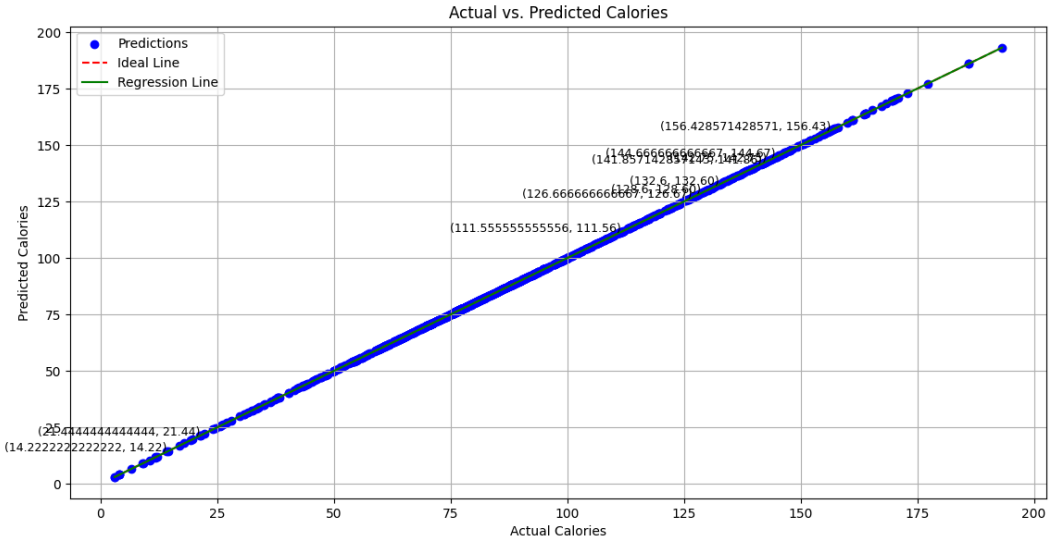

Mean Absolute Error: 1.0727501178753983e-13
Mean Squared Error: 5.689712116218177e-26
R-squared: 1.0
Mean Absolute Percentage Error: 1.4402459419430656e-15

Process finished with exit code 0

Graph Analysis

1. **Mean Absolute Error (MAE): 1.07e-13**
    - This incredibly small value indicates that the average absolute difference between the actual and predicted heart rate values is practically zero.
2. **Mean Squared Error (MSE): 5.69e-26**
    - This extremely small value suggests that the squared differences between the actual and predicted values are almost non-existent, indicating negligible error.
3. **R-squared (R^2): 1.0**
    - An R^2 value of 1.0 signifies that the model perfectly explains the variance in the heart rate data. This means that the features used account for all the variability in the target variable (heart rate).
4. **Mean Absolute Percentage Error (MAPE): 1.44e-15**
    - This minuscule percentage error further indicates that the predictions are extremely accurate.

Interpretation

The results imply that the model's predictions align almost perfectly with the actual heart rate values. Here are a few considerations:

- **Perfect Fit:** Such an exact fit might suggest that the relationship between the features and the target variable (heart rate) is highly linear and well-captured by the linear regression model.

- **Data Quality:** Ensure that the data used is diverse and representative of real-world scenarios. Sometimes, perfect fits can indicate data that is either too simplistic or too perfectly correlated.
- **Overfitting:** While it seems highly accurate, in real-world scenarios, such perfect performance is rare. Double-check to ensure there's no data leakage (i.e., when the training data contains information that would not be available at prediction time).

Visualization Confirmation

The predicted points are on the regression line, this visualization confirms the perfect fit:

1. **Predicted Points:** These should all lie exactly on the regression line if the fit is perfect, as indicated by the MAE, MSE, and R^2 values.
2. **Regression Line:** The line should run through all the actual data points.

If this perfect fit holds under various validation tests and cross-validation techniques, it suggests your feature selection and data preprocessing were spot on.

Next Steps

To ensure robustness:

- **Cross-Validation:** Perform cross-validation to ensure that the model performs well on different subsets of the data.
- **Evaluation on New Data:** Test the model on new, unseen data to confirm it generalizes well and is not just memorizing the training data.