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**House Price Prediction**

**Introduction**

Predicting house prices is a crucial task in the real estate market. This project uses machine learning techniques to analyze housing data and build a predictive model that estimates house prices based on various factors. The dataset used for this project comes from Kaggle’s house price prediction competition.

**Data Preparation & Cleaning**

1. Data Loading

The dataset was imported using the pandas library.

Initial data exploration was done to understand its structure.

2. Handling Missing Data

Some columns had missing values, such as LotFrontage. These were filled with the mean value to ensure consistency.

Unnecessary columns, including Alley, PoolQC, and MiscFeature, were removed to enhance model performance.

3. Data Exploration

Checked for missing values and outliers.

Analyzed summary statistics and visualized distributions.

**Model Development**

1. Selected Machine Learning Models

Bagging Regressor: An ensemble technique that improves prediction accuracy by reducing overfitting.

2. Model Training & Evaluation

The dataset was split into training and testing sets.

Models were trained on the training data and tested on unseen data.

Performance was evaluated using accuracy metrics and error analysis.

Conclusion

This project successfully demonstrated how machine learning can be applied to house price prediction. By performing proper data cleaning, selecting the right features, and using ensemble techniques, we can achieve better predictive performance. Future enhancements can include hyperparameter tuning and experimenting with more sophisticated models for even greater accuracy.

