# PROJECT REPORT

**Project name: University Admit Eligibility Predictor**

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## INTRODUCTION

a) Overview:

The project is implemented using a Machine-Learning model that predicts whether the user is eligible for an admission in the selected rated universities with provided details such as marks and others. The algorithm works in such a way that when the user provides the details such as (GRE Score, TOEFL Score, University Rating, SOP, LOR, CGPA, Research) the percentage of chance of admit is displayed. The user is provided with a UI (Web based application) in which the user can enter the details mentioned above for prediction. The main advantage of this is that the user can avoid long process of having to check the eligibility of a university admission by himself and make use of this application to predict the eligibility / chance of admit.

b) Purpose:

The purpose of this project is to make the prediction of eligibility of an admission to a rated university with ease using a UI with the provided user details (GRE Score, TOEFL Score, University Rating, SOP, LOR, CGPA, Research). This also eliminates the possibility of human errors.

## LITERATURE SURVEY

a) Existing problem:

Previous research done in this area used Naive Bayes algorithm which will evaluate the success probability of student application into a respective university but the main drawback is they didn't consider all the factors which will contribute in the student admission process like TOEFL/IELTS, SOP, LOR and under graduate score. Bayesian Networks Algorithm have been used to create a decision support network for evaluating the application submitted by foreign students of the university. This model was developed to forecast the progress of prospective students by comparing the score of students currently studying at university. The model thus predicted whether the aspiring student should be admitted to university based on various scores of students. Since the comparisons are made only with students who got admission into the universities but not with students who got their admission rejected so this method will not be that much accurate.

b) Proposed solution:

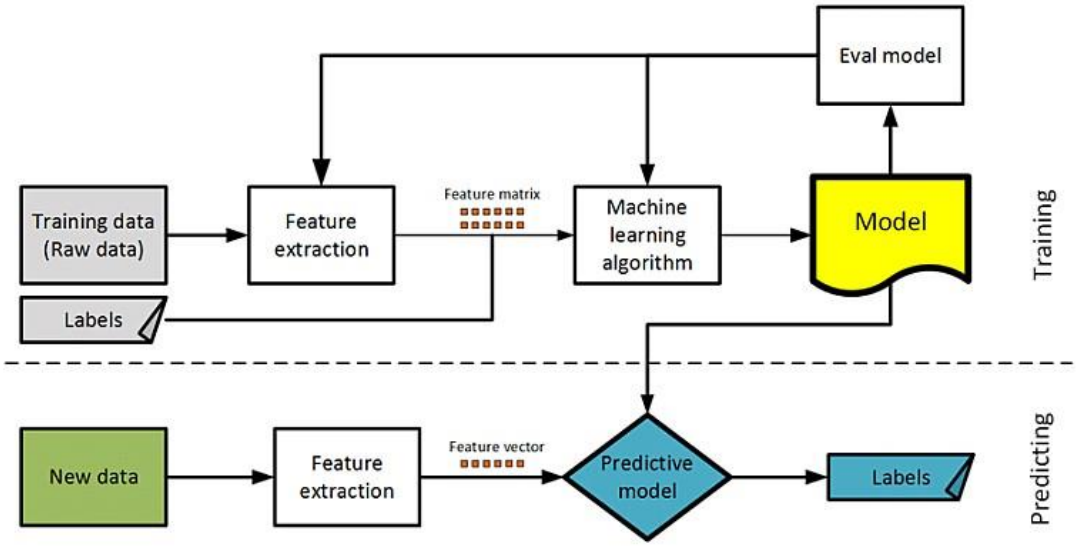
These problems can be resolved by using regression algorithms / classification algorithms as they can consider most of the features for prediction. Linear regression / KNN classification / Random forest Regressor can be used as the machine learning model for the model. XG boost

model can also be used which performs better on small to medium scale datasets but the model giving accurate and desired results only will be selected. The aim of the proposed system is to address the limitations of the current system. The requirements for the system have been gathered from the defects recorded in the past and also based on the feedback from users of previous metrics tools. Following are the objectives of the proposed system:

- Reach to geographically scattered student.
- Reducing time in activities
- Paperless admission with reduced man power
- Operational efficiency

## THEORETICAL ANALYSIS

a)Block diagram:



