Real Estate House Price Prediction Using Machine

Learning

Mr. Sambodhi Siddhant Rahul \*, Mr. Patil Shubham Kumgonda\*\*,

Mr. Kamble Prasad Shamu\*\*\*, Mr. Goenka Siddharth Mukul\*\*\*\*

Ms. F. A. Patel\*\*\*\*\*

\*BE Student(Computer science and engineering), Sharad institute of technology college of engineering,

\*\* BE Student(Computer science and engineering), Sharad institute of technology college of engineering,

\*\*\* BE Student(Computer science and engineering), Sharad institute of technology college of engineering,

\*\*\*\* BE Student(Computer science and engineering), Sharad institute of technology college of engineering,

\*\*\*\*\*Ass. Professor, Sharad institute of technology college of engineering

***Abstract-*** *An application that helps the user to get information on real estate property, with elegant accuracy and accurate output. It predicts the property prices via our datasets and prediction algorithmic. We are using datasets of the landmark was prediction going to process, this landmark can be updated as per as the area we want to predict, for prediction we are using linear regression algorithm, we are using Flask as our framework. We are getting precise results. we found, training data for maximum we were getting absolute results By using the technologies like python, we can predict working in this field we can train and get more amusing data, In real estate properties prices are impracticable as compare to other investments. We can say we can predict the property*

* 1. **INTRODUCTION**

Buying a property is a big decision in a person's life and needs a practical amount of thought and research. One would like to buy a house at the best rate and no risk and would like it to be the perfect investment for the future. There are online websites, real estate agents, and realtors try to guide home buyers by letting them compare different houses available for purchase. As our project is completely based on the prediction of raw data of real estate that we collecting from previous data.

There are a lot of people who want to buy properties or at least want to think of buying them, it is not ideal any buyer would buy any property without checking others or comparing to others, As before buying any property private investigation is preferred, this is where our projects comes in, We are trying to predict the house prices using Machine learning algorithms Linear Regression. Our project aims to provide the best areas to invest in for a real estate developer, individual buyers looking for a place to develop a new apartment building or to purchase. Another goal is to predict the house prices in a county in next few years

* 1. **LITERATURE REVIEW**

Machine learning is a form of artificial intelligence that prepares skilfully to train available computers without being programmed correctly. Machine learning interest in the expansion of computer programs that are capable enough to be modified when new data is insecure. Machine learning algorithms are broadly classified into three divisions, namely; supervised learning, unusable learning and reinforcement learning. Supervised learning is an education in which we teach or train a machine using data that is properly labeled which means that some data is already tagged with the correct answer. After that, the machine is provided with a new set of examples so that the supervised learning algorithm analyzes the training data and produces the correct results from the labeled data. Unhelpful learning is the training of a machine using information that is neither classified nor labeled and the algorithm is allowed to act on that information without guidance. Here the function of the machine is to group unresolved information according to similarity, pattern and difference without any prior training of data. Unlike supervised teaching, no teacher is provided i.e. no training will be given to the machine. In this way, the machine is limited by us to track down the secret construction in unlabeled information.

Reinforcement learning is an area of the machine learning. It is about taking appropriate action for the maximum reward in a particular situation. It is employed by various software and machines to find the best possible behavior or path in a specific situation. Reinforcement learning differs from supervised learning in that the training data in supervised learning is the answer key, so the model is trained with the correct answer whereas reinforcement learning has no answer, but the reinforcement agent decides it does what to do to perform the given task. Without a preparation dataset, it will undoubtedly gain from its experience.

Machine learning has many applications, one of which is the prediction of application real estate. The real estate market is the most competitive in terms of pricing and varies greatly depending on a lot of factors, forecasting the price of the property to support budget allocation, making decisions for both buyers and investors in finding a property. Important module. Therefore, locating strategies and determining appropriate policies have become one of the major areas of applying machine learning concepts to optimize and predict prices with high accuracy. Studies on land price trend have been considered important to support decisions in urban planning. The land framework is a shaky stochastic interaction. Investors' decisions are based on market trends to achieve maximum returns. Developers are interested in knowing the future trends to make their decisions. In order to accurately estimate property prices and future trends, analysis, modeling, and forecasting require a large amount of data affecting the price of land.

Eric Sloan (2014) developed relationships between different household characteristics and the asking price of a residential property was analyzed using both simple linear regression and a multiple linear regression using the method of simple least squares. Home square footage was used as explanatory variable in simple linear regression, and multiple linear regression included land parcel size, number of bedrooms, year of construction, and other explanatory variables. The results of multi-linear regression proved to be biases due to omissions of important factors in simple linear regression. Home square footage was found to be the most important factor in determining the price of a residential property, while garage capacity proved to be the weakest factor.

(2015) had found that if the significance level was accepted as 0.05 then all The 5 variables have significant effects on the dependent variable value in previous regression models (floor, heating system, earthquake area, rent value, and land value). Land value and rental value have the most impact on the price of housing. Existing floors, heating systems and earthquake zones are following them. Although it has been found that other variables are not significant in this study, it may change according to sample size. If the sample size increases, the regression model is recommended once again for further study. Indicates the application of multiple regression analysis to a home data set or model's variance in house price that demonstrates good examples of strategic application of mathematical tools to aid analysis, hence in decision making in property investment.

