Model Development Phase Template

Date	15 April 2024
Team ID	Team - 738203
Project Title	Share Price Estimation Of TOP 5 GPU Companies
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model Selection Report:

Model	Description	Hyperparameters	Performance Metric
Linear Regression	Linear regression models the relationship between a dependent variable and independent variables by fitting a linear equation to observed data for prediction.	Hyperparameters used	MAE :- 1.0295797341476502 MSE :- 3.9646805791556625 RMSE:- 1.991150566671356 R2 Score:- 0.9998329252700594
Decision Tree	A decision tree is a predictive model that maps observations about an item to	Hyperparameters used	MAE :- 5.768714122998442 MSE :- 953.7740005954626 RMSE:- 30.88323170582157

	conclusions about its target value, by recursively partitioning data into subsets.		R2 Score:- 0.9598072201801939
Extra Trees Model	Extra Trees, or Extremely Randomized Trees, is an ensemble learning technique that builds multiple decision trees and aggregates their predictions to improve accuracy and reduce overfitting.	Hyperparameters used	MAE :- 4.9105214587100345 MSE :- 1035.0286791401684 RMSE:- 32.17186160513825 R2 Score:- 0.9563830846910345
Random Forest	Random Forest is an ensemble learning technique that constructs multiple decision trees and combines their predictions to enhance accuracy and mitigate overfitting.	Hyperparameters used	MAE :- 5.600888524166072 MSE :- 1035.8351393370608 RMSE:- 32.18439279118158 R2 Score:- 0.9563490998297288
Prophet Model	Prophet is a forecasting tool developed by Facebook that models time series data with additive components and incorporates seasonality and holiday effects.	Hyperparameters not used	Mean Absolute Error (MAE): 195.73297116012097 Mean Squared Error (MSE): 48206.04630780599 Root Mean Squared Error (RMSE): 219.55875365788992 R-squared (R2) Score: -1.031440366400611

ARIMA Model	ARIMA (Autoregressive Integrated Moving Average) is a time series forecasting method that models the next step in the sequence based on linear combinations of past observations and forecast errors.	Hyperparameters not used	Mean Absolute Error (MAE): 96.90709354098094 Mean Squared Error (MSE): 25382.386804348866 Root Mean Squared Error (RMSE): 159.3185074131341 R-squared (R2) Score: -0.4138728147447801
SARIMAX Model	SARIMAX (Seasonal Autoregressive Integrated Moving Average with Exogenous Factors) is a statistical model used for time series forecasting, incorporating seasonality, trends, and external variables.	Hyperparameters not used	Mean Absolute Error (MAE): 109.06895324833107 Mean Squared Error (MSE): 32756.718955805904 Root Mean Squared Error (RMSE): 180.9881735246972 R-squared (R2) Score: -0.38039366955694187