

Weekly Report: Oudarja Barman Tanmoy

Alpha AI

Week-04 (march 14 - march 18)

1. Machine learning project:

i) Tesla Stock Price Prediction Project:

- **Data preprocessing** : Cleaned and transformed raw stock data (e.g., handling missing values, converting dates, normalizing features) to prepare it for modeling.
- **Exploratory Data Analysis** : Analyzed trends, patterns, and correlations in Tesla's historical prices using plots and statistics to extract insights and guide feature engineering.
- **Model Training** : Trained both classical ML models and deep learning models on engineered features to predict future monthly closing prices. Trained models are : Linear Regression, RandomForestRegressor, XGBoost, LSTM, GRU.
- **Model evaluation** : Evaluated models using metrics like RMSE, and R^2 score on a test set to compare performance and identify the best predictive model.
- **Inference** : Used the best-performing model to forecast Tesla's next monthly closing price based on the most recent available data.

2. Test Driven Development:

i. Unit Testing

- Studied and documented how to test individual functions or components in isolation to ensure each unit of code works as expected.

ii. Integration Testing

- Explored and documented how different modules or services interact with each other to verify they work together correctly.

iii. System Testing

- Understood and recorded the process of testing the complete, integrated system to ensure it meets specified requirements and functions as a whole.

iv. Acceptance Testing and

- Learned and documented how to validate the system from the end-user's perspective to ensure it meets business needs and is ready for deployment.

v. Mock Testing

- Studied how to use mock objects to simulate dependencies in unit tests, allowing isolated testing without relying on real external services.

3. LeetCode Problem Solving:

- i. Solved some problems based on sliding window technique.