International Journal of Trend in Scientific Research and Development (IJTSRD)
Special Issue on Advancements and Emerging Trends in Computer Applications - Innovations, Challenges, and Future Prospects
Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

Housez

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ABSTRACT

We propose to implement a house price prediction model of Bangalore, India. It's a Machine Learning model which integrates Data Science and Web Development. We have deployed the ml model instance on Flask &hosted on Render. Housing prices fluctuate on a daily basis and are sometimes exaggerated rather than based on worth. The major focus of this project is on predicting home prices using genuine factors. Here, we intend to base an evaluation on every basic criterion that is taken into account when establishing the pricing. The client side is made using React.js & connected to ml-model using axios &hence a full-stack application is created.

KEYWORDS: *Machine Learning, Flask, React JS, Render, Netlify*

I. INTRODUCTION

Everyone dreams to buy his/her own apartment. He may not be familiar with the price in that locality. Before buying any apartment, a buyer should have an idea about price in that locality else brokers, owners could easily con them with much higher price..

Key Skills Demonstrated:

- Buying an apartment is a major life goal for many individuals and families.
- **Many first-time buyers lack awareness** of real estate prices in specific localities.
- **Market research is essential** before making any property investment.
- **Local price trends vary widely** based on factors like location, amenities, and connectivity.
- **Lack of knowledge can lead to overpricing**, especially when dealing with brokers or owners.
- **Brokers may take advantage** of uninformed buyers by quoting inflated prices.
- **Comparing similar properties** in the same area helps estimate the fair market value.
- **Online property portals** and government valuation records can be useful resources.
- **Seeking advice from trusted sources** like friends, family, or real estate consultants is helpful.
- **Being informed empowers buyers** to negotiate better and avoid poor investment decisions.

II. RELATED WORK

Many researchers have studied how to estimate or predict the price of apartments and houses using data. These studies help people understand what factors affect property prices and how to make smarter buying decisions.

One common method used in early research is the hedonic pricing model, which looks at how features like location, size, and nearby facilities affect the price of a property (Rosen, 1974). This model is still widely used today.

With the growth of technology, machine learning methods have become popular for predicting house prices. For example, researchers like Kumar and Garg (2019) used models such as Random Forest and Gradient Boosting to predict prices, and they found these methods worked better than older techniques.

Some studies, like the one by Zheng et al. (2015), used location and map data to improve the accuracy of their predictions. These studies showed that the neighborhood plays an important role in deciding a property's value.

Others have used deep learning models like neural networks (Guo and Zhang, 2020) to find complex patterns in the data that affect prices.

Apart from prediction, some researchers focused on buyer awareness. Tsatsaronis and Zhu (2004) pointed out that when buyers don't know the real market price, they can be misled or charged too much by sellers or brokers.

Our research is inspired by these studies. We aim to help apartment buyers by analyzing local market prices and predicting fair values using data, so they can make informed choices.

III. DATA AND SOURCES OF DATA

This section contains the basic concepts about the related tools and techniques used in this project.

3.1. Machine Learning: To build a Machine Learning Model to predict the price of an apartment in Bangalore taking parameters total sqft, bhk, locality, bath, balcony.

3.2. Flask: To build an API using Flask that will take the parameters in JSON format from frontend and return the predicted price.

3.3. React JS: To build a responsive dashboard. λ Perform search operations. λ A map view to enhance the user friendly nature of the application

IV. RESEARCH METHODOLOGY

Methodology OR Proposal For Machine Learning(ML) Part we used Linear Regression algorithm. We found out metric parameters as: i) MSE score - Mean square error (MSE) is the average of the square of the errors .The larger the number the larger the error. ii) R2 score - R- squared is a goodness-of-fit measure for linear regression models. This statistic indicates the percentage of the variance in the dependent variable that the independent variables explain collectively. For MSE score we got a value of 994.4471092635403 For R2 score we got a value of 0.8556662450161905

