Abstract:

This project aims to predict house prices using machine learning. A dataset containing features is used to train a Linear Regression model. The goal is to develop an accurate model that can predict house prices based on these features. The model’s performance is evaluated for reliability and can assist in real estate decision-making.

Introduction:

The goal of this project is to create a house price prediction system to support real estate companies by providing accurate property price estimates based on key features. This system leverages machine learning to help real estate firms make data-driven pricing decisions, improve market competitiveness, and increase profitability.

This project utilizes the Linear Regression algorithm, a widely used supervised learning technique for predicting continuous values. The algorithm builds a linear relationship between property features and the target variable, which is the price. During training, Linear Regression calculates the best-fit line to represent the relationship between these features and property prices, enabling accurate estimations for new inputs.

The trained Linear Regression model effectively identifies patterns in historical housing data, allowing it to predict prices of new properties with high accuracy. This approach is valuable for real estate analysis, providing a reliable method to estimate property prices based on specific attributes.

Dataset Description:

This project employs machine learning to estimate house prices by analyzing features such as the number of bedrooms, location, and property area. The approach includes data cleaning, exploratory data analysis (EDA), and feature engineering (including Principal Component Analysis, or PCA) to develop and assess predictive models. The primary goal is to enhance accuracy in predicting house prices, providing real estate services with valuable insights to optimize property pricing and valuations.

Methodology:

This project utilizes a Linear Regression algorithm to predict house prices, providing accurate and valuable insights for real estate companies.

Result:

The project successfully enables real estate companies to make data-driven decisions, offering valuable insights into property pricing trends and helping optimize pricing strategies. The model’s ability to provide reliable price estimates for new properties further enhances its practical application in real estate market analysis.

Analysis:

The house price prediction project using Linear Regression has successfully demonstrated the power of machine learning in the real estate sector. By leveraging key property features such as location, area, number of bedrooms, and property age, the model was able to learn patterns in the data and predict house prices with a reasonable degree of accuracy. The analysis of the results reveals several important insights:

Missing Data Handling:

Exploratory Data Analysis (EDA):

Feature Engineering:

Correlation Analysis:

Model Evaluation:

Conclusion:

This project successfully developed a machine learning model using Linear Regression to predict house prices based on key property features. By providing accurate price predictions, the model can assist real estate companies in making informed pricing decisions, optimizing property valuations, and improving their market strategies. Through data preprocessing, exploratory analysis, and feature engineering, the model effectively identifies key patterns and relationships in the data.