**1. Title of the Project**

**Forecasting Tesla Stock Prices Using Time Series Analysis**

**2. Introduction**

**Brief Background**

**Time series analysis is a statistical technique used to analyze time-ordered data points to identify trends, seasonal patterns, and cyclical behaviors. In finance, it plays a crucial role in predicting stock prices, enabling investors to make informed decisions based on historical performance and market trends.**

**Motivation**

**The stock market is inherently volatile, influenced by numerous factors such as economic indicators, company performance, and investor sentiment. This project focuses on analyzing historical stock price data to develop predictive models that can assist investors in identifying potential investment opportunities. The relevance of this analysis lies in its ability to enhance decision-making processes in trading strategies and portfolio management.**

**3. Objective(s)**

* **To analyze historical stock price data to identify trends and patterns.**
* **To develop predictive models using time series analysis techniques such as ARIMA and Exponential Smoothing.**
* **To assess the impact of external economic indicators on stock performance.**
* **To provide actionable insights for investors based on the analysis.**

**4. Dataset Description**

* **Source of the Data: The dataset is sourced from Kaggle, specifically focusing on Tesla's historical stock prices.**
* **Nature of the Data: The dataset includes daily closing prices, along with additional information such as opening prices, high/low prices, and trading volume.**
* **Time Period Covered: The dataset spans from January 1, 2005, to December 31, 2023.**
* **Number of Data Points: The dataset contains over 3200 data points, allowing for comprehensive analysis.**

[**Tesla Stock Price [2005-2023]**](https://www.kaggle.com/datasets/themrityunjaypathak/tesla-stock-price-2005-2023)

**5. Team Members and Responsibilities**

* **Team Member 1: UTKARSH SHARMA - Data Collection and Preprocessing and model training**
  + **Responsible for gathering the dataset, cleaning it, and preparing it for analysis. And training the model for eventually better prediction .**
* **Team Member 2: RACHIT - Exploratory Data Analysis and Visualization and model building**
  + **Conduct exploratory data analysis (EDA) to uncover trends and visualize key patterns in the data.**

**6. Expected Outcomes**

* **Identification of significant trends and seasonal patterns in stock prices.**
* **Determination of the most accurate forecasting model for predicting future stock prices.**
* **Insights that can inform investment decisions and strategies based on historical data analysis.**

**7. Timeline**

| **Milestone** | **Estimated Completion Date** |
| --- | --- |
| **Data Collection** | **Week 2** |
| **Data Preprocessing** | **Week 3** |
| **Exploratory Data Analysis** | **Week 4** |
| **Model Building** | **Week 5** |
| **Model Building** | **Week 6** |
| **Testing and report writing** | **Week 7** |
| **Final Presentation** | **Week 8** |

**8. References**

* **Yiheng Chi. (2024). *Predictive Analysis of Tesla's Stock Closing Prices Utilizing LSTM and GRU Deep Learning Models***

[**128075.pdf**](https://www.scitepress.org/Papers/2024/128075/128075.pdf)

* **Vijayalakshmi Mallari\*1, Irshad Hussain B\*2 (2024). *LSTM-BASED PREDICTION MODEL FOR TESLA'S STOCK PRICES***

[***fin\_irjmets1725453108.pdf***](https://www.irjmets.com/uploadedfiles/paper/issue_9_september_2024/61346/final/fin_irjmets1725453108.pdf)

* **Tesla Inc. stock Prediction Using Sentiment Analysis** [**IJRPR31832.pdf**](https://ijrpr.com/uploads/V5ISSUE7/IJRPR31832.pdf)

**9. Conclusion**

**This project aims to deepen our understanding of time series analysis through practical application in stock market forecasting. By identifying trends and developing predictive models, we hope to contribute valuable insights that can enhance investment strategies. Anticipated challenges include handling missing data and ensuring model accuracy; these will be addressed through thorough preprocessing and validation techniques. Feel free to modify any sections or add specific names where indicated!**