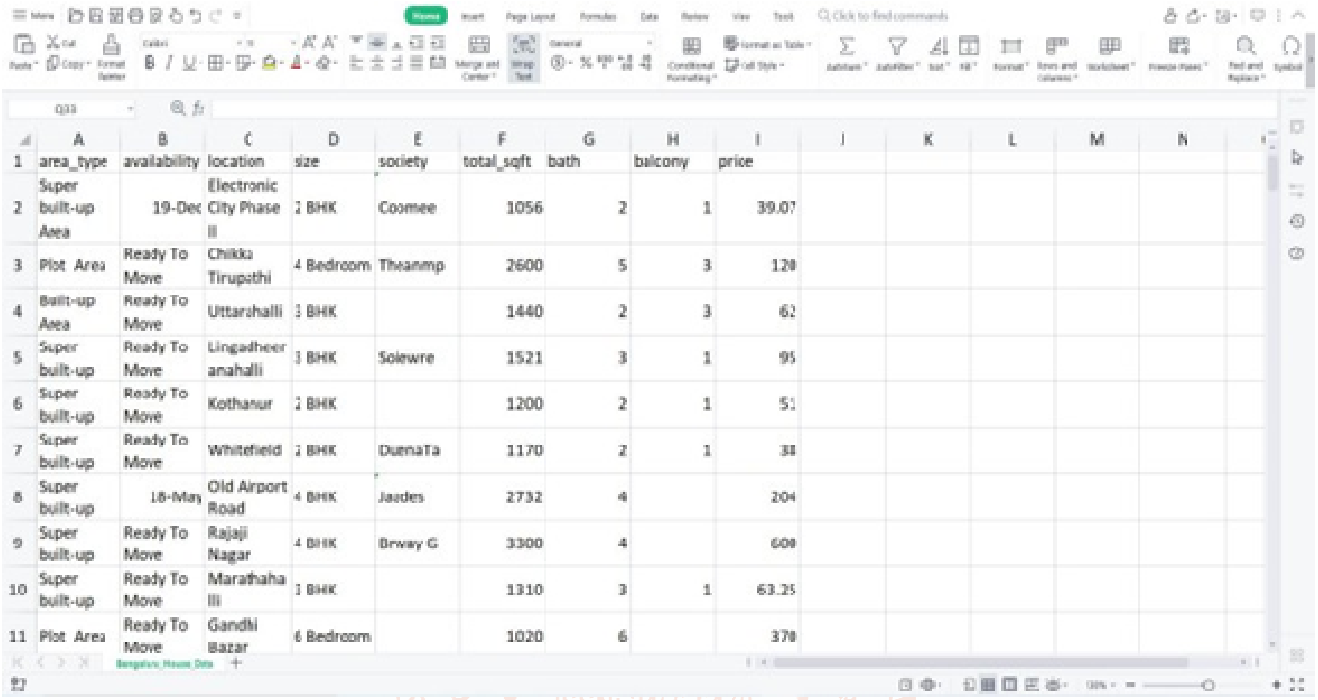
Figures and Tables

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Provide parameters.	Providing parameters to get price.	Price prediction successful.	Price predicted Successfully.

Dataset :

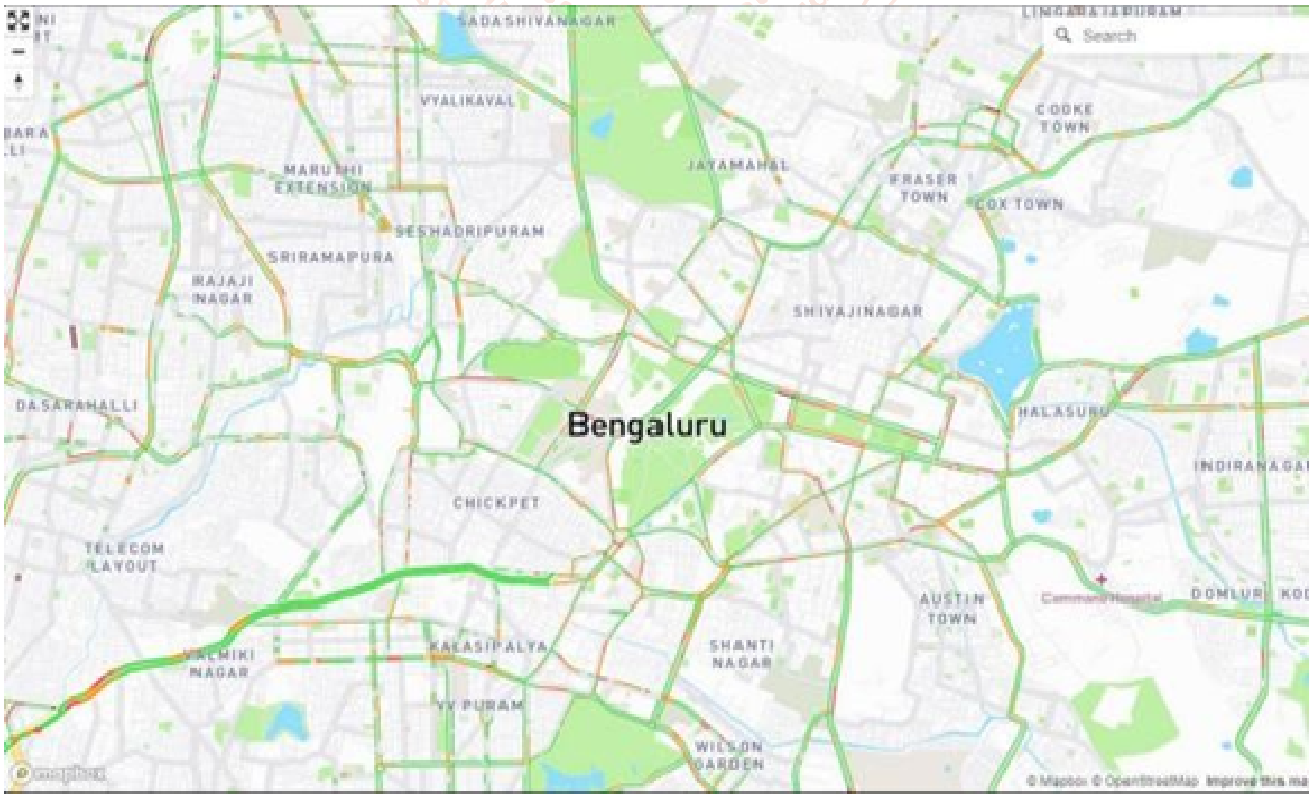
Dataset The dataset has been collected from Kaggle and it's publicly available. It contains 13320 rows and 9 columns. The columns are area_type, availability, location, size, society, total_sqft, bath, balcony, price. The data is of the Bangalore city. By analyzing these data we will determine the approximate price for the apartments in Bangalore.

