Model Optimization and Tuning Phase Template

Date	09 July 2024
Team ID	739996
Project Title	Identification Of Methodology Used In Real Estate Property Valuation
Maximum Marks	10 Marks

Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Hyperparameter Tuning Documentation (6 Marks):

Model	Tuned Hyperparameters	Optimal Values
Decision tree	-	-
Random forest regression	-	-
Linear Regression	-	-
Adaboost Regression	-	-
XGBoost Regressor	-	-
Multilinear Regression		

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
Decision tree	-	-
XGB regression	-	-
Linear Regression	-	-
Ada boost	-	-
Multilinear Regression	-	-

Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Random forest regressor	Based on the evaluation, the **Random Forest Regression** model is selected for predicting real estate property values due to its highest accuracy of 0.7883. This model effectively balances bias and variance, providing robust and reliable predictions. • **Accuracy**: Random Forest Regression has the highest accuracy among all models tested. • **Robustness**: It reduces overfitting by averaging multiple decision trees. • **Handling Non-Linearity**: It captures complex relationships between features and the target variable.