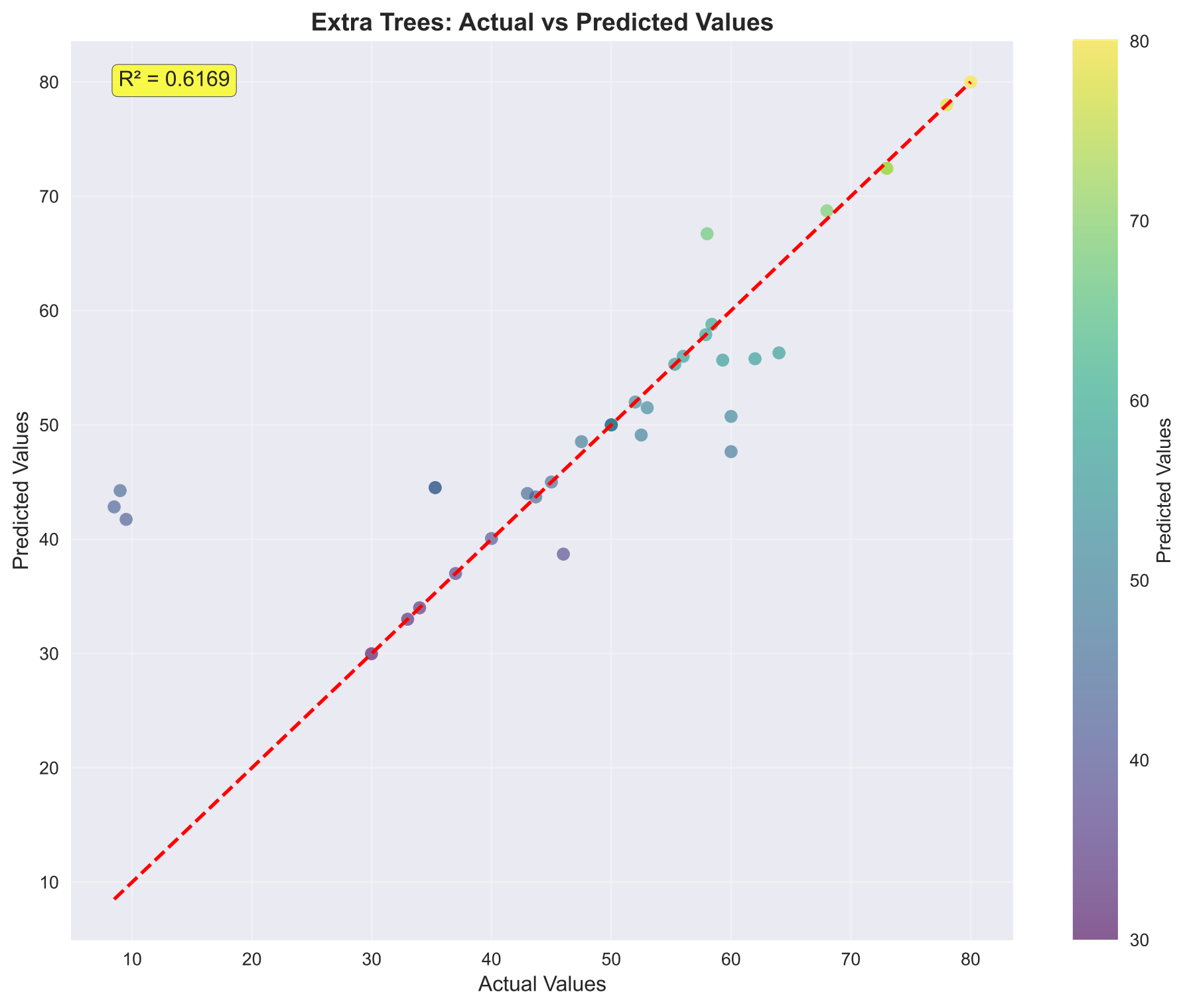
Model Performance Report: Extra Trees

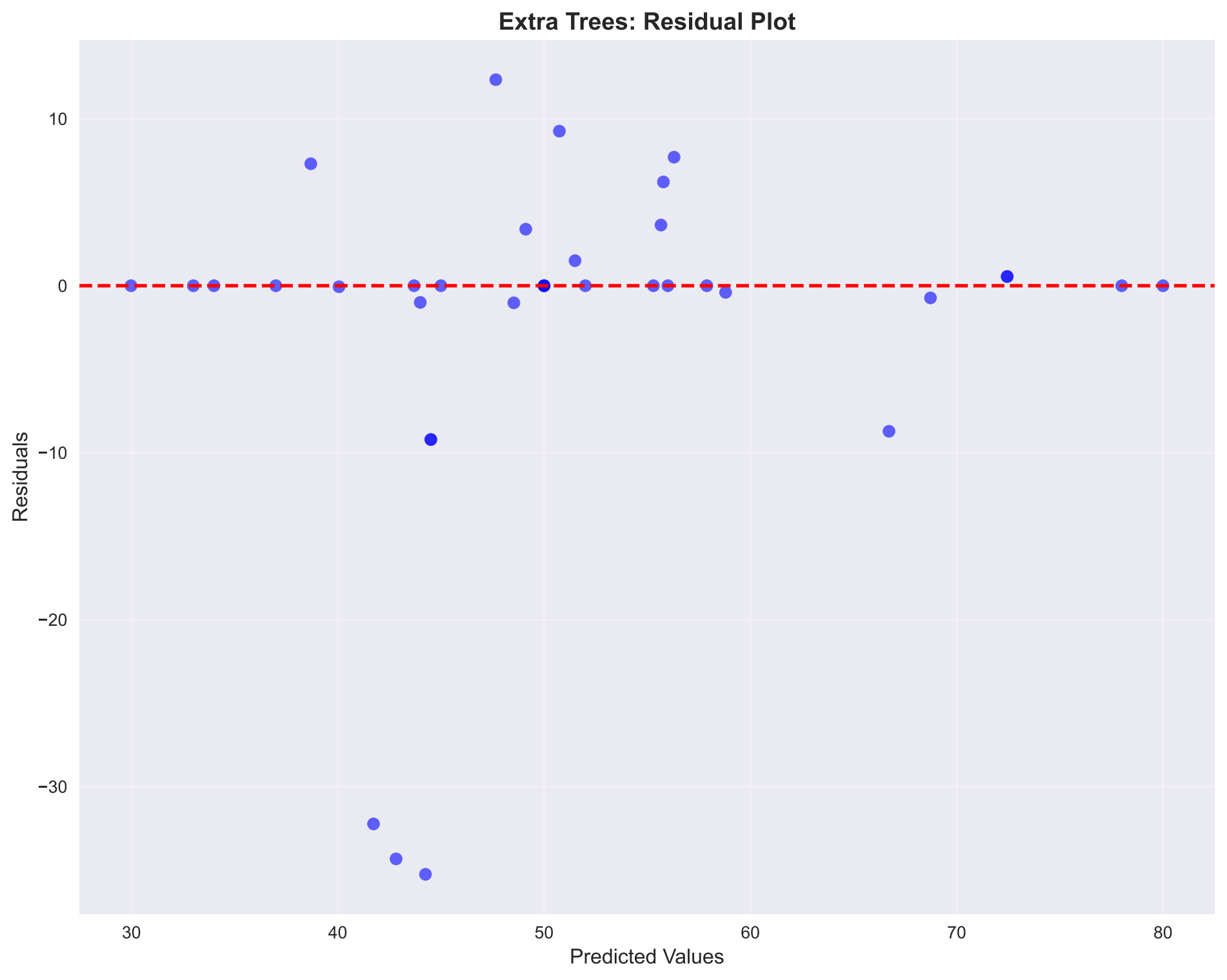
MODEL DETAILS:
• Algorithm: Extra Trees
• Training Samples: 141
• Test Samples: 36
• Features: 12