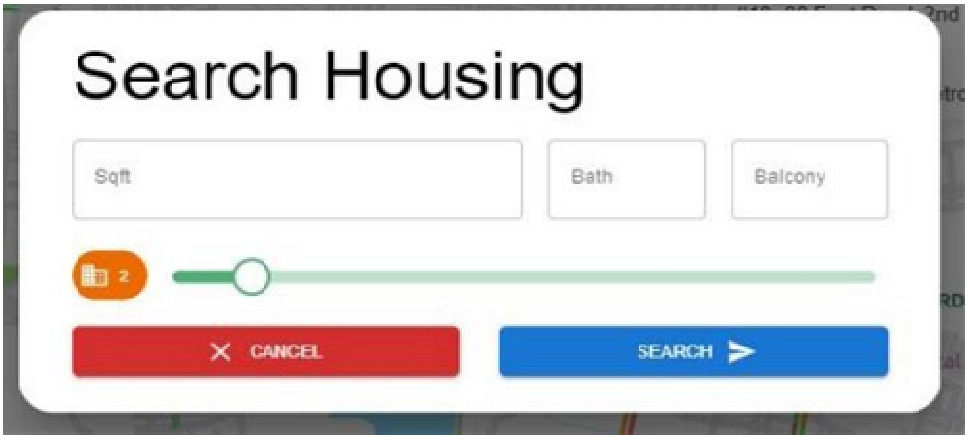
Screenshots :



