

**A PROJECT REPORT**

**on**

**“HOUSEZ”**

**Submitted to  
KIIT Deemed to be University**

**In Partial Fulfillment of the Requirement for the Award of**

**BACHELOR’S DEGREE IN  
INFORMATION TECHNOLOGY**

**BY**

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**UNDER THE GUIDANCE OF  
Prof. RINA KUMARI**



**SCHOOL OF COMPUTER ENGINEERING  
KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY  
BHUBANESWAR, ODISHA - 751024  
May 2020**

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May 2022

# KIIT Deemed to be University

School of Computer Engineering  
Bhubaneswar, ODISHA 751024



## CERTIFICATE

This is certify that the project entitled

“HOUSEZ”

submitted by

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RIYA RANI MANDAL	1906493

is a record of bonafide work carried out by them, in the partial fulfillment of the requirement for the award of Degree of Bachelor of Engineering (Information Technology) at KIIT Deemed to be university, Bhubaneswar. This work is done during year 2022-2023, under our guidance.

Date: 15/04/2022

(Prof. Rina Kumari)  
Project Mentor

## **Acknowledgements**

We are profoundly grateful to Prof. Rina Kumari for her expert guidance and continuous encouragement throughout to see that this project rights its target since its commencement to its completion. Her kindness, dedication, hard work, and attention to detail have been a great inspiration to me. My heartfelt thanks to you for the unlimited support and patience shown to us.

SAIKAT DAS

# ABSTRACT

In this project we have built a model which predicts the price of an apartment in Bangalore using linear regression model in Python. The frontend has been created using React JS and deployed in Netlify while the api calls have been implemented using Flask and deployed in Render

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

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# Chapter 1

## 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.



## Chapter 2

### Basic Concepts

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

#### 2.1 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.

#### 2.2 Flask

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

#### 2.3 React JS

- To build a responsive dashboard.
- Perform search operations.
- A map view to enhance the user friendly nature of the application.

## Chapter 3

# Problem Statement / Requirement Specifications

Build a Full stack fully functional Machine learning model that helps us to predict price of an apartment in any locality of Bangalore.

### 3.1 Project Planning

The problem statement is split into 2 objectives. The objectives of the primary 1/2 of the project are:

- A Machine Learning Model built using Linear Regression algorithm in Python that takes 4 parameters location, total square feet area, bath and bhk and returns a price.
- The model will be stored as a pickle file.
- Now the model is deployed using Flask as an API, where we will code to handle GET and POST request where the GET request sends an array of location and the POST request sends the price predicted as response.
- The Client which is made in React & Material-UI will connect to the REST Service for sending & receiving the response-request & take the location & parameters from the user & render the Map & accurate estimation of the location & the apartment price

### 3.2 System Design

#### 3.3.1 Design Constraints

We used Google Colab or Jupyter Notebook for machine learning part. We used VS Code Editor for Flask and React JS part. We deployed the Flask Application in Render and the ReactJS in Netlify.

## Chapter 4

### Implementation

#### 4.1 Methodology OR Proposal

For ML Part we used several models to find out the best.

We found out metric parameters as:

- i) MSE score
- ii) R2 score

We found our best model as Extreme Gradient Boost.

#### 4.2 Testing OR Verification Plan

Tests done by us.

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Provide parameters.	Providing parameters to search.	Search result successful.	Searched result Succesfully.

