Model Development Phase Template

Date	9 July 2024
Team ID	SWTID1720096271
Project Title	Machine learning approach for Predicting the price of natural gas
Maximum Marks	6 Marks

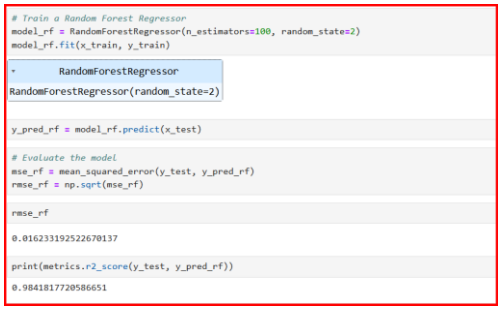
Model Selection Report

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 (e.g., Accuracy, F1 Score)
Linear Regression	Linear Regression predicts a continuous target variable by fitting a linear relationship between input features and the target variable.	null	

```
from sklearn.linear_model import LinearRegression

# Initialize and train the Linear Regression model
lr_model = LinearRegression()
lr_model.fit(x_train, y_train)

LinearRegression
LinearRegression()

# Make predictions on the test set
y_pred = lr_model.predict(x_test)

# Calculate evaluation metrics
rmse = np.sqrt(mean_squared_error(y_test, y_pred))

print(metrics.r2_score(y_test, y_pred))

0.9871686856443018

rmse

0.014620445192057996
```

Decision Tree Regressor	Decision Tree Regressor predicts continuous target values by splitting data into branches based on feature thresholds, optimizing prediction accuracy.	max_depth=5, min_samples_split=10 random_state=2	
Random Forest Regressor	Random Forest Regressor predicts continuous values by averaging predictions from multiple decision trees, reducing overfitting and improving accuracy.	n_estimators =100, random_state = 2	
SVM	Support Vector Regression (SVR) uses support vectors and kernel functions to predict continuous target values with high accuracy and robustness.	kernel='rbf', C=100, gamma=0.1