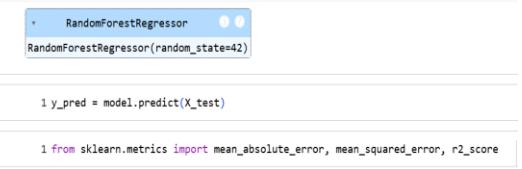


Project Development Phase

Model Performance Test

Date	15 February 2026
Team ID	LTVIP2026TMIDS62246
Project Name	Weather-Based Prediction of Wind Turbine Energy Output: A Next-Generation Approach to Renewable Energy Management
Maximum Marks	10 marks

Model Performance Testing – Wind Turbine Energy Prediction

S.No.	Parameter	Values	Screenshot
1.	Metrics	<p>Regression Model: MAE - , MSE - , RMSE - , R2 score -</p> <p>Classification Model: Confusion Matrix - , Accuracy Score- & Classification Report -</p>	 <pre> 1 model.fit(X_train, y_train) + RandomForestRegressor ●●● RandomForestRegressor(random_state=42) 1 y_pred = model.predict(X_test) 1 from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score 1 mae = mean_absolute_error(y_test, y_pred) 2 mse = mean_squared_error(y_test, y_pred) 3 r2 = r2_score(y_test, y_pred) 4 5 print("Mean Absolute Error (MAE):", mae) 6 print("Mean Squared Error (MSE):", mse) 7 print("R2 Score:", r2) Mean Absolute Error (MAE): 171.02609609173072 Mean Squared Error (MSE): 170421.94808313966 R2 Score: 0.9001226217296279 1 from sklearn.metrics import classification_report, confusion_matrix 2 3 print(confusion_matrix(y_test, dt_pred)) 4 print(classification_report(y_test, dt_pred)) 5 [[1606 16] [15 1649]] precision recall f1-score support 0 0.99 0.99 0.99 1622 1 0.99 0.99 0.99 1664 accuracy 0.99 0.99 0.99 3286 macro avg 0.99 0.99 0.99 3286 weighted avg 0.99 0.99 0.99 3286 </pre>

2.	Tune the Model	Hyperparameter Tuning - Validation Method -	<pre>1 from sklearn.model_selection import train_test_split 2 3 X_train, X_test, y_train, y_test = train_test_split(4 X, y, 5 test_size=0.2, 6 random_state=42 7) 8</pre>
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