HOUSE RENT ANALYSIS USING IBM WATSON

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Abstract

Science and Technology has changed this world into a small, secure and easy to manage every activities of the individual and organization. Everything is more secure, easy to use and easily accessible in this modernworld. Thus, the use of house rentalsystem is neededto manage, searchand book the housing system easily. In order to give easy access to find the houses as per the users need,the web application has been developedin this documentation. And it includes all the detail information about the projectrespectively.

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1) INTRODUCTION

1.1 Overview

Rental house analysis has turned out to be critical figurecurrent society subsequently the need a rental house administration system.

This section will give a short comprehension about foundation of study, meaning of the venture issue explanation, its destinations, scopes, extend support, dangers, extend deliverables and venturespending plan and calendar

1.2 Purpose

In this project, we present a house rent prediction technique that utilizes historical data to train simple machine learning models which are more accurate and can help us predict the rent of the house. The evaluation results show that the accuracy of the models is good enough to be used alongside the current state-of-the-art techniques.

2) LITERATURE SURVEY

2.1 Existing problem

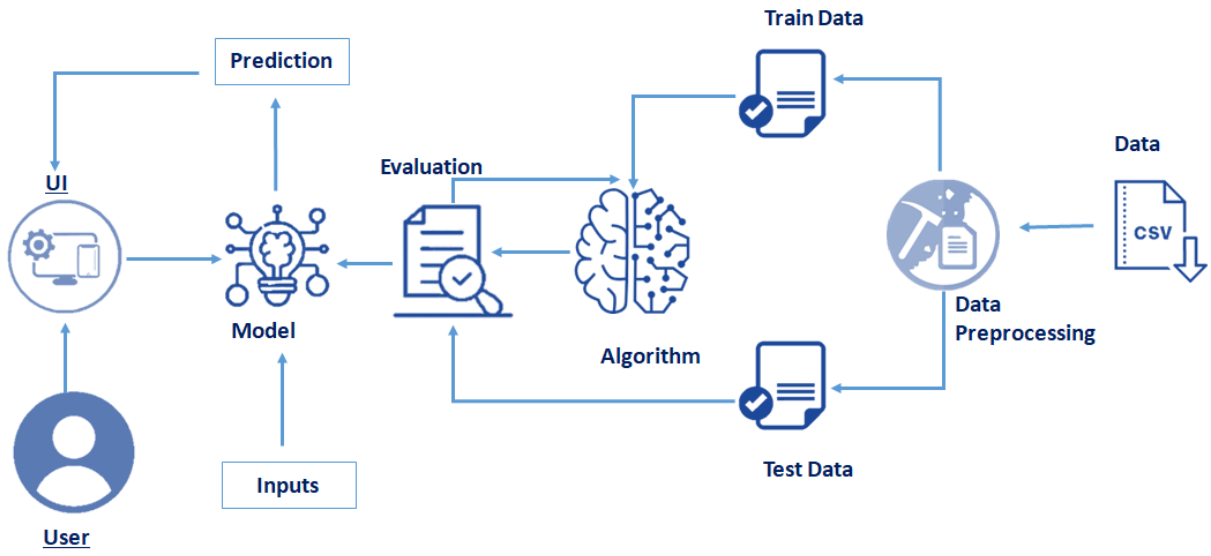
Firstly, with using online algorithm, we design an optimal (deterministic) online strategy. This strategy is to rent the house until the difference aggregated between rent fee and depreciation and opportunity loss sum up to the transaction cost caused by buying and selling house, and then to buy house. Subsequently, we design an online risk strategy in the light of forecasting, and obtain the set of online risk strategy that the manager can accept risk tolerance level by comparing the unsuccessful online risk strategy with optimal (deterministic) online strategy. The risk strategy will lead to reward if forecasting is successful, the risk is sustainable if unsuccessful. The decision-makers can design online strategy to improve outcome in the light of his risk tolerance level.

2.2 Proposed solution

This web-based system is hopefully can assist the people and the students in making a good decision during rental house selection. This web-based system also provides the easiest way for job holder and student to find and choose their suitable rental house that meets their requirement at the minimum cost and time. It is also provide the details information of the house. The web-based system will enable people to view selected rental house online from the computer before they actually decide to visit the site. Once they are satisfied with what is shown, they can later make the actual visit to further make any confirmation and at the same time affordable.

