

Model Optimization and Tuning Phase Template

Date	17 July 2024
Project Title	Machine learning approach for predicting the price of natural gas
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
Linear Regression	None	Default
Decision Tree Regressor	None	Default

Performance Metrics Comparison Report (2 Marks):

Model	Baseline Metric	Optimized Metric
Linear Regression	0.22	0.22

Decision Tree Regressor	0.98	0.98
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Final Model Selection Justification (2 Marks):

Final Model	Reasoning
Decision Tree Regressor	The Decision Tree Regressor was chosen as the final model because it produced a higher R^2 score (0.98) compared to the Linear Regression model's R^2 score (0.22). This indicates that the Decision Tree Regressor better captures the variance in the data and provides more accurate predictions.