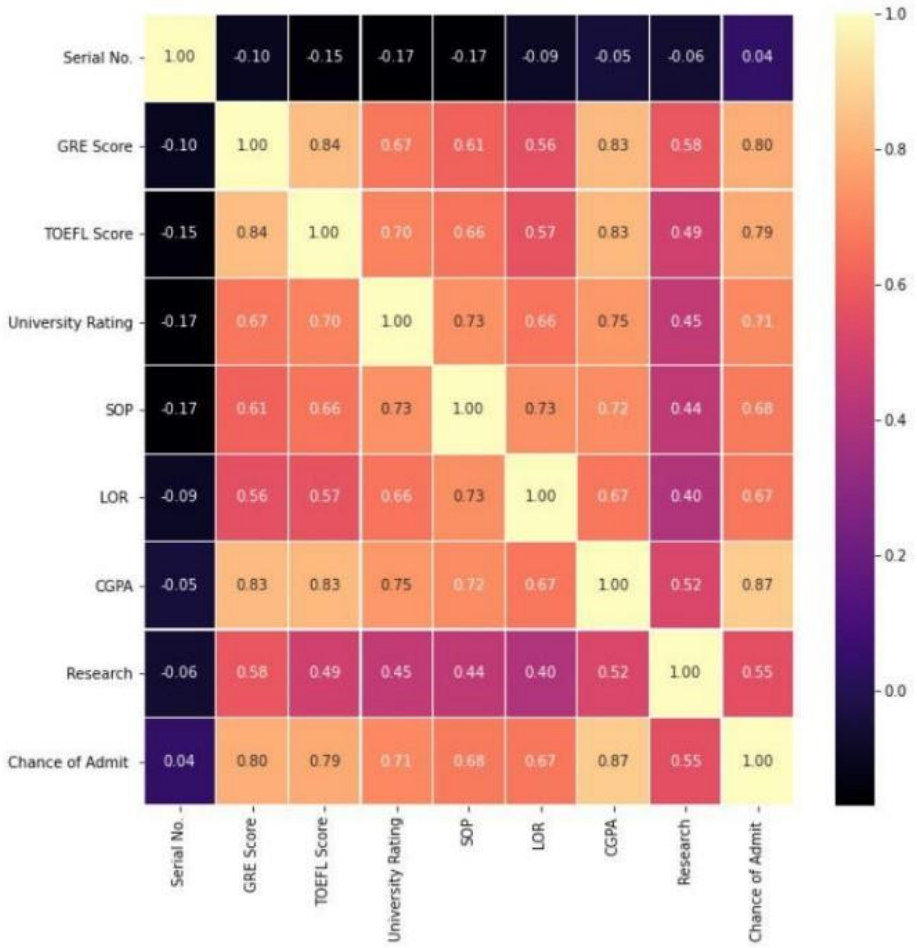

b)Hardware/Software designing:

- CPU - Intel i3 7th gen or above/ AMD Ryzen 3500 or above
- GPU - Integrated / Dedicated (at least 2GB)
- RAM - 8 GB

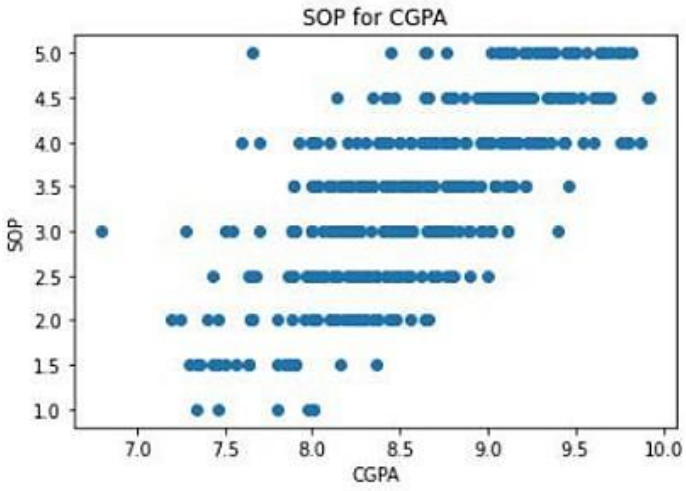
- Operating system - Windows 10/ Linux / MacOS
- Programming language - Python 3.9 ML library Scikit learn
- Other libraries - Matplot,seaborn,numpy,pandas,pickle