3) THEORITICAL ANALYSIS

3.1 Block diagram



3.2 software Requirements

- Anaconda Software(includes Jupyter Notebook ,Spyder)
- Web Browser(Google chrome, Firefox, Microsoft edge etc)

4) EXPERIMENTAL INVESTIGATIONS

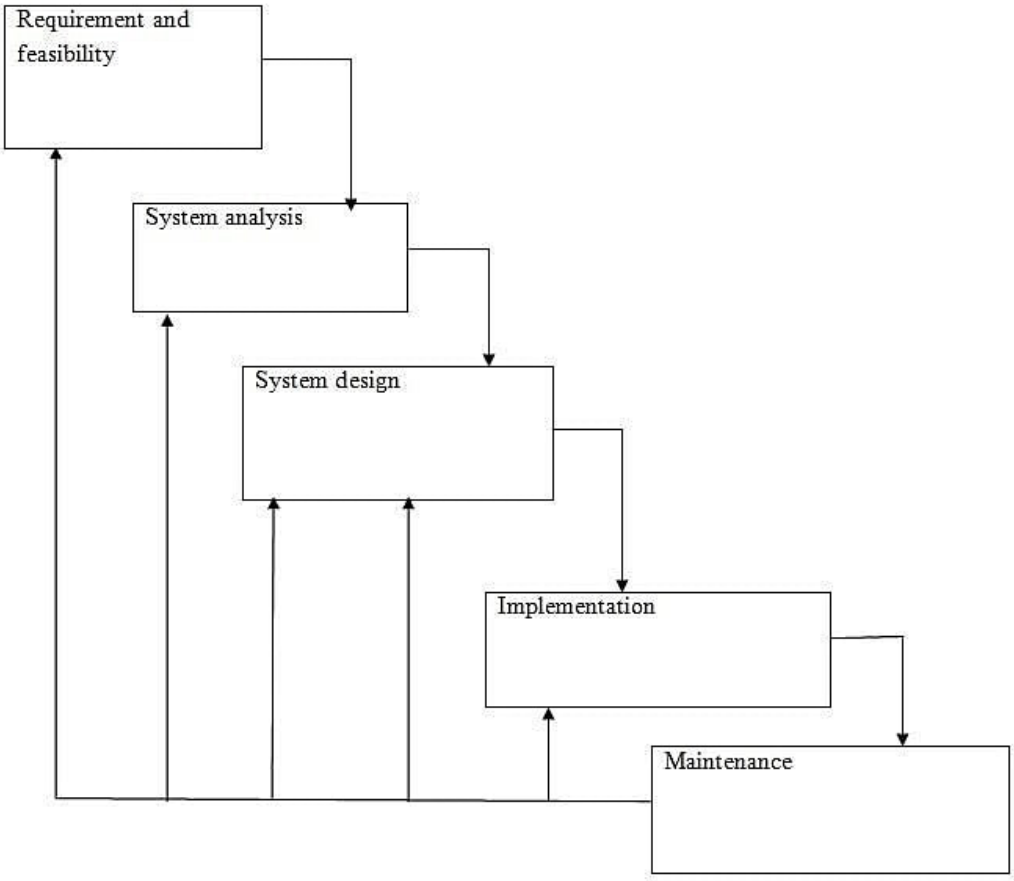
The user's necessities record was examined for better comprehension of what was required of the framework. Methods for actualizing these necessities were broke down. Physical modules of the framework were planned and recognizing of the working condition in which they were to chip away at. The framework was a visual essential framework/application. The database was refreshed each time the director; include,erases or erases information the framework.

It's just the overseer who has entryto the framework to view or roll out improvements when vital. The framework was intended to permit the head to see, alter, erase and add information to the databaseEach time a client comes, he/she is enrolled in the occupant

enlistment table of the database withother pertinent insightsabout the inhabitant.

Framework configuration included changing the product prerequisites into an engineering that portrayed its top-level structure and distinguished the product parts and built up a nitty grittyplan for every product segments. For every prerequisite, an arrangement of at least one outline components was created.

