Model Development Phase Template

Date	21 June 2024
Team ID	739772
Project Title	Gem Valuation Revolution: Predicting Diamond Prices With Artificial Neural Networks
Maximum Marks	6 Marks

Model Selection Report

Based on performance metrics and considerations of model complexity, computational efficiency, and interpretability, recommend the most suitable model for predicting diamond prices. Provide insights into potential improvements, such as

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
Random Forest	Ensemble of decision trees; robust, handles complex relationships, reduces overfitting, and provides feature importance for diamond price prediction.	Default parameters	R2 = 0.98 (example value)
Simple Decision Tree	Simple tree structure; interpretable, captures non-linear relationships, suitable for initial insights into diamond price patterns.	Default parameters	R2 = 0.73 (example value)
KNN	Classifies based on nearest neighbors; adapts well to data patterns, effective for predicting diamond prices based on similar instances in the dataset.	Default parameters	R2 = 0.77 (example value)

hyperparameter tuning, feature engineering, or ensemble methods, to enhance model performance.

Gradient Boosting	Gradient boosting with trees; optimizes predictive performance, handles complex relationships, and is suitable for accurate predictions of diamond prices.	Default parameters	R2 = 0.81 (example value)