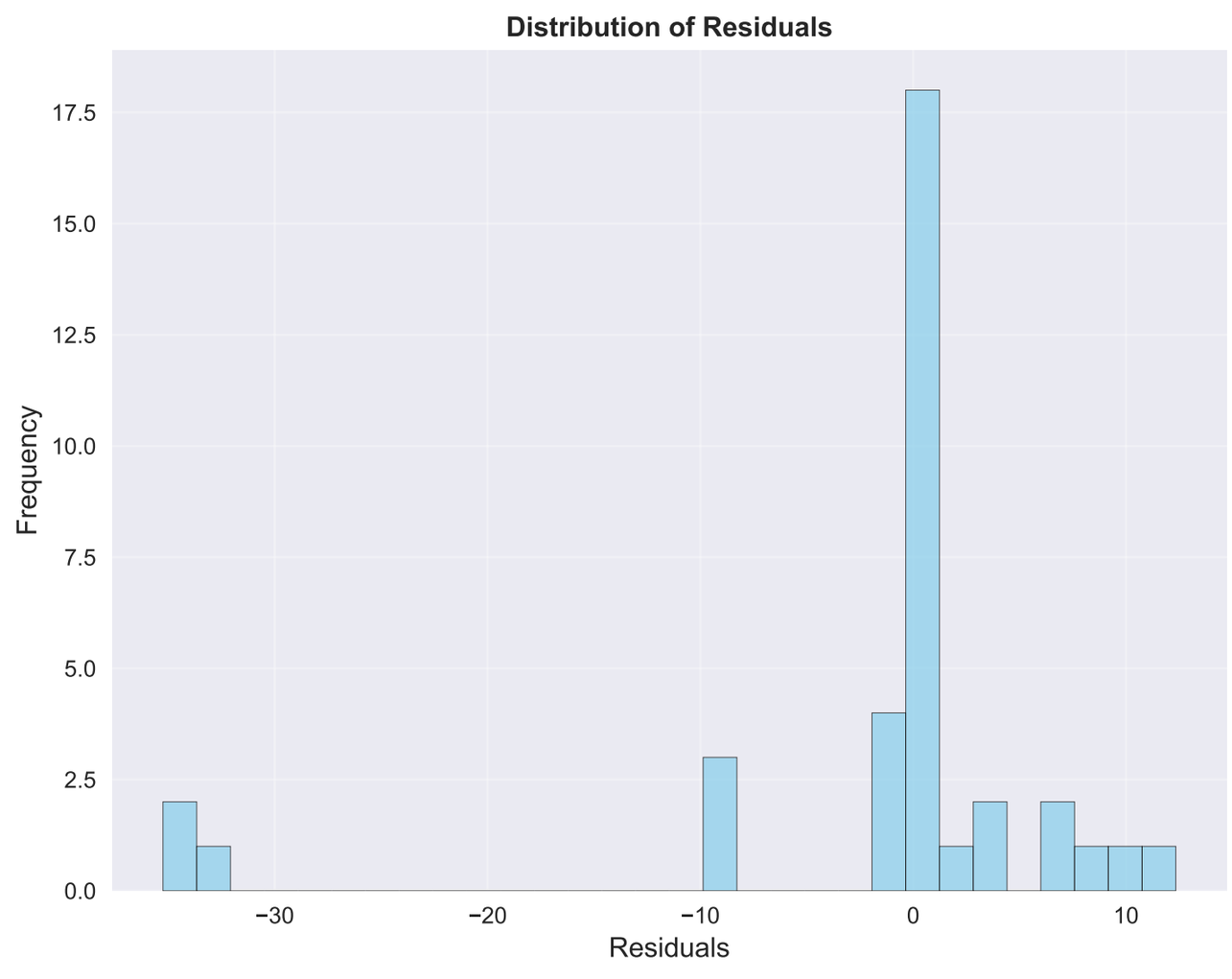
PERFORMANCE METRICS:
• Root Mean Square Error (RMSE): 10.7049
• R^2 Score: 0.6169
• Mean Absolute Error (MAE): 5.1281
• Mean Square Error (MSE): 114.5942

INTERPRETATION:
• R^2 Score of 0.6169 means the model explains 61.69% of the variance
• RMSE of 10.7049 indicates average prediction error
• Lower RMSE and MAE values indicate better model performance
• R^2 closer to 1.0 indicates better model fit