5) FLOWCHART

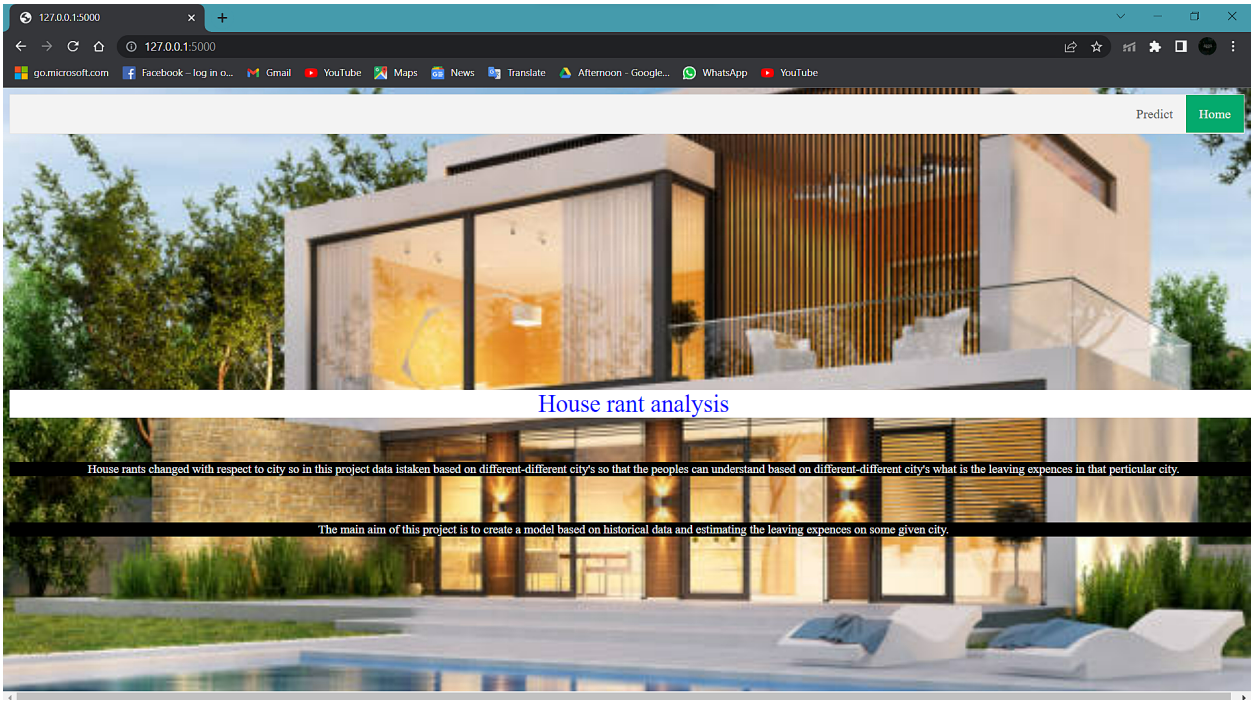


6) Results

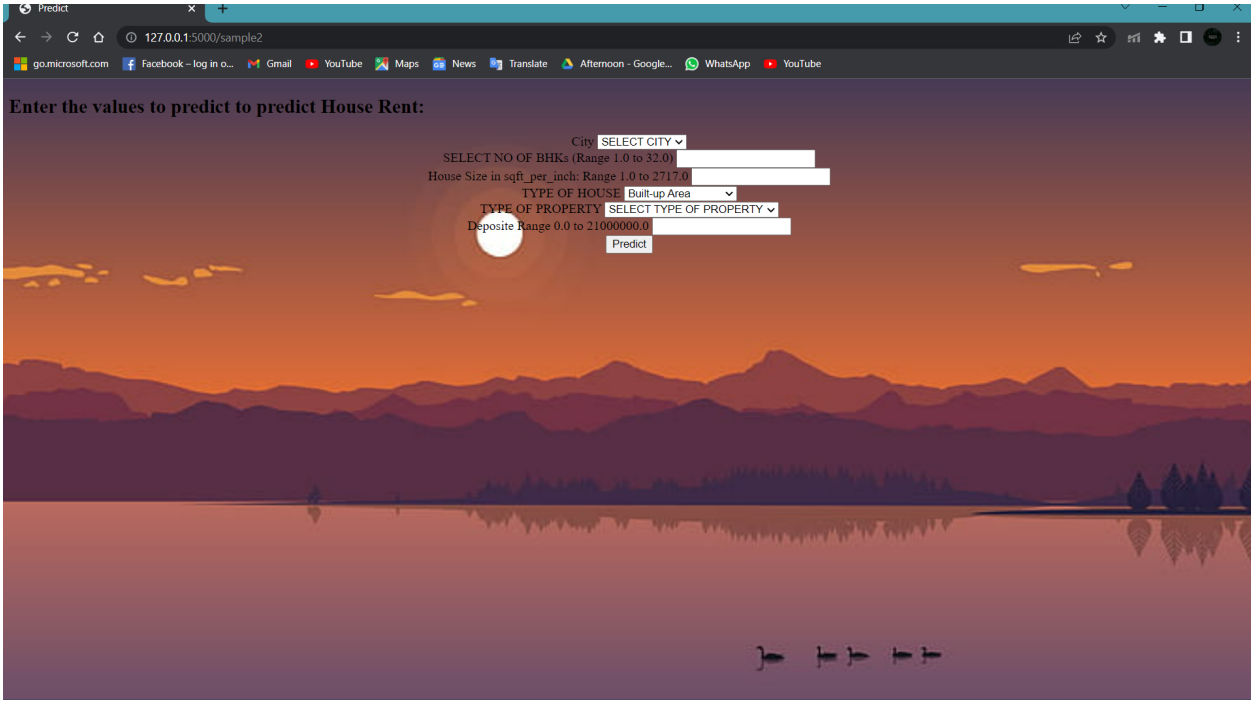
The project contain two HTML pages

- Home
- predict

Home page



Predict



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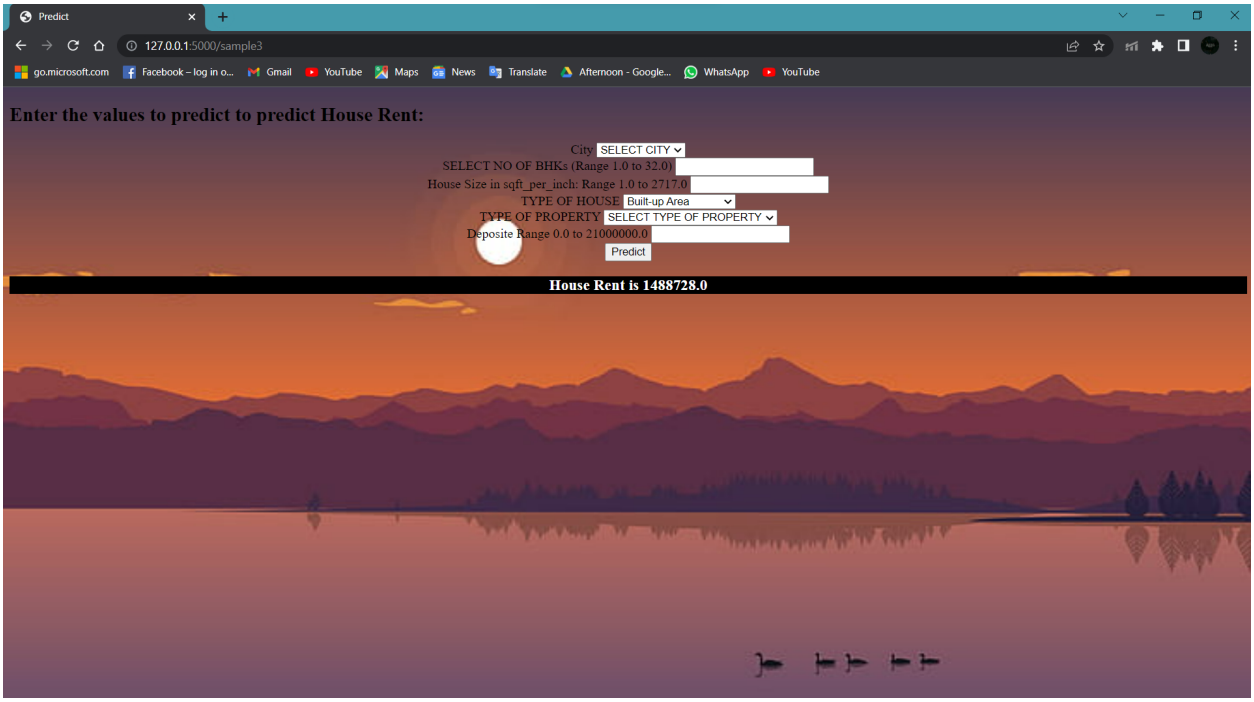
The output(House rent) will appear in the same page



7) Advantages and Disadvantages

Advantages

- This model predicts the house rent based on the location.
- The house rent can be found remotely and we can plan our Budget.

