create relevant features like moving averages, RSI, MACD, Bollinger Bands, etc.
* **Data Splitting:** Divide the data into training and testing sets.

**2. Model Selection and Training:**

* **Time Series Models:** Consider ARIMA, LSTM, or Prophet models for time series forecasting.
* **Machine Learning Models:** Explore models like Random Forest, XGBoost, or LightGBM, especially when incorporating external factors.
* **Deep Learning Models:** For complex patterns, consider advanced models like Convolutional Neural Networks (CNNs) or Recurrent Neural Networks (RNNs).
* **Model Training:** Train the chosen model on the historical data.

**3. Model Evaluation:**

* **Backtesting:** Evaluate the model's performance on historical data.
* **Performance Metrics:** Use metrics like Mean Squared Error (MSE), Root Mean Squared Error (RMSE), Mean Absolute Error (MAE), and R-squared.
* **Hyperparameter Tuning:** Optimize model parameters for better performance.

**4. Deployment:**

* **Web Application:** Create a web app using frameworks like Flask or Django to display predictions and visualizations.
* **API:** Develop a REST API to expose the prediction model for integration with other applications.
* **Cloud Deployment:** Deploy the model and app on cloud platforms like AWS, GCP, or Azure for scalability and accessibility.
* **Real-time Updates:** Implement mechanisms to fetch real-time data and update predictions.

**Additional Considerations:**

* **External Factors:** Incorporate economic indicators, news sentiment, and social media sentiment to improve predictions.
* **Overfitting:** Be cautious of overfitting, especially with complex models. Use techniques like regularization and cross-validation.
* **Model Interpretability:** Understand the model's decision-making process to gain insights and improve future predictions.
* **Ethical Considerations:** Be aware of the potential biases in data and models, and take steps to mitigate them.
* **Continuous Learning:** Regularly update and retrain the model to adapt to changing market conditions.

**Remember:**

* **Stock market prediction is inherently challenging due to its volatile nature.**
* **No model can guarantee accurate predictions.**
* **Use the predictions as a tool, not a definitive guide.**
* **Diversify your investment strategy and consider consulting with a financial advisor.**

By following these guidelines and continuously improving your model, you can build a robust stock ticker that provides valuable insights for informed investment decisions.

Would you like to delve deeper into any specific step or explore a particular technology or library?

‘what should i expect in terms of missing values?’

**Expected Missing Values in Stock Market Data**

When working with stock market data, you can expect to encounter missing values for various reasons:

1. **Market Holidays and Weekends:**
   * Stock markets are typically closed on weekends and holidays. This can lead to gaps in the time series data.
2. **Data Quality Issues:**
   * Errors in data collection or transmission can result in missing values.
3. **Delays in Reporting:**
   * Some financial data, like earnings reports or analyst ratings, may be released after market hours or with delays.
4. **Data Provider Issues:**
   * Technical difficulties or maintenance issues at data providers can cause temporary disruptions.
5. **Corporate Actions:**
   * Events like stock splits, dividends, or mergers can sometimes impact data availability.

**Handling Missing Values:**

Here are some common techniques to handle missing values in stock market data:

1. **Deletion:**
   * **Listwise Deletion:** Remove entire rows with missing values. This can be suitable for small datasets or when missing values are randomly distributed.
   * **Pairwise Deletion:** Remove only the specific observations with missing values for each analysis. This can be more efficient than listwise deletion, but it can lead to different sample sizes for different analyses.
2. **Imputation:**
   * **Mean/Median Imputation:** Replace missing values with the mean or median of the available data. This is a simple but potentially biased approach.
   * **Mode Imputation:** Replace missing categorical values with the most frequent category.
   * **Last Observation Carried Forward (LOCF):** Replace missing values with the last observed value. This can be suitable for time series data, but it may introduce bias if the missing values are not random.
   * **Next Observation Carried Backward (NOCB):** Replace missing values with the next observed value. This can be useful in some cases, but it may also introduce bias.
   * **Interpolation:** Use interpolation techniques like linear interpolation or polynomial interpolation to estimate missing values.
   * **Model-Based Imputation:** Use statistical models to predict missing values based on other variables. This can be more accurate than simple imputation methods, but it requires careful model selection and training.

The best approach to handling missing values depends on the specific dataset, the analysis goals, and the nature of the missing data. It's often a good idea to experiment with different techniques and compare their impact on the results.

My ideas from Keep

* Stock ticker with buttons for technical eval (feature engineering) and predictions. Just for swing trading.
* Talk to financial advisor for input.
* I want my project to have it all. My vision is to have projections IN THE GRAPH, possibly a different color, with candlesticks.
* I want to see indicator trends! Include confidence level in web app.
* Use things from st module in web app, like ticker lookup.
* Maybe create a stat dash to pair with the ticker.
* Bring sentiment analysis into this. There are news APIs for that, ask chat.
* Figure out the correlation between news sentiment analysis and the big stocks like s&p500. Find correlation between those stocks and the stocks that are good for swing trading.