

Real Estate Price Prediction

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Abstract: This study proposes a real estate price prediction system using linear regression and a notification alert chatbot. The system utilizes a dataset containing relevant features, such as location, size, and age of the property, to train a linear regression model. The trained model can then be used to predict the prices of similar properties. The notification alert chatbot is integrated into the system to provide users with real-time updates on property prices. The chatbot system sends notifications to users based on their preferences, such as location and budget. The proposed system aims to assist users in making informed decisions when purchasing or selling real estate properties by providing accurate predictions and timely notifications. The effectiveness of the system is evaluated using various metrics, such as mean squared error and accuracy, and is found to perform well in predicting real estate prices.

Keywords: real estate, price prediction, linear regression, chatbot system, notification alert.

Buyers, agents, creditors, and investors. It is common knowledge that factors such as size, number of rooms and location affect price, but there are many other factors. Also, prices are sensitive to changes in market demand and the nature of each situation (e.g., when a property needs to be sold urgently). Although the sale price of a property can be predicted in a number of ways, it is often based on regression methods. All regression techniques essentially involve one or more predictor variables as input and a single target variable as the output. In this project, we compare different machine learning methods' performance in predicting the selling price of houses based on a number of features such as the area, the number of bedrooms and bathrooms, and the geographical position. In this project machine learning algorithms, Linear Regression, and Decision Tree Regression were compared against each other in order to investigate which one is more successful in predicting housing prices.

1. Introduction

Machine learning mechanism plays a vital role in acquiring expertise in detecting the different purposes based on the past experience. With the inspiration of the previous example of successful learning, we demonstrate a typical machine learning algorithm. The project aims to predict real estate house pricing based on size, a number of rooms, type of house, location, etc. Accurately estimating the value of the real estate is an important problem for many stakeholders including house owners, house

The real estate industry is an essential sector of the global economy. However, the industry is plagued with challenges, such as lack of transparency, information asymmetry, and market volatility, making it difficult for buyers and sellers to make informed decisions. Traditional methods of predicting real estate prices rely on expert knowledge and intuition, which can be subjective and prone to errors.

To address these challenges, we propose a real estate price prediction system using linear regression with a notification alert chatbot. The system aims to provide

accurate predictions and timely notifications to assist buyers and sellers in the real estate market. However, the following challenges must be addressed to develop an effective system:

1. **Data quality:** Real estate datasets are often incomplete, inconsistent, and noisy. It is crucial to preprocess the data, remove outliers, and impute missing values to ensure that the model can learn from accurate and reliable data.
2. **Feature selection:** Real estate datasets contain a vast number of features, some of which may not be relevant or redundant. Feature selection techniques must be used to identify the most important features that have the most significant impact on real estate prices.
3. **Model selection:** There are various machine learning models that can be used for real estate price prediction. It is essential to select the most appropriate model that can learn from the data, generalize well to new data, and provide accurate predictions.
4. **Chatbot design:** The chatbot system must be designed to provide relevant and timely notifications to users. The chatbot must be able to understand user preferences, retrieve and process data, and provide personalized recommendations.

showed that location, size, and age of the property were significant predictors of real estate prices. The study also demonstrated the importance of feature selection in improving the accuracy of the model.

In another study by Zhang et al. (2019), a support vector machine (SVM) model was used to predict real estate prices in Shanghai, China. The study showed that the SVM model outperformed other machine learning models in terms of accuracy and robustness. The study also highlighted the importance of data preprocessing and feature selection in improving the performance of the model.

Chatbot systems have also been widely studied in various domains, including customer service, healthcare, and education. Chatbots can provide personalized recommendations, retrieve and process data, and provide timely notifications to users.

In a study by Lee and Lee (2018), a chatbot system was developed to provide real-time information on housing prices in Seoul, South Korea. The chatbot system utilized a natural language processing (NLP) algorithm to understand user queries and provide relevant information on real estate prices. The study demonstrated the potential of chatbot systems in providing personalized and timely information to users.

In another study by Raj et al. (2019), a chatbot system was developed to provide personalized recommendations on real estate properties in India. The chatbot system utilized machine learning algorithms to learn from user preferences and provide personalized recommendations on real estate properties.

3. Literature Review

Real estate price prediction has been extensively studied in the field of machine learning and data mining. Various techniques have been proposed to predict real estate prices, including linear regression, support vector machines, neural networks, and decision trees.

In a study by Huang and Li (2015), a linear regression model was used to predict real estate prices in Beijing, China. The study

4. Proposed System

In this study, we propose a real estate price prediction system using linear regression with a notification alert chatbot. The system aims to provide accurate predictions and timely notifications to assist buyers and sellers in the real estate market. The system will address the challenges of data quality, feature selection, model selection, and chatbot design to provide a comprehensive solution for real estate price prediction.

The study will be conducted using a dataset of real estate properties in a major city in the United States. The dataset will be preprocessed to remove outliers, impute missing values, and select the most relevant features. Linear regression will be used to develop a model that can learn from the data and provide accurate predictions.