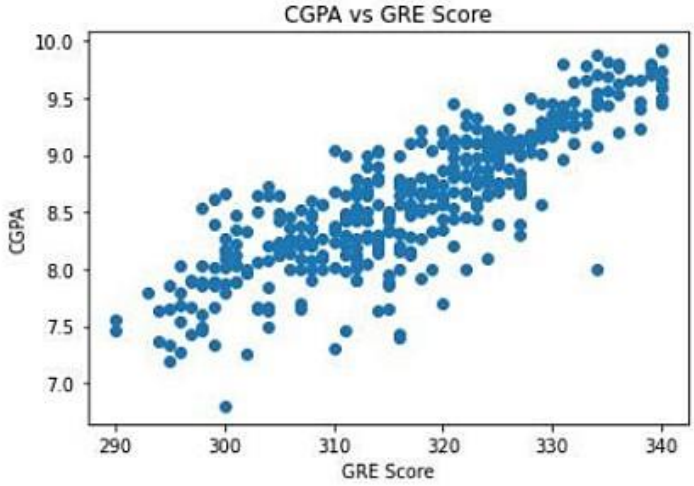
**EXPERIMENTAL ANALYSIS**

Heat map of the data.

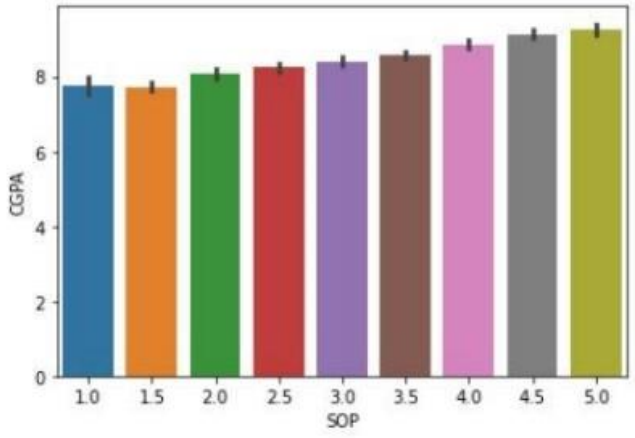



Scatter Plots , Bar graphs

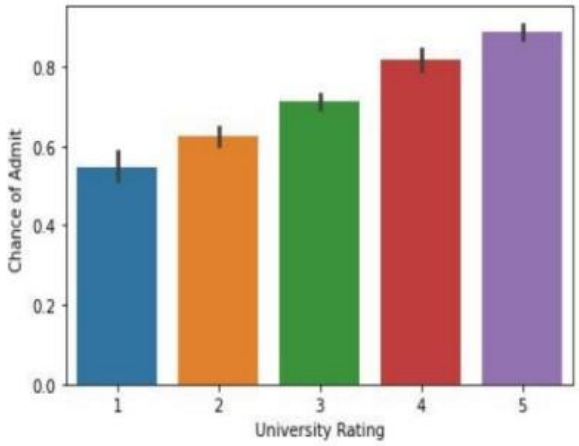


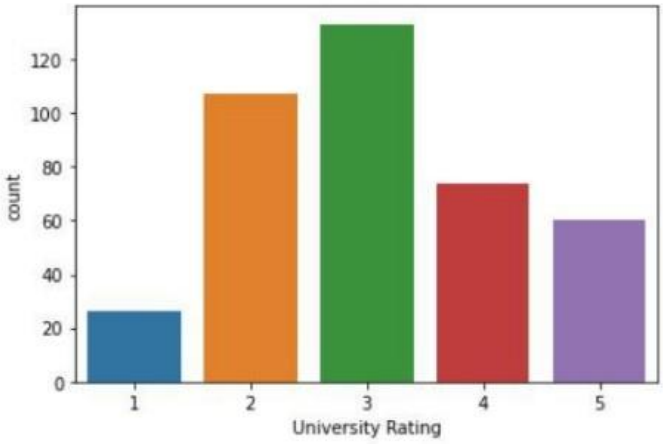

```
<AxesSubplot:xlabel='SOP', ylabel='CGPA'>
```



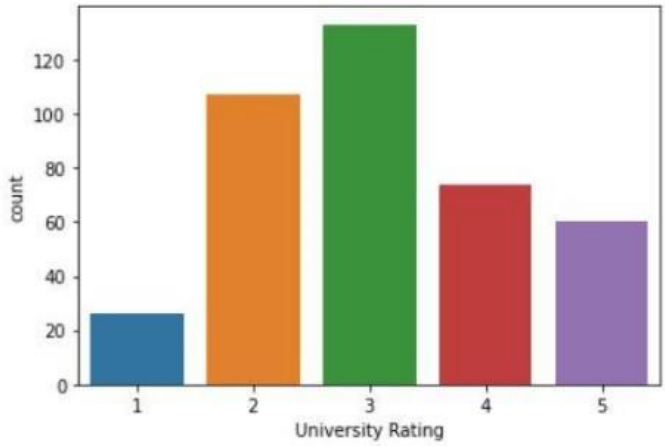
```
<AxesSubplot:xlabel='University Rating', ylabel='Chance of Admit '>
```



