House Price Prediction using Machine Learning

Internship: Python Development Internship (QSkill)
Project: House Price Prediction (Regression Models)

1. Objective

The objective of this project is to predict house prices based on multiple features such as area, number of bedrooms, bathrooms, and location using machine learning regression techniques.

2. Dataset Description

The dataset contains housing attributes including area in square feet, number of bedrooms, bathrooms, location category, and the target variable price. Categorical variables were encoded and numerical features were prepared for modeling.

3. Models Used

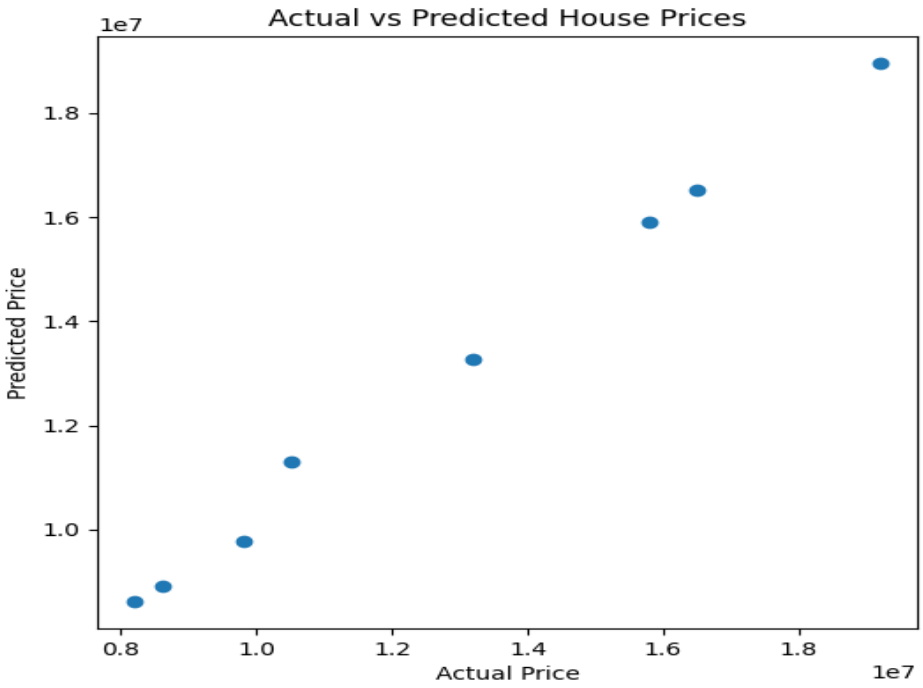
- Linear Regression (baseline model)
- Ridge Regression (L2 regularization)
- Lasso Regression (L1 regularization & feature selection)

4. Model Evaluation Metrics

MAE: 250999.3256
RMSE: 355122.8516
R2: 0.9914

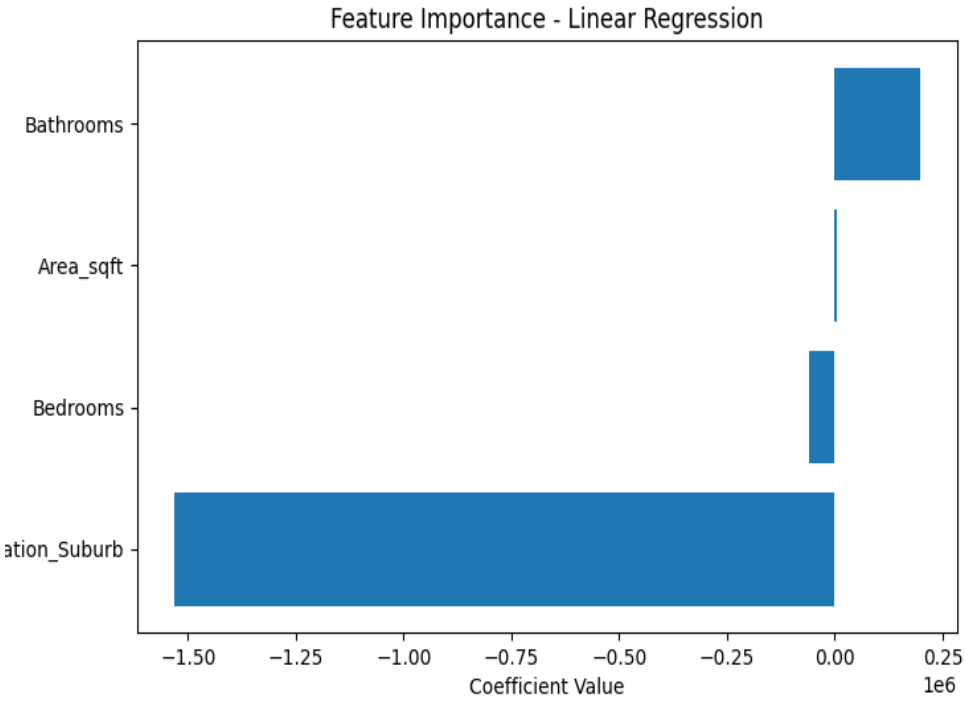
5. Prediction Results

Actual vs Predicted House Prices



6. Feature Importance Analysis

Linear Regression Coefficient Analysis



7. Ridge & Lasso Regularization

Ridge Regression
MAE: 215275.2517
RMSE: 292801.9070
R2: 0.9941

Lasso Regression
MAE: 250999.1611
RMSE: 355122.7568
R2: 0.9914

8. Conclusion

The project demonstrates a complete machine learning pipeline from data preprocessing to model training, evaluation, and explainability. Linear Regression provided a strong baseline, while Ridge and Lasso improved generalization and interpretability.

— End of Report —