

# House Price Prediction using Machine Learning

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**Abstract**— There is a huge increase in house prices in most of the places due to various factors, one of the factors being that the dealers charge extra commission. However, in this paper we will be using Machine Learning to help in predicting the right prices for the customers as per their needs. This work considers the issue of changing house cost as an arrangement issue and applies machine learning methods to foresee regardless of whether house costs will rise or fall. This work applies different highlight choice methods, for example, fluctuation impact factor, data esteem, guideline part investigation and information change methods, for example, exception and missing worth treatment just as box-cox change procedures. The execution of the machine learning procedures is estimated by the four parameters of exactness, accuracy, particularity and affectability with the help of linear regression.

**Keywords:** House Price Prediction, Factors, Machine Learning, Linear Regression

## I. INTRODUCTION

We need an appropriate forecast on the land and the houses in lodging market we can see an instrument that keeps running all through the properties purchasing and moving purchasing a house will be an actual existence time objective for a large portion of the individual however There are part of individuals committing tremendous errors right now when purchasing the properties the vast majority of the general population are purchasing properties inconspicuous from the general population they don't know by observing the promotions and everywhere throughout the depressions coming around and it being one of the regular oversights is purchasing the properties that are excessively costly yet its not justified, despite any potential benefits. In the lodging market. Precise expectation of house costs has been dependably an interest for the purchasers, venders and for the financiers moreover. Numerous scientists have just attempted to disentangle the secrets of the forecast of the house prices. There are numerous speculations that have been conceived an offsprung as an outcome of the exploration work contributed by the different specialists everywhere throughout the world. A portion of these speculations trust that the geological area and culture of a specific region decide how the home costs will increment or abatement. Numerous strategies have been utilized in the value expectation like hedonic regression, we are attempting to anticipate the foresee the land cost for the future utilizing the machine learning methods. We have utilized the linear regression algorithm to anticipate the house cost.

## II. RELATED WORKS

The goal is to analyze the prescient execution of the Neural Network, Random Forest and Support Vector Machine approaches with conventional Ordinary Least Squares

Regression. The database for our examination comprises of an example of 16,472 value records for new lodging units or private properties inside the zone secured. The aftereffects of the examination demonstrate that Random Forest performed superior to alternate models in displaying lodging costs. All the more for the most part, we infer that machine learning systems can give a valuable arrangement of instruments for getting data on lodging markets[1].The underneath archive introduces the execution of value forecast task for the land markets and lodging. Numerous calculations are utilized here to adequately build the exactness rate, different scientists have done this task and executed the calculations like hedonic regression, artificial neural networks, AdaBoost, J48 tree which is considered as the best models in the value prediction[2].The wonder of the falling or ascending of the house costs has pulled in enthusiasm from the specialist just as numerous other invested individuals. There have been numerous past research works that utilized different relapse systems to address the topic of the progressions house cost. This paper uses Support Vector Machines (SVM), Rain Forest Algorithm, and Artificial Neural Network (ANN)[3].

## III. LINEAR REGRESSION

Linear Regression is a straight way to deal with demonstrating the connection between a scalar reaction (or dependent variable) and at least one informative variable (or autonomous variable). The instance of one informative variable is called straightforward direct relapse. For more than one informative variable, the procedure is called different direct relapse. This term is particular from multi variant direct relapse, where numerous related ward factors are anticipated, as opposed to a solitary scalar variable. Direct relapse has numerous handy employments. Most applications can be categorized as one of the accompanying two general classes:

On the off chance that the objective is expectation, or determining, or blunder reduction, linear relapse can be utilized to fit a prescient model to a watched informational collection of estimations of the reaction and illustrative factors. In the wake of growing such a model, if extra estimations of the illustrative factors are gathered without a going with reaction esteem, the fitted model can be utilized to make a forecast of the reaction.

On the off chance that the objective is to clarify variety in the reaction variable that can be credited to variety in the illustrative factors, straight relapse investigation can be connected to measure the quality of the connection between the reaction and the logical factors, and specifically to decide if some illustrative factors may have no direct association with the reaction by any stretch of the imagination, or to recognize which subsets of informative factors may contain repetitive data about the reaction..

#### IV. MODULES

In azure AI environment the information originating from the train.csv is feeded to the alter meta information were every one of the information is to be categorised and train aside from the id.

##### A. Categorical Meta Data

An alter meta information is chosen and dropped to the AI canvas associated with the past alter meta information and that fields are chosen which should be set up as straight out fields. In our home value forecast show we have chosen forty eight[48] categorical highlights to exactly anticipate the cost of the house.