Disadvantages

- Although the model predicts the house rent ,the probability of matching with exact prices is low.

8) Applications

- Use to predict house rent.
- Useful in real state fields.

9) Conclusion

All in all, the product can be utilized as a stock framework to give a casing work that empowers the troughs to make sensible exchanges set aside a few minutes outline. Every exchange made on the framework run as an inseparable unit with the information being refreshed in the database for our situation it is Microsoft Access 2007 which is the back end. To wrap things up it is not the work that played the approaches to achievement howeverALMIGHTY GOD.

10) Future Scope

In future our project is meant to satisfy the needs of rental house owners.

Several user friendly interfaces have also been adopted. This package shall prove to be a powerful in satisfying all the requirements of the users. It is with utmost faith that I present this software to you hoping that it will solve your problems and encourage you to continue appreciating technology because it is meant to change and ease all our work that seems to be very difficult. I don't mean that my project is the best or that I have used the best technology available it just a simple and a humble venture that is easy to understand. In extent we can add GPS system in build and can give live chat online option to users. This project can also be extended to IOS Platform and several state Database can be included. Could also allow local business to push deals/coupons within a certain geographic area

11) Bibliography

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Appendix

Source code

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

```
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LinearRegression
from sklearn.ensemble import RandomForestRegressor
from sklearn.ensemble import GradientBoostingRegressor
from sklearn.metrics import r2_score,mean_squared_error
import pickle
import seaborn as sns
from scipy import stats
plt.style.use('fivethirtyeight')
import warnings
warnings.filterwarnings('ignore')
df=pd.read_csv("C:\gec_ml\99acres_data.csv")
df.head()
df.isnull().sum()
df.drop(["Baths","location_of_the_property"],axis=1,inplace=True)
df.Type_of_property.unique()
df=df[df.Type_of_property!="for"]
df=df[df.Type_of_property!="Serviced"]
df=df[df.Type_of_property!="Floor"]
city=LabelEncoder()
b_u_a=LabelEncoder()
T_o_p=LabelEncoder()
#l_o_t_p=LabeelEncoder()
df["city"]=city.fit_transform(df["city"])
df["build_up_area"]=b_u_a.fit_transform(df["build_up_area"])
df["Type_of_property"]=T_o_p.fit_transform(df["Type_of_property"])
#df["location_of_the_property"]=l_o_t_p.fit_transform(df["location_of_the_property"])
```

```
print("city",df["city"].unique())
print(city.inverse_transform(list(df["city"].unique())))
print()
print("build_up_area:",df["build_up_area"].unique())
print(b_u_a.inverse_transform(list(df["build_up_area"].unique())))
print()
print("Type_of_property",df["Type_of_property"].unique())
print(T_o_p.inverse_transform(list(df["Type_of_property"].unique())))
print()
#print("location_of_the_property",df["location+of_the_property"].unique())
#print(l_o_t_p.inverse_transform(list(df["location_of_the_property"].unique())))
x=df.drop("monthly_rant",axis=1)
#splitting the data into training set & test set
y=df.monthly_rant
xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.2,random_state=10)
print("shape of xtrain{}".format(xtrain.shape))
print("shape of xtest{}".format(xtest.shape))
print("shape of ytrain{}".format(ytrain.shape))
print("shape of ytest{}".format(ytest.shape))
st=StandardScaler()
xtrain_scaled=st.fit_transform(xtrain)
xtest_scaled=st.transform(xtest)
 rf=RandomForestRegressor()
   rf.fit(xtrain_scaled,ytrain)
   ypred=rf.predict(xtest_scaled)
   score=r2_score(ytest,ypred)
   rmse=np.sqrt(mean_squared_error(ytest,ypred))
   print("***Random Forest regression model***")
   print("Score for Linear Regression model is {}".format(score))
```

```
    print("rmse score for Linear Regression model is {}".format(rmse))
pickle.dump(rf,open("model3.pkl","wb"))
```