# HOUSE VALUE PREDICTION BANGLORE, INDIA

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**ABSTRACT***:* With the enlargement of data analytics and machine learning techniques, predicting house values has become an essential task in the real estate market. Based on various features the price of house is declared , some of the important factors which are taken under consideration are location, size, number of bedrooms and bathrooms, amenities and so on. Now a days real estate property is not a person's primary desire, but it also reflects a person's wealth and prestige in today's society. The primary phase entails conducting exploratory data analysis to grasp the distribution and correlation among the features.

In this house value prediction process we are taken three kinds of machine learning models such as Simple Linear Regression model (SLR model), Random Forest Model (RF model), Decision Tree model to predict the house price. The performance of each model is evaluated using mean squared error method , finally we get that Simple Linear Regression model gives the accurate results at the end of the process. So this model is used in the final draft.

The crucial step for any Real-Time ML based project, is to collect the datasets which contains all the required features. After that we need to prepare the dataset for modeling through Data preprocessing steps including data cleaning, normalization, and feature engineering and so on. In our project we employed HTMLand CSS forfront-end development, while JavaScript is used for back-end functionality. Additionally, Flask serves as Server-Side framework which facilitates the project operation.

**Keywords:**Machine Learning, Data analytics, Real estate market, Simple linear regression (SLR), Random forest model (RFM).

## 1.INTRODUCTION

In recent years, the integration of machine learning into the real estate market make many changes which are very much useful. Because of having huge amount of dataset make prediction more easier. In ML there have different kinds of models to predict the value of house based on various features. Among all those models we need pick one model which give accurate results at the end for the given information. This selection of model is determined by assessing the accuracy of the results which are given by models through methods such as Mean square method ,R-squared method,.. so on.

As a first design, I intended to make it as educational as possible by diving each stage of the machine literacy process and trying to comprehend it well. I picked Bangalore Real Estate Prediction as a system, which is known as a" toy issue," relating problems that aren't of immediate scientific applicability but are helpful to demonstrate and exercise. The ideal was to read the price of a specific apartment grounded on request pricing while counting for colorful" features" that would be established in the ensuing sections. Gathering comprehensive datasets containing information on domestic parcels in different points of Bangalore. This data should include features similar as square

footage, number of bedrooms and bathrooms, position equals, amenities, propinquity to essential services, and literal deals prices

The below diagram illustrates various factors that influence the prediction of house prices in a particular area.
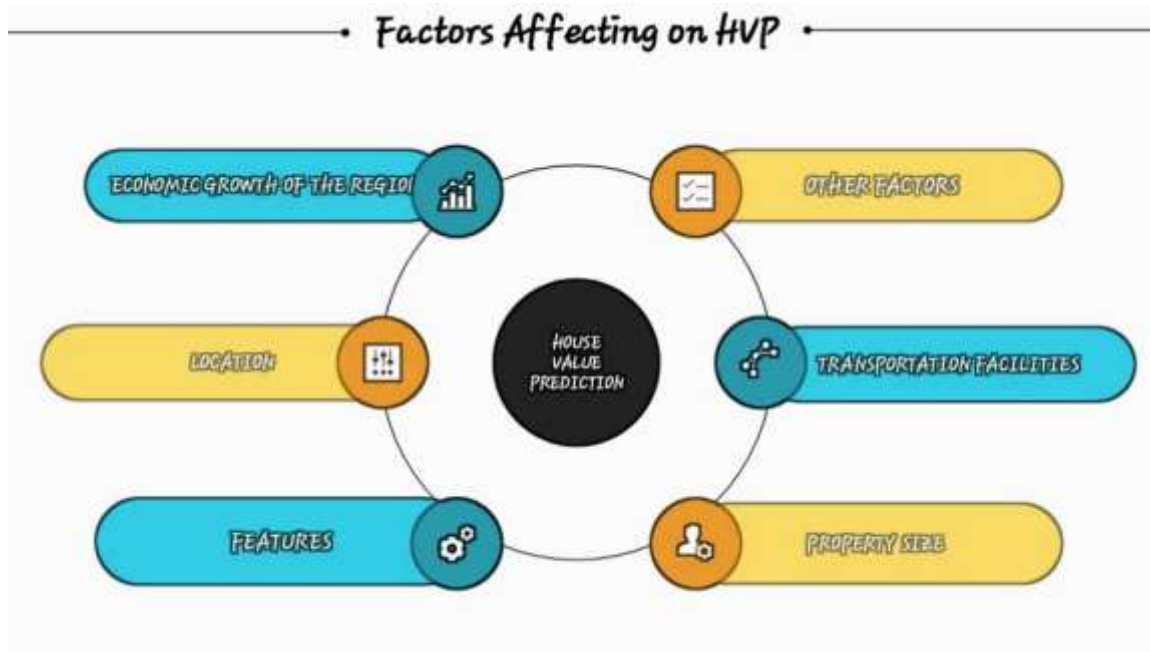


