🏠House Price Prediction Using Linear Regression

Project Title

House Price Prediction Using Machine Learning (Linear Regression)

Objective

The main objective of this project is to predict house prices based on various housing features using a Linear Regression machine learning model. This helps buyers, sellers, and real estate businesses make informed pricing decisions.

🏫Dataset Used

Dataset Name: india_housing_prices.csv.csv (Kaggle)

The dataset contains housing-related features such as: - Area - Bedrooms - Bathrooms - Location-related features - Price (Target Variable)

Technologies Used

- Python
- Pandas
- NumPy
- Matplotlib
- Seaborn
- Scikit-learn
- Joblib

Problem Statement

Real estate pricing depends on multiple factors such as house size, location, and number of rooms. Manual estimation often leads to inaccurate pricing. This project uses machine learning to automate and improve house price predictions.

Methodology

1. Data Loading
2. Data Cleaning
3. Feature Selection
4. Data Splitting
5. Model Training
6. Performance Evaluation
7. Visualization
8. Prediction System Development

Model Used

Linear Regression

Reason for choosing Linear Regression: - Simple and interpretable - Works well with continuous data - Efficient for baseline prediction

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Performance Metrics Used

- Mean Absolute Error (MAE)
- Mean Squared Error (MSE)
- Root Mean Squared Error (RMSE)
- R^2 Score

These metrics help evaluate prediction accuracy.

Results

The model successfully learned price patterns from the dataset and produced reliable predictions. The Actual vs Predicted graph shows strong correlation and residual plot confirms acceptable error distribution.

Conclusion

The project demonstrates how machine learning can be applied in real estate price prediction. The trained model can be extended further using advanced algorithms such as Random Forest or XGBoost for better accuracy.