

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	4 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial RandomForestRegressor model shows promising results in predicting diamond prices based on the selected features. Further optimization, feature engineering, and model tuning may enhance performance. Future steps include refining hyperparameters, exploring feature importance, and validating the model on additional datasets for robustness and generalization.

Initial Model Training Code:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
df = pd.read_csv('/content/diamonds.csv')
X= label_data.drop(["price"],axis =1)
y= label_data["price"]

# Import train_test_split
from sklearn.model_selection import train_test_split

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=7)
from sklearn.pipeline import Pipeline # Import the Pipeline class
from sklearn.preprocessing import StandardScaler
```

```
from sklearn.linear_model import LinearRegression
from sklearn.tree import DecisionTreeRegressor
from sklearn.ensemble import RandomForestRegressor
from sklearn.neighbors import KNeighborsRegressor
from xgboost import XGBRegressor
from sklearn.model_selection import cross_val_score # Import cross_val_score
#Fit the pipelines
for pipe in pipelines:
    pipe.fit(X_train, y_train)
```

Model Validation and Evaluation Report:

Decision Tree	-		-
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Model	Classification Report	F1 Score	Confusion Matrix
Random Forest	-	-	
KNN	-		-

Gradient Boosting	-		-
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