## 4.3 Screenshots :

area_type	availability	location	size	society	total_sqft	bath	balcony	price
Super built-up	15-Dec	Electronic C/2 BHK	Cocomee	1056	2	1	38.07	
Plot Area	Ready To M	Chikka Ting 4 Bedroom	Thewamp	2600	5	3	120	
Built-up	Are Ready To M	Uttarahalli 3 BHK		1440	2	3	62	
Super built-up	Ready To M	Ungdhera 3 BHK	Solevne	1521	3	1	95	
Super built-up	Ready To M	Korbanur 2 BHK		1200	2	1	51	
Super built-up	Ready To M	Whitefield 2 BHK	DuenaTa	1170	2	1	38	
Super built-up	18-May	Old Airport 4 BHK	Jaades	2732	4	1	204	
Super built-up	Ready To M	Rajal Nagar 4 BHK	Bruny G	3300	4	1	600	
Super built-up	Ready To M	Marathahalli 3 BHK		1310	3	1	63.25	
Plot Area	Ready To M	Gandhi Bazz 6 Bedroom		1020	6	3	370	
Super built-up	18-Feb	Whitefield 3 BHK		1850	2	2	70	
Plot Area	Ready To M	Whitefield 4 Bedroom	Prry M	2785	5	3	295	
Super built-up	Ready To M	7th Phase Jf 2 BHK	Shncyes	1000	2	1	38	
Built-up	Are Ready To M	Gortigere 2 BHK		1100	2	2	40	
Plot Area	Ready To M	Sarjapur 3 Bedroom	Skityer	2250	3	2	148	
Super built-up	Ready To M	Mysore Road 2 BHK	PrintaCh	1175	2	2	73.5	
Super built-up	Ready To M	Rissandhal 3 BHK	Prityel	1180	3	2	48	
Super built-up	Ready To M	Raja Rajesh 3 BHK	GrrvaGr	1540	3	3	60	
Super built-up	Ready To M	Ramakrishn 3 BHK	PeBaiye	2770	4	2	260	
Super built-up	Ready To M	Manavate T 2 BHK		1100	2	2	48	
Built-up	Are Ready To M	Kengeri 1 BHK		600	1	1	15	
Super built-up	19-Dec	Binnu Pete 3 BHK	She 2rk	1755	3	1	122	
Plot Area	Ready To M	Thandisandri 1 Bedroom	Solitye	2850	5	3	380	
Super built-up	Ready To M	Beilandur 3 BHK		1767	3	1	103	
Super built-up	18-Nov	Thandisandri 1 Rk	Bhe 2ko	510	1	0	25.25	
Super built-up	18-May	Manganna 3 BHK		1250	3	2	56	
Super built-up	Ready To M	Electronic C/2 BHK	Itelaa	660	1	1	23.1	
Built-up	Are	20-Dec	Whitefield 3 BHK		1610	3	2	81
Super built-up	17-Oct	Ramagunda 2 BHK	VilatLa	1151	2	2	46.77	

Figure 4.3.1: Dataset

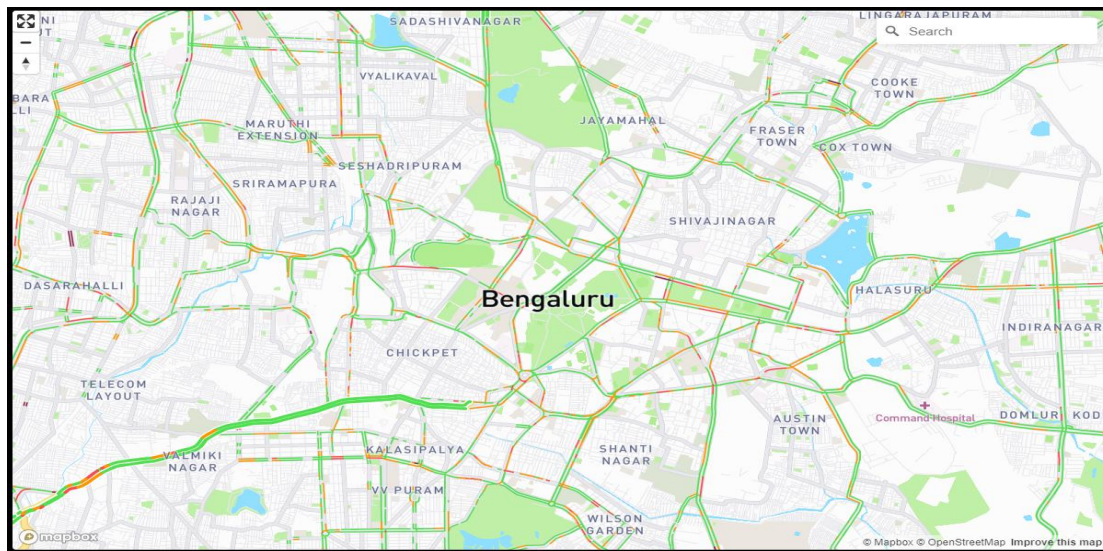


Figure 4.3.2: Map Component

Figure 4.3.3: Modal Form Component

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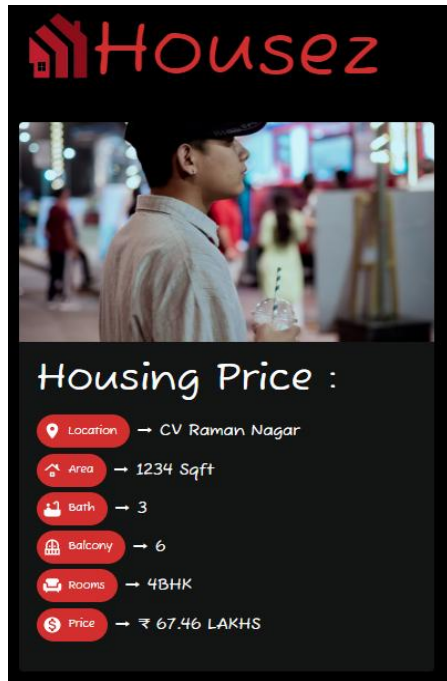


