Predicting House Prices using Linear Regression

Data Analytics Internship by Darshana Chaudhari

Made with GAMMA

Problem Statement

Our goal is to predict house prices using numerical features and Linear Regression, then evaluate the model's performance.

1

Predict Prices

Forecast house values accurately.

2

Numerical Features

Utilize quantitative data for predictions.

3

Linear Regression

Apply a robust statistical method.

4

Evaluate Model

Assess performance and accuracy.

Dataset Overview

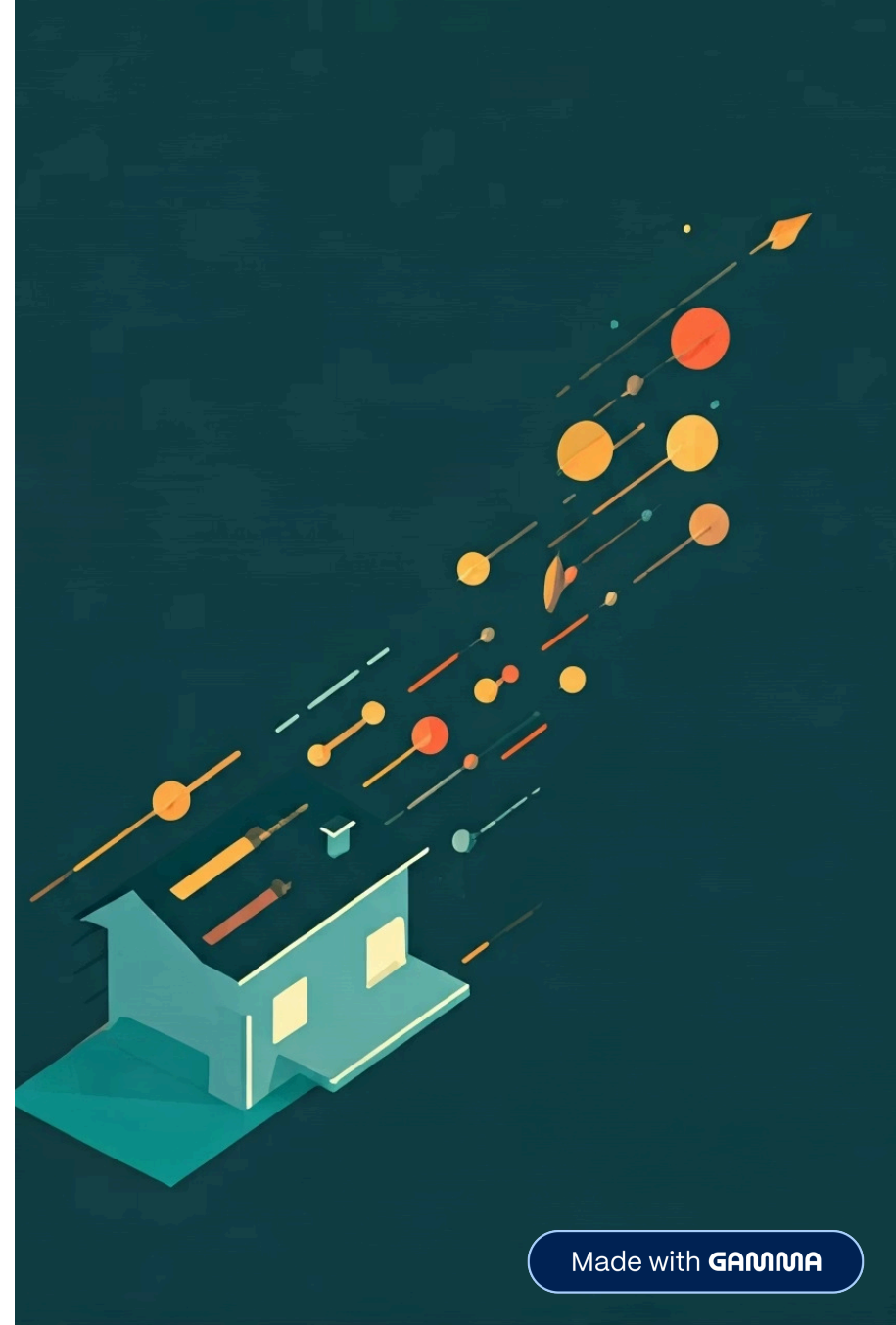Our dataset comprises a mix of numerical and categorical features, with SalePrice as the target variable.

1460

Total Records

Comprehensive data points.

81

Total Features

Diverse characteristics for analysis.

Data Cleaning & Preparation

A crucial step to ensure model accuracy involved handling missing values, selecting key features, and splitting the data.

Handle Missing Values

Select Features

Remove Unnecessary Columns

Train-Test Split (80:20)

Key Feature Selection

We identified the most impactful numerical features for predicting house prices.

OverallQual

GrLivArea

GarageCars

TotalBsmtSF

YearBuilt

Model Training: Linear Regression

We utilized Scikit-learn to implement Linear Regression, a supervised learning algorithm for continuous prediction.

- Algorithm: Linear Regression
- Library: Scikit-learn
- Supervised Learning
- Continuous Prediction

Model Evaluation & Visualization

Our model achieved an R2 Score of 0.81, indicating a good fit between predicted and actual values, as visualized in the scatter plot.

- R2 Score: 0.81

- Mean Squared Error: 1.4×10^{10}

- Good fit between predicted & actual values

- Scatter Plot: Actual vs Predicted shows a positive linear relationship

Key Insights & Conclusion

We successfully built a regression model with 81% accuracy, identifying crucial factors influencing house prices, valuable for real estate valuation.

1	2
Overall Quality Highest impact on price.	**Year Built** Newer houses are priced higher.

3	4
Living Area Larger areas increase price.	**Garage Capacity** Affects property value.