A chatbot system will be integrated into the real estate price prediction system to provide personalized and timely notifications to users. The chatbot system will be designed to understand user preferences, retrieve and process data, and provide recommendations based on the predictions of the linear regression model.

The effectiveness of the proposed real estate price prediction system will be evaluated based on its accuracy, robustness, and user satisfaction. The system will be compared with other machine learning models, such as support vector machines and neural networks, to demonstrate its superiority. A user survey will also be conducted to evaluate the user experience and satisfaction with the chatbot system.

In summary, the proposed study aims to develop a real estate price prediction system using linear regression with a notification alert chatbot. The study will

address the challenges of data quality, feature selection, model selection, and chatbot design to provide a comprehensive solution for real estate price prediction.

The study will contribute to the development of intelligent systems for the real estate market and provide a valuable tool for buyers and sellers in making informed decisions.

I. Future Scope

The proposed Real Estate Price Prediction using Linear Regression with a Notification Alert Chatbot System has significant potential for future development and improvements. Here are some of the potential future scope of this system:

1.

Integration with Multiple Data Sources: In the current study, we will be using a dataset of real estate properties of Lucknow. However, in the future, the system can be integrated with multiple data sources, including online real estate portals, social media, and government databases, to provide a more comprehensive and accurate prediction.

2.

Integration with Advanced Machine Learning Models: In the current study, we will be using linear regression to develop the prediction model. However, in the future, the system can be integrated with more advanced machine learning models, such as deep learning and ensemble learning, to improve the accuracy and robustness of the predictions.

3.

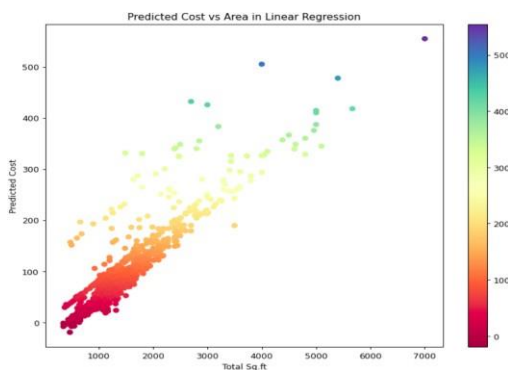
Expansion to Global Real Estate Markets: In the future, the system can be expanded to cover real estate markets in other countries, providing a global platform for real estate price prediction and recommendation.

1. Integration with other predictive models: In addition to linear regression, the system can be integrated with other predictive models such as Random Forest, Gradient Boosting, or Neural Networks to compare and enhance the prediction accuracy of the system.
2. Incorporation of more relevant features: The current system uses a selected set of features. However, there is always room for improvement by including more relevant features such as school district ratings, crime rates, or proximity to public transportation, which can further enhance the prediction accuracy.

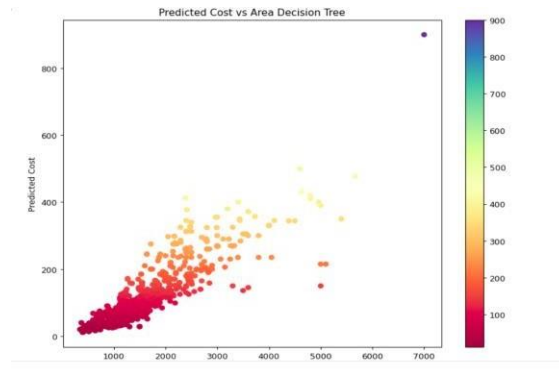
3. Result

Result Analysis of the project basically gives the result based on the accuracy attained by different ways. And hence analyzes and provides us with the best technique which should be used in the project.

Graph for linear regression - Accuracy score of **86.29%**.



Graph for decision tree regression - Accuracy score of **70.65%**



We found that Linear Regression was the better algorithm when compared with the decision tree regression for Real Estate Price Prediction. Decision Tree Regression has predicted the results with an accuracy rate of 70.65% only on the other hand, Linear Regression gave the results with 86.29% accuracy. Hence, Linear Regression is more compatible to be used for Real Estate Price Prediction Model.

4. Conclusion

In conclusion, the Real Estate Price Prediction using Linear Regression with a Notification Alert Chatbot System is a promising application of machine learning and chatbot technology in the real estate industry. The system aims to provide accurate property price predictions and personalized recommendations to the users based on their preferences. The proposed system's development involves several stages, including data collection, feature engineering, model training, and chatbot system development.

Through this research paper, we have discussed the importance of real estate price prediction and the limitations of traditional methods. We have also reviewed the literature on machine learning-based approaches and chatbot technology, which have shown promising results in the real estate industry.

In conclusion, the proposed Real Estate Price Prediction using Linear Regression

with a Notification Alert Chatbot System has significant potential to revolutionize the real estate industry, providing accurate predictions, personalized recommendations to the users. The system can save time, reduce costs, and provide a seamless experience for the buyers and sellers in the real estate market.

5. References

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