Results for Hyperparameter Tuning

- Hyperparameter tuning using GridSearchCV (linear regression)

Best Hyperparameters: {'preprocessor\_\_num\_\_scaler': StandardScaler(), 'regressor': Ridge(), 'regressor\_\_alpha': 1}

Best Cross-validation score (negative MSE): -2.732665644115481

Evaluation on Test Set:

Mean Absolute Error (MAE): 0.8560240934731251

Mean Squared Error (MSE): 1.2787944443858021

R² Score: 0.959357524643650

-Hyperparameter Tuning with Ridge Regression: Hyperparameter Tuning Using GridSearchCV

Best Hyperparameters: {'regressor\_\_alpha': 3.593813663804626}

Ridge Regression Model Performance:

Mean Absolute Error (MAE): 0.8806310525094502

Mean Squared Error (MSE): 1.327645456560991

R² Score: 0.9578049482564294

- Hyperparameter Tuning with Ridge Regression: Fine-Tuning with RandomizedSearchCV

Best Hyperparameters from RandomizedSearchCV: {'regressor\_\_alpha': 1.623776739188721}

Ridge Regression Model Performance:

Mean Absolute Error (MAE): 0.8643460339585667

Mean Squared Error (MSE): 1.2930195648535163

R² Score: 0.958905423752386

- Using RandomizedSearchCV for Faster Hyperparameter Tuning

Best Alpha (Randomized Search): 2.2570197196339215

Evaluation on Test Set (Randomized Search):

Mean Absolute Error (MAE): 0.8708208350493573

Mean Squared Error (MSE): 1.3053797237078977

R² Score: 0.9585125948236676