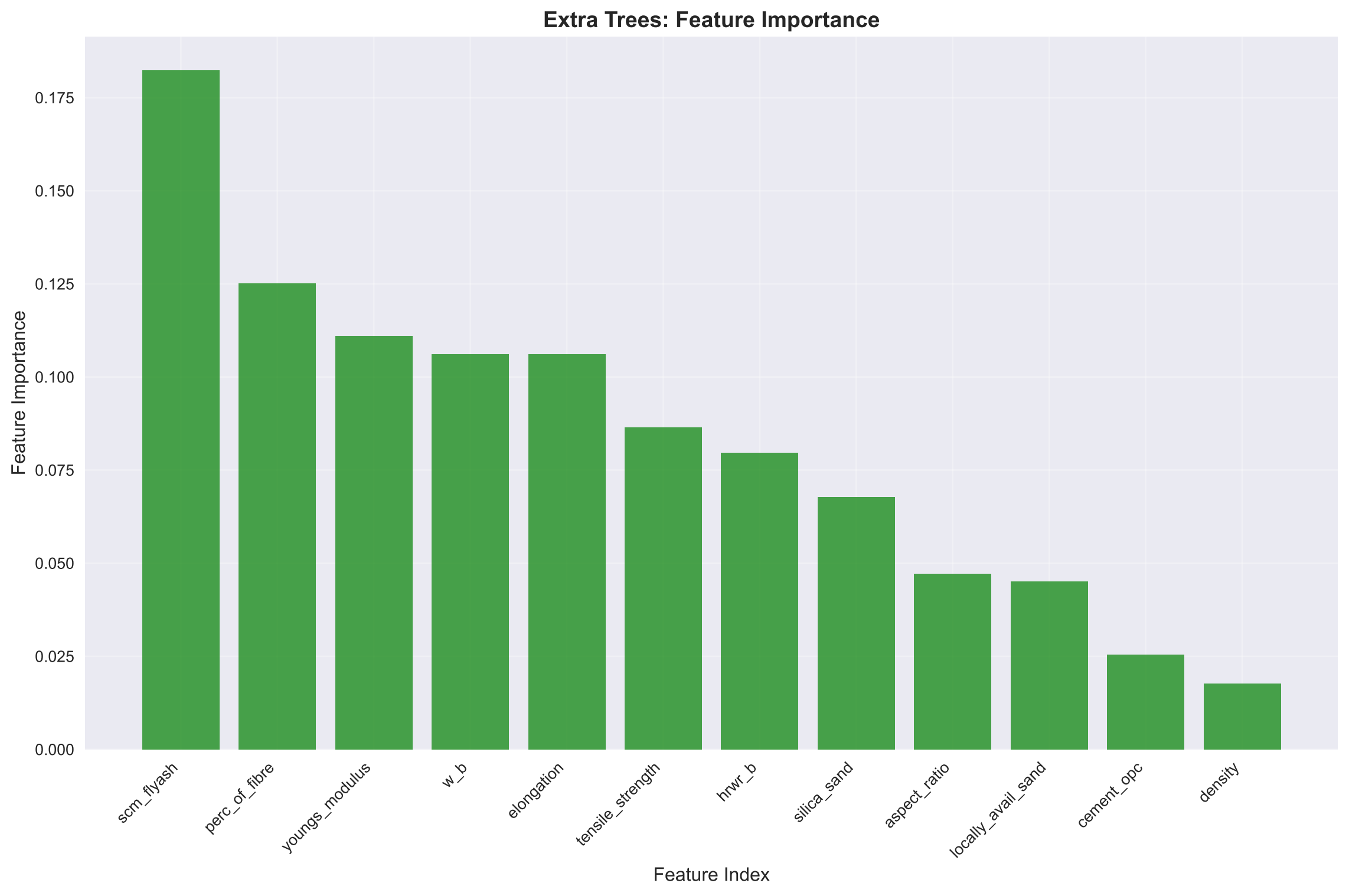
DATASET INFORMATION:
• Target Variable: Last Column
• Problem Type: Regression
• Cross-validation: 3-fold GridSearchCV used for hyperparameter tuning

