**<P-511- Apple stock Forecast >**

**Business Objective:**

**Help the Investors, traders, and financial analysts monitor stock prices to make buy/sell decisions. Predict the apple stock market price for the next 30 days.**

**The dataset contains financial, economic, and sentiment-related variables that influence Apple's stock price. Below is a breakdown of each variable, its meaning, and real-world impact on financial markets.**

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**stock\_price (Target Variable) :**

* **Definition: The stock price of Apple Inc. (AAPL) over time.**

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**nasdaq\_index (Feature):**

**Definition:** The NASDAQ Composite Index, which tracks over 3,000 tech and growth companies, including Apple.

Since Apple is a major component of NASDAQ, its stock price moves in correlation with NASDAQ trends. Traders look at NASDAQ trends before making investment decisions in Apple stock.

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**sp500\_index (Feature)**

**Definition:** The S&P 500 Index, which tracks the 500 largest U.S. companies, including Apple.

Apple’s stock is a part of the S&P 500, so large market movements impact its stock price. Investors compare Apple's stock performance vs. S&P 500 to assess risk and relative strength.

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**inflation\_rate (Feature)**

**Definition:** The percentage increase in the price of goods/services over time.

Higher inflation reduces consumer purchasing power, impacting Apple's product sales (iPhones, MacBooks, etc.). The Federal Reserve may increase interest rates to control inflation, affecting Apple's borrowing costs.

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**unemployment\_rate (Feature)**

Definition: The percentage of people without jobs but actively seeking employment.

High unemployment reduces consumer spending on non-essential products like iPhones & MacBooks.

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**interest\_rate (Feature)**

Definition: The cost of borrowing money, set by the Federal Reserve (U.S.).

Affects Apple’s debt financing and expansion plans.

Higher interest rates make loans expensive, reducing Apple’s profits

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**market\_sentiment (Feature)**

Definition: A numerical score (-1 to +1) indicating public perception of Apple stock from news, social media, and analyst reports.

Investors use sentiment analysis to gauge public reaction to earnings reports, lawsuits, product launches.

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**Challenges:**

1. **Data set may have outliers – fill it – don’t drop the samples**
2. **Data may blanks – fill it with your logics**
3. **According to the share market in US:**

The U.S. stock markets, including the NYSE and NASDAQ, generally operate as follows:

1. **Regular Trading Hours:** 9:30 a.m. to 4:00 p.m. Eastern Time (ET), Monday through Friday (excluding holidays).
2. **Pre-Market Session:** Approximately 4:00 a.m. to 9:30 a.m. ET.
3. **After-Hours Session:** Approximately 4:00 p.m. to 8:00 p.m. ET.

**4:00 AM to 8:00 Pm 🡪 consider only and exclude Saturday and sunday**

**Which are the Models can We Use?**

1. **Use Multiple X variables if required to fit the models**
2. **Transformations can be used to make best fit.**

ARIMA,

SARIMA,

VAR (Vector AutoRegression),

Random Forest Regressor, XGBoost / LightGBM (Boosting Algorithms),

Deep Learning Models(LSTM (Long Short-Term Memory)), Prophet, Hybrid Models

**Milestones:**

**30 days to complete the Project**

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| **Milestone** | **Duration** |
| **Kick off and Business Objective discussion**  **Data set Details** | **22-02-2025**  **24-02-2025** |
| **Doubts clarification** | **25-02-2025** |
| **EDA** | **01-03-2025** |
| **Model Building & Model Evaluation** | **08-03-2025** |
| **Deployment** | **15-03-2025**  **22-03-2025** |
| **Final presentation** |

**Protocols:**

1. **All the documentation – Final presentation and python code to be submitted before the final presentation day**
2. **All the participants must attend review meetings**