Machine Literacy( ML) has surfaced as a important tool for prognosticating house prices with remarkable delicacy. This operation of ML has converted the real estate geography, furnishing precious perceptivity into the complex dynamics that determine property values in different areas.

## 2. REVIEW OF LITERATURE

A crucial duty in real estate and finance, house value prediction affects investors, purchasers, merchandisers, and homeowners alike. The application of machine learning (ML) techniques to this field has attracted a lot of attention lately because of its implied ability to increase the accuracy of prophecies and automate the appraisal process. The purpose of this study of the literature is to investigate the debate around the house value prophecy by means of machine learning models, critical techniques, datasets, performance standards, and acquired perceptivity.

In today's society, real estate property not only represents a person's wealth and status, but it also serves as their main desire. Given that property values do not decline in an unpredictable manner, real estate investing often seems to be profitable. Many home investors, bankers, legislators, and others will be impacted by changes in the value of real estate. Investing in real estate seems like a really alluring alternative.Predicting the significant estate price is therefore a crucially beneficial signal. With a total of 24.67 crores of dwellings, the Asian nation is ranked second in the world for the number of residences. However, past recessions have shown that real estate prices are not correlated with the state's profitability. This is because substantial estate property charges are borne

independently of property values. In any case, there are no precise, standardized methods for determining the important estate property prices.

Initially, we examined many articles and discussions regarding machine literacy in casing pricing vaticination. House Value Vaticination is the name of the design, which is based on a machine learning model. The publication's description is as accurate as possible with very little mistake.The paper's previously mentioned title is Hedonic models derived from Belfast price data suggest that residential valuation and submarkets are identified over a broader spatial scale by this model, which also has implications for the evaluation process concerning the choice of comparable evidence and the caliber of variables that the values may need. The study's focus is on comprehending recent changes in homeownership and home pricing. They employed a social epidemic or feedback mechanism in this piece to promote the idea that real estate is a necessary market investment.

### 3.PROBLEM STATEMENT

Create an ML model to predict the price of houses in Bengaluru. The real estate market in Bangalore, India, is dynamic and diverse, with numerous factors influencing property values. As prospective buyers and sellers seek accurate estimates of house prices, there is a growing demand for reliable predictive models leveraging machine learning (ML) techniques. The objective of this project is to develop a robust ML model capable of accurately predicting house prices in Bangalore. The model will utilize a comprehensive dataset containing various features such as location, size, amenities, and other relevant factors that influence property values in the region.

### 4 . TECHNOLOGIES USED

1) HTML &CSS : Developers are able to construct aesthetically pleasing and well-structured web pages and applications by combining HTML for structure and content with CSS for styling and presentation. To properly design and construct websites, it's imperative to have a working knowledge of both technologies. The common markup language used to create web pages is HTML. It makes use of a system of tags and attributes to give the content and structure of a webpage. A style sheet language called CSS is used to specify how an HTML document is presented. It gives developers authority over a website's design, including its fonts, colors, and layout.

2) Flask : Because of its ease of use, versatility, and large ecosystem of extensions, Flask is a well-liked option for Python web application development. With Flask, you can easily create small prototypes or large-scale production applications with the flexibility and resources you need to accomplish the job well. Flask's compact and understandable syntax frees developers to concentrate on creating dependable and expandable web apps.

3) JavaScript : Web browser client-side scripting is the primary use of JavaScript. It enables interactive user experiences by enabling developers to dynamically alter a webpage's HTML and CSS. JavaScript uses an event-driven programming model, in which certain behaviors or functions are triggered by events or actions. Keystrokes, mouse movements, clicks, form submissions, etc. are examples of common events.