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Ezgi Candas (2015) had found that all 5 variables in the final regression model (floor, heating system, earthquake area, rent value, and land value) were significant on the dependent variable if the significance level was accepted as 0.05. They make an impact. Value. Land value and rental value have the most impact on the price of housing. Existing floors, heating systems and earthquake zones are following them. Although it has been found that other variables are not significant in this study, it may change according to sample size. If the sample size increases, the regression model is recommended once again for further study. Indicates the application of multiple regression analysis to a home data set or model variation in house price that demonstrates good examples of strategic application of mathematical tools to aid analysis therefore aiding decision-making in property investment.

Monk, Tang and Whitehead (2010) investigated the social and economic impact of housing in the Scottish country. Investment in housing finance directly and indirectly affects the economy. Housing finance investment affects employment, GDP, productivity and many other important factors. The study showed that housing is an important indicator to increase the wealth of nations. It was concluded that the Scottish Housing Policy aims to improve the quality standard of housing as well as increase investment in the older home sector.

Bhalla, Arora and Gill (2009) examined the performance of the housing sector as well as the problems and challenges faced by the sector. The study showed that due to continuous changes in the global financial environment, banks and financial institutions have brought sea changes in their strategies related to this sector to show growth by this sector gradually and gradually. It was discovered that due to the process of globalization, India is witnessing competition among banks, reducing the cost of finance for housing users. Bhalla (2008) discussed the current scenario, development, performance, problems, challenges and prospects of housing finance as an industry segment in a paper. According to this study, housing finance grows at a rate of 36 percent. With the change in policies of banks and financial institution, there has been a change from buyer market to seller market.

By doing the study of these survey we have come up with our idea to solve the problem of price prediction in an easy manner .

* 1. **OBJECTIVES**
* to predict the price of given home according to the market price
* easily known the future price home which is suitable for our budget
* Minimizing the difference between actual price and predicted price.
* easily accessible each and every information on given location within just few minutes
  1. **METHODOLOGY**

Idea: ­ our basic idea is to create an application which will help user to find their desired property. To achieve this goal we are using machine learning and data science. This are the steps follow:

­ Step1:­ to get the raw data for kaggle. Kaggle is the provides largest datasets and resources for data science and machine learning projects.

Step2:­ from kaggle we downloaded dataset and started doing analysis of that dataset. For analysis we used to different tools like jupyter Notebook and libraries like Numpy, Pandas scikit­learn etc. with the use of tools and libraries we separated useful and unusual data.

Step3:­ Later we separated dataset into training and testing’s datasets. Afterward we used different algorithms like Linear regression, Decision Tree, Lasso (least check the accuracy & from the all algorithms that we checked the highest accuracy is shown absolute shrinkage and selection operator) algorithm. This algorithm we used to by linear regression.

Step4:­ Further on we used linear regression algorithm on the actual data to predict the price of that real estate. For the price prediction of the real estate using Machine learning. Our team is currently using the website that we have created. For Front­end we used technologies like bootstrap, CSS & HTML. For Back­end we used Flask technology

* 1. **CONCLUSION**

There are online websites, real estate agents, and realtors try to guide home buyers by letting them compare different houses available for purchase. As our project is completely based on the prediction of raw data of real estate that we collecting from previous data. Our project aims to provide the best areas to invest in for a real estate developer, individual buyers looking for a place to develop a new apartment building or to purchase. Another goal is to predict the house prices in a county in the next few years. Machine learning is a form of artificial intelligence that prepares skillfully to train available computers without being programmed correctly. Machine learning interest in the expansion of computer programs that are capable enough to be modified when new data is insecure. Reinforcement learning is an area of ??machine learning. It is about taking appropriate action for the maximum reward in a particular situation. Machine learning has many applications, one of which is the prediction of application real estate.The real estate market is the most competitive in terms of pricing and varies greatly depending on a lot of factors, forecasting the price of the property to support budget allocation, making decisions for both buyers and investors in finding a property. Therefore, locating strategies and determining appropriate policies have become one of the major areas of applying machine learning concepts to optimize and predict prices with high accuracy. If the sample size increases, the regression model is recommended once again for further study. (2014) developed relationships between different household characteristics and the asking price of a residential property was analyzed using both simple linear regression and a multiple linear regression using the method of simple least squares. Although it has been found that other variables are not significant in this study, it may change according to sample size. If the sample size increases, the regression model is recommended once again for further study. Monk, Tang and Whitehead (2010) investigated the social and economic impact of housing in the Scottish country. Investment in housing finance directly and indirectly affects the economy. Bhalla, Arora and Gill (2009) examined the performance of the housing sector as well as the problems and challenges faced by the sector. With the change in policies of banks and financial institution, there has been a change from buyer market to seller market.

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