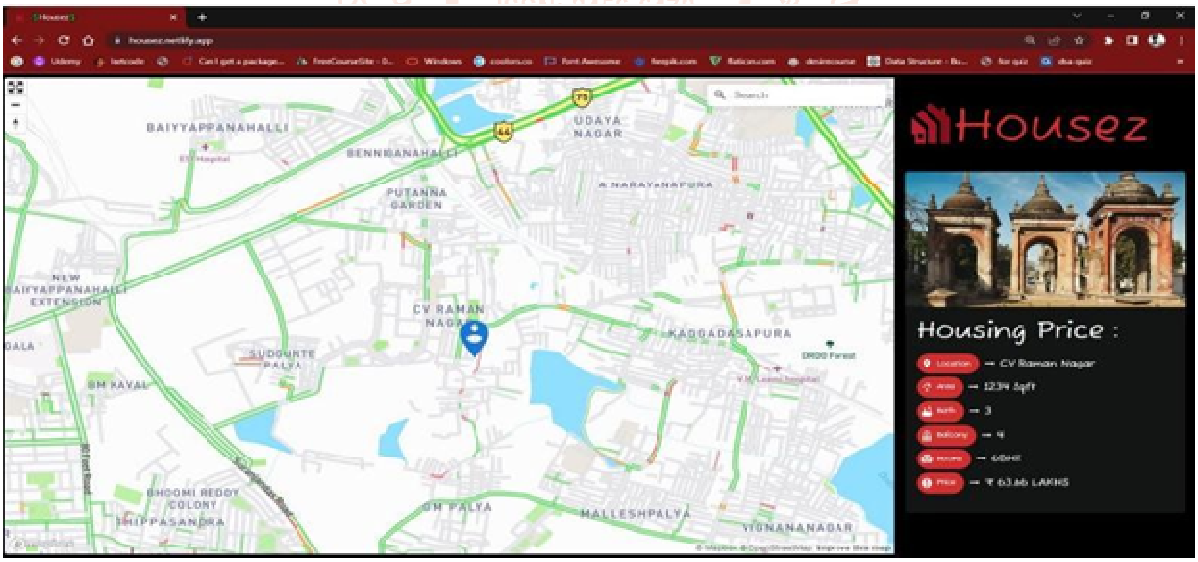
	A	B	C	D	E	F	G	H	I
1	area_type	availability	location	size	society	total_sqft	bath	balcony	price
2	Super built-up Aeea	19-Dec	Electronic City Phase II	2 BHK	Coomee	1056	2	1	39.07
3	Plot Area	Ready To Move	Chikka Tirupathi	4 Bedroom	Theanmp	2600	5	3	120
4	Built-up Aeea	Ready To Move	Uttarahalli	3 BHK		1440	2	3	62
5	Super built-up	Ready To Move	Lingadheer anahalli	3 BHK	Soiewre	1521	3	1	95
6	Super built-up	Ready To Move	Kothanur	2 BHK		1200	2	1	51
7	Super built-up	Ready To Move	Whitefield	2 BHK	DuenaTa	1170	2	1	38
8	Super built-up	18-May	Old Airport Road	4 BHK	Jaades	2732	4		204
9	Super built-up	Ready To Move	Rajaji Nagar	4 BHK	Brvary G	3300	4		600
10	Super built-up	Ready To Move	Marathaha lli	3 BHK		1310	3	1	63.25
11	Plot Area	Ready To Move	Gandhi Bazar	6 Bedroom		1020	6		370

Dataset:





V. RESULTS AND DISCUSSION



Final Product:

```
In [76]: mean_squared_error(y_test, predicted)
Out[76]: 994.4471892635403

In [77]: r2_score(y_test, predicted)
Out[77]: 0.8556662450161905
```

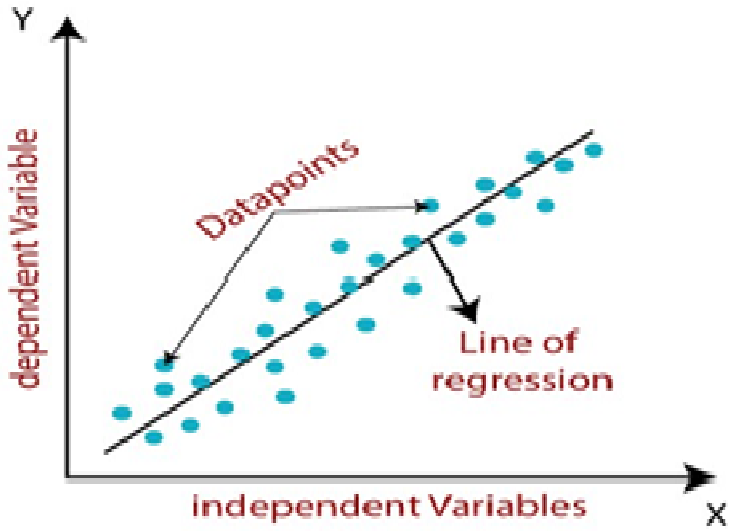


Fig.2 linear Diagram

VI. CONCLUSION

Getting an estimate of house price in certain areas is painful. All you can get interindividual house prices and decide upon the scattered information. This problem is solved by our project. Moreover it will save a lot of people from getting scammed..

Future Scope :

Housez has many future scope such as :

- This can be used as consumer & provider platform
- The consumer data can be retrieved & be sold to other services
- Provider data can be used to enhance the ML Model
- Can be converted into community

VII. References

[1] https://towardsdatascience.com/

[2] https://mui.com/

[3] https://www.w3schoo.com/react/showreact.asp?filename=demo2_react_test