2. Stock Market Forecasting: Predicting the Next Big Move

Stock market forecasting is one of the most complex and challenging problems in data science and finance. In this challenge, you are tasked with predicting future stock prices or market movements based on historical market data using time-series forecasting techniques.

You need to develop a model that can analyze the historical stock data and make predictions about future stock price movements or trends. The model should ideally be able to identify patterns and provide valuable insights that can help forecast market behaviour, such as predicting price increases, decreases, or volatility.

Your solution should leverage time-series forecasting techniques like:

1. Autoregressive Integrated Moving Average (ARIMA)
2. Long Short-Term Memory (LSTM) networks
3. Prophet (for trend forecasting)
4. Moving averages and other statistical methods

The output of your model should include predicted stock prices or market indices for a given time horizon (e.g., next day, next week, etc.). Additionally, the model should be evaluated based on its prediction accuracy, using suitable evaluation metrics such as Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), or others.

Datasets

You can use the following datasets to develop and test your stock market forecasting model:

1.Yahoo Finance: Provides historical stock price data for various companies, available at Yahoo Finance. You can download data in CSV format.

2. **Alpha Vantage:** Offers free access to historical and real-time stock market data, available at Alpha Vantage. You need to sign up for an API key.

3. **Quandl:** Offers access to a wide range of stock market data, including historical prices, economic data, and more, available at Quandl.

4. **Kaggle Datasets:** Kaggle hosts several datasets related to stock market forecasting, including historical stock prices and market indicators. Check Kaggle Datasets.