##### B. Non Categorical Highlights

The information is passed from categorical information to the alter meta data where the non categorical data is chosen from the remaining data set and the fields is set to the highlighted section in this alter meta information segment all the numerical values categories are chosen by the purplish blue segment selector. In this alter meta information segment twenty seven[27] numerical highlights are chosen from the data set.

##### C. Date and Time Feature

The numerical alter meta information is passed to the new alter meta information where the date and time based qualities are catagoriced like the house assembled year and the carport manufactured year the year the house sold and a lot more date and time highlighted sections are chosen and that information go to alter meta information to choose the marked segment deals value that will be anticipated by sky blue AI model. the information is then splinted in seventy and 30%. That 30% of information is utilized to contrast the information and the prepared information in score show and the last yield of offers cost is predicted. A traing model is associated with the spilt information and the calculation used to prepare the model in which 70% of information is passed yield of which is passed to the score demonstrate.

#### V. IMPLEMENTATION

##### A. Feature Definition

The present work utilizes data from the web resource Kaggle.com and the data set has been used from a test encouraged by that web application.

##### B. Machine Learning System

###### 1) Machine Learning

It is a characterization of figuring that empowers programming applications to end up being progressively exact in anticipating results without being unequivocally redone. The key reason of AI is to manufacture counts that can get input data and use true examination to foresee a yield while reviving yields as new data ends up open.

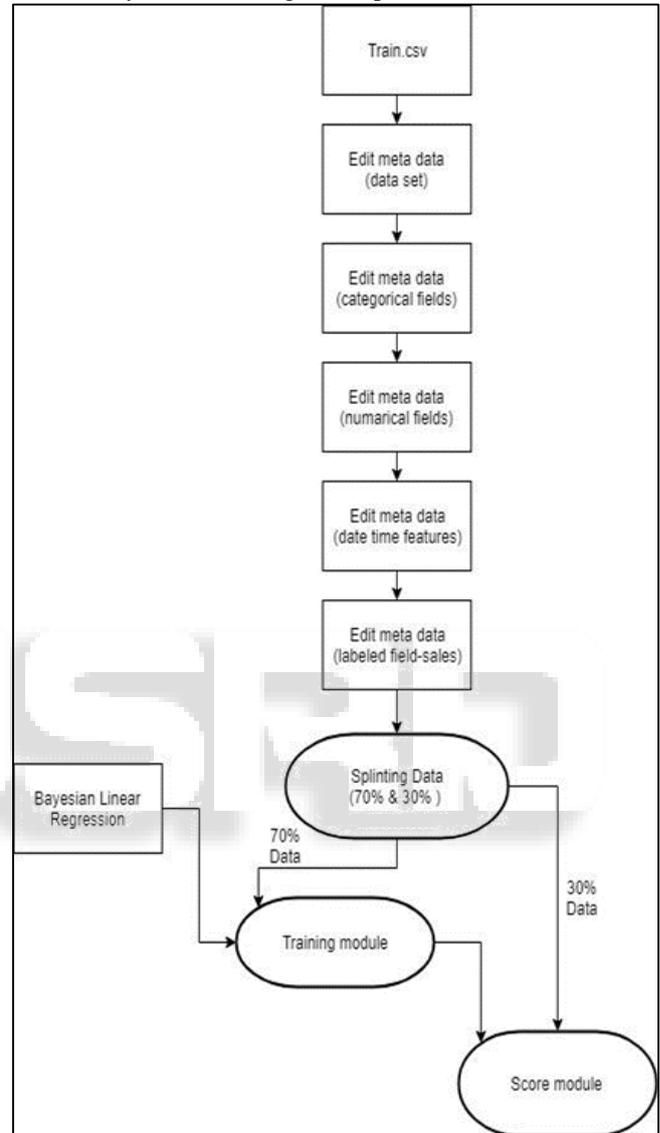
###### 2) Bayesian Linear Regression

Bayesian straight relapse empowers a truly basic part to persevere through lacking data, or on the other hand poor scattered data. It empowers you to put a before on the coefficients and on the racket so that without data, the priors can overwhelm. Even more fundamentally, you can solicit

Bayesian direct relapse which parts from its fit to the data is it sure about, and which parts are extraordinarily questionable

###### 3) Support Vector Machines

Bolster Vector Machines are immediate discriminant limits (classifier) with the most extraordinary edge is the best. The edge is portrayed as the width that the utmost could be extended by, before hitting a data point.



#### VI. CONCLUSION

Through this paper we have represented one of the best ways to predict house prices by using Machine Learning techniques. Though there are some demerits to this method, one can implement better technologies and algorithms in order to find and predict the house prices in a more better and efficient manner and help to get rid of brokers and other problems faced by the public for buying houses.

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