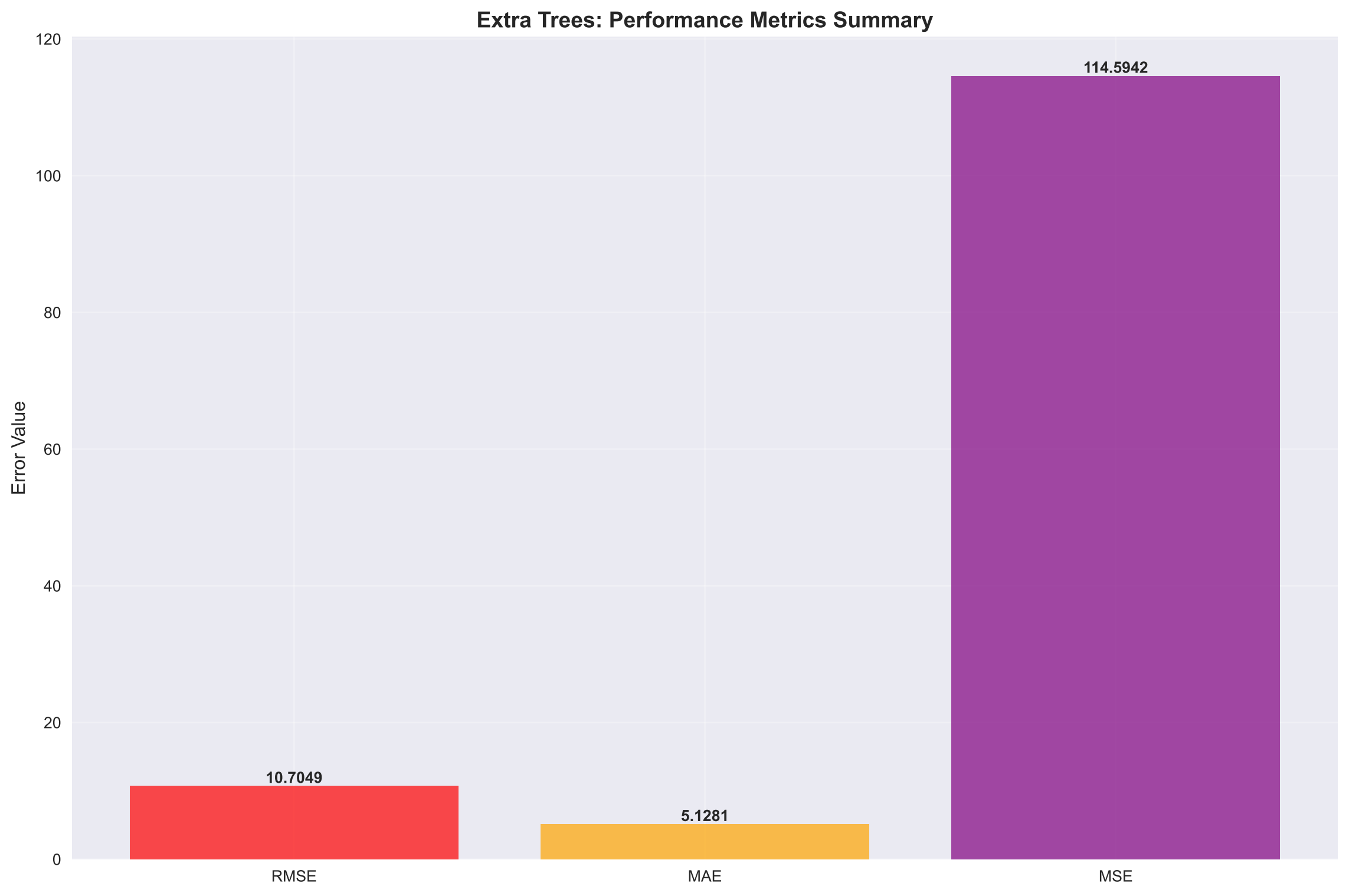

Extra Trees: Actual vs Predicted Values
R² = 0.6169
Predicted Values
Actual Values
10
20
30
40
50
60
70
80


Extra Trees: Residual Plot
Residuals
Predicted Values
10
0
−10
−20
−30
30
40
50
60
70
80


Distribution of Residuals
Frequency
Residuals
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−30
−20
−10
0
10

Q-Q Plot of Residuals
Ordered Values
Theoretical quantiles
10
0
−10
−20
−30
−2
−1
0
1
2


Extra Trees: Feature Importance
Feature Importance
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
scm_flyash
perc_of_fibre
youngs_modulus
w_b
elongation
tensile_strength
hrwr_b
silica_sand
aspect_ratio
locally_avail_sand
cement_opc
density
Feature Index


Extra Trees: Performance Metrics Summary
Error Value
120
100
80
60
40
20
0
10.7049
5.1281
114.5942
RMSE
MAE
MSE