Figure 4.3.4: Meta Data Component

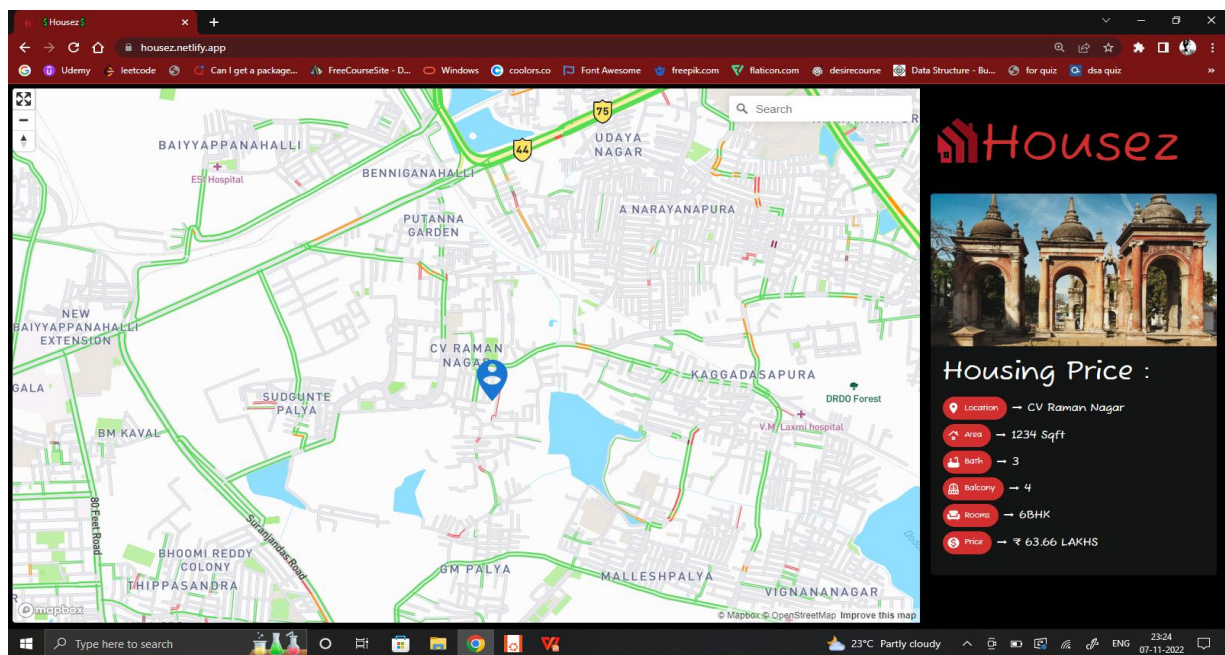


Figure 4.3.5: Final Product

# Chapter 5

## Standards Adopted

### 5.1 Design Standards

A set of principles for software design:

- The design process should not suffer from “tunnel vision”.
- The design should be traceable to the analysis model.
- The design should not reinvent the wheel.

The design should “minimize the intellectual distance” between the software and the problem in the real world.

### 5.2 Coding Standards

Coding standards are collections of coding rules, guidelines, and best practices.

Few of the coding standards are:-

- 1. Write as few lines as possible.
- 2. Use appropriate naming conventions.
- 3. Segment blocks of code in the same section into paragraphs.
- 4. Use indentation to mark the beginning and end of control structures.

Clearly specify the code between them.

5. Don't use lengthy functions. Ideally, a single function should carry out a single task.

6. Not making too much data type

## Chapter 6

### Conclusion & Future Scope

#### 6.1 Conclusion

Getting an estimate of house price in certain areas is painful. All you can get is the individual 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.

#### 6.2 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

## *References*

- [1] <https://towardsdatascience.com/>
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- [3] [https://www.w3schools.com/react/showreact.asp?filename=demo2\\_react\\_test](https://www.w3schools.com/react/showreact.asp?filename=demo2_react_test)



**SAMPLE INDIVIDUAL CONTRIBUTION REPORT:****HOUSEZ****SAIKAT DAS****1906355**

**Abstract:** In this project we have built a model which predicts the price of an apartment in Bangalore using linear regression model in Python. The frontend has been created using React JS and deployed in Netlify while the REST Service has been implemented using Flask and deployed in Render


**Individual contribution and findings :** Client Side using React & Material-UI, which takes parameters from users and estimates the price according to the location & deploying them

**Individual contribution to project report preparation:** This project report, including all the chapters has been done by me, individually.

Full Signature of Project Mentor:

.....

Full signature of the student:



# PLAGIARISM REPORT

(This report is mandatory for all the projects and plagiarism must be below 25%)