4) Machine Learning : Machine learning (ML) models are used in house value prediction projects to estimate the worth of residential properties based on a variety of features, including location, size, number of bedrooms, amenities, and past sales data.A house value prediction project's need for a particular level of predictive accuracy, the quantity and quality of the dataset, the intricacy of the interactions between characteristics and the target variable, and computational resources all play a role in choosing the best machine learning model. Performing trials with various models and evaluating their efficacy is frequently advantageous prior to implementing a resolution in a production setting.

## 5. WORKING PROCESS AND METHODOLOGY

Using machine learning (ML) to create a house value prediction model entails a number of phases, including data collection and preprocessing, model training, evaluation, and  deployment.

Typical workflow of house prediction project is shown in the below diagram.
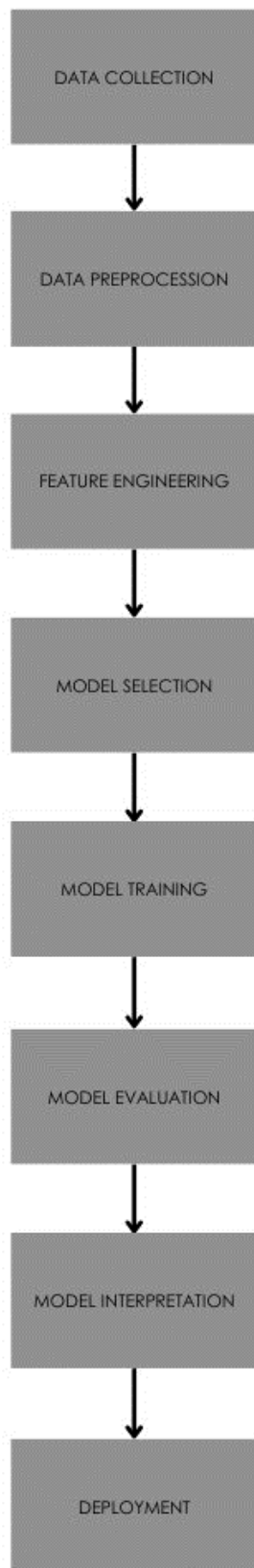
## 6. EXISTING SYSTEM

The goal of machine learning is to create self-learning algorithms that use historical data to predict future action. Predicting home prices is based on comparable phenomena. The different ideas and research that have been done in this specific area are presented in this section. Many researchers have worked on housing model prediction; Zhao et al, applied deep learning in conjunction with extreme Gradient Boosting (XG Boost) for real estate price predictions, by analyzing historical property sale records. They stated that the process of developing an opinion of value is an important tool for evaluating property values when buying, selling, insuring, lending, or taxing on residency property. The Online Real Estate website is where the dataset was taken from. 20% was used for testing and the remaining 80% was used for training. Every record in the collection includes the land size,                        bedrooms,                        bathrooms,                        and                        location.

## 7.PROPOSEDSYSTEM

Here are some possible upgrades and additions for a suggested house value forecast system, based on the mentioned current method:
Consider experimenting with different machine learning techniques and algorithms to see if they may enhance prediction performance, eventhough the current system combines XG Boost with deep learning. As an illustration:
1) Ensemble methods like Random Forests or AdaBoost
2) Support Vector Machines (SVM)
3) Regression models like Ridge Regression or Lasso Regression
Enhance the system's user interface to make it more intuitive and user-friendly. To assist users in understanding the forecasts and helping them make wise decisions, include interactive elements, explanations, and visualizations. By putting these improvements into practice, the suggested system may be able to estimate home prices with greater accuracy, resilience, and usability, giving users in the real estate market greater value.

Establish a routine for maintenance and updates to guarantee the model stays current and correct. This entails keeping an eye on the model's performance, frequently retraining it with fresh data, and incorporating useror domain expert feedback.

## 8.CONCLUSION

In conclusion, that for a number of real estate industry stakeholders, the machine learning (ML)-based house value prediction project is highly valuable. The project's goal is to produce precise property price estimates by utilizing historical property data and cutting-edge machine learning algorithms. This will help buyers, sellers, lenders, insurers, and tax assessors make informed decisions.A methodical methodology that includes data collection, preprocessing, model training, evaluation, deployment, and maintenance is necessary for the project to be implemented successfully. In light of shifting market conditions and trends, it is imperative that the models be continuously monitored and updated to guarantee their continued relevance and efficency.

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