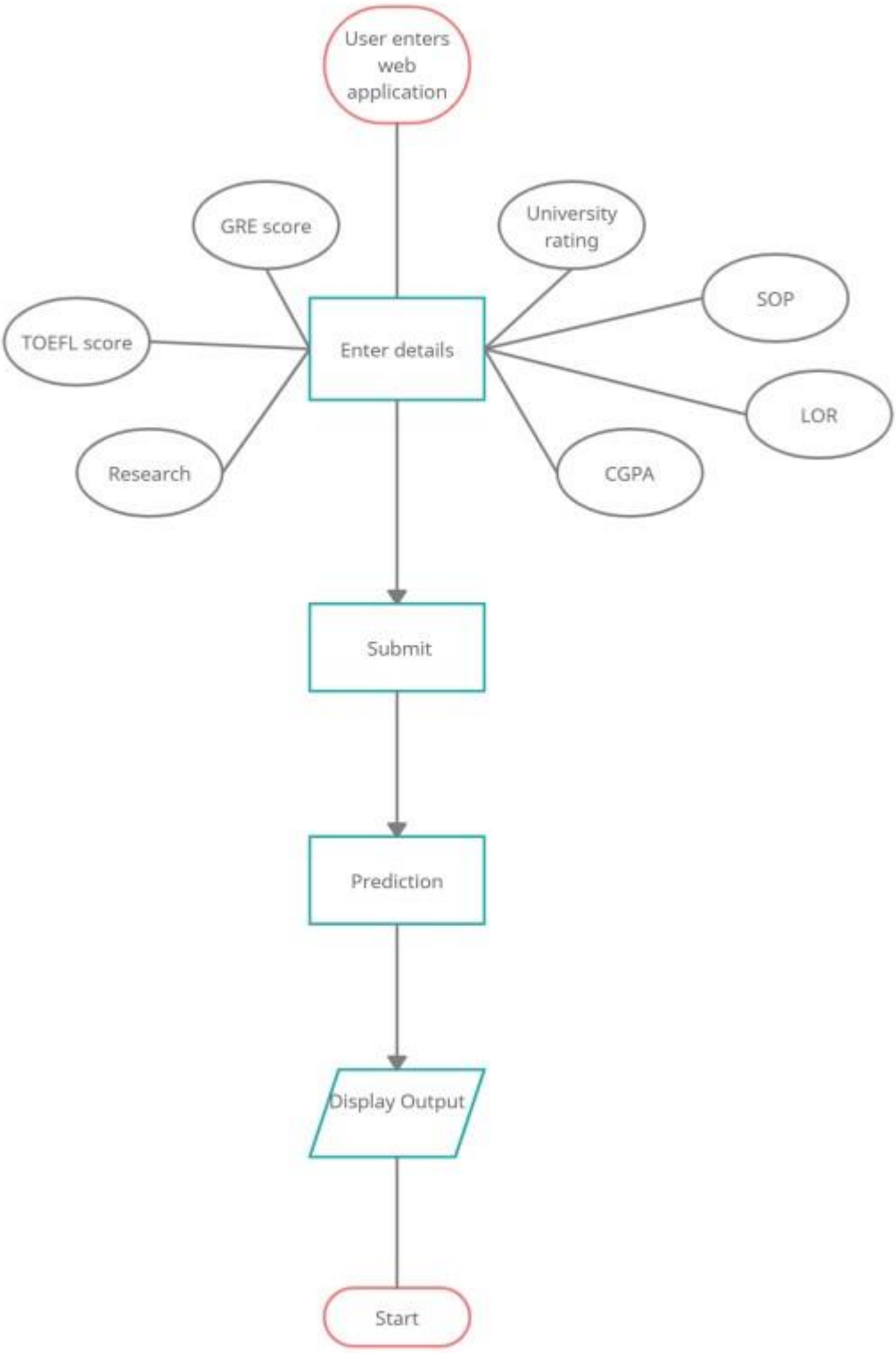

```
<AxesSubplot:xlabel='University Rating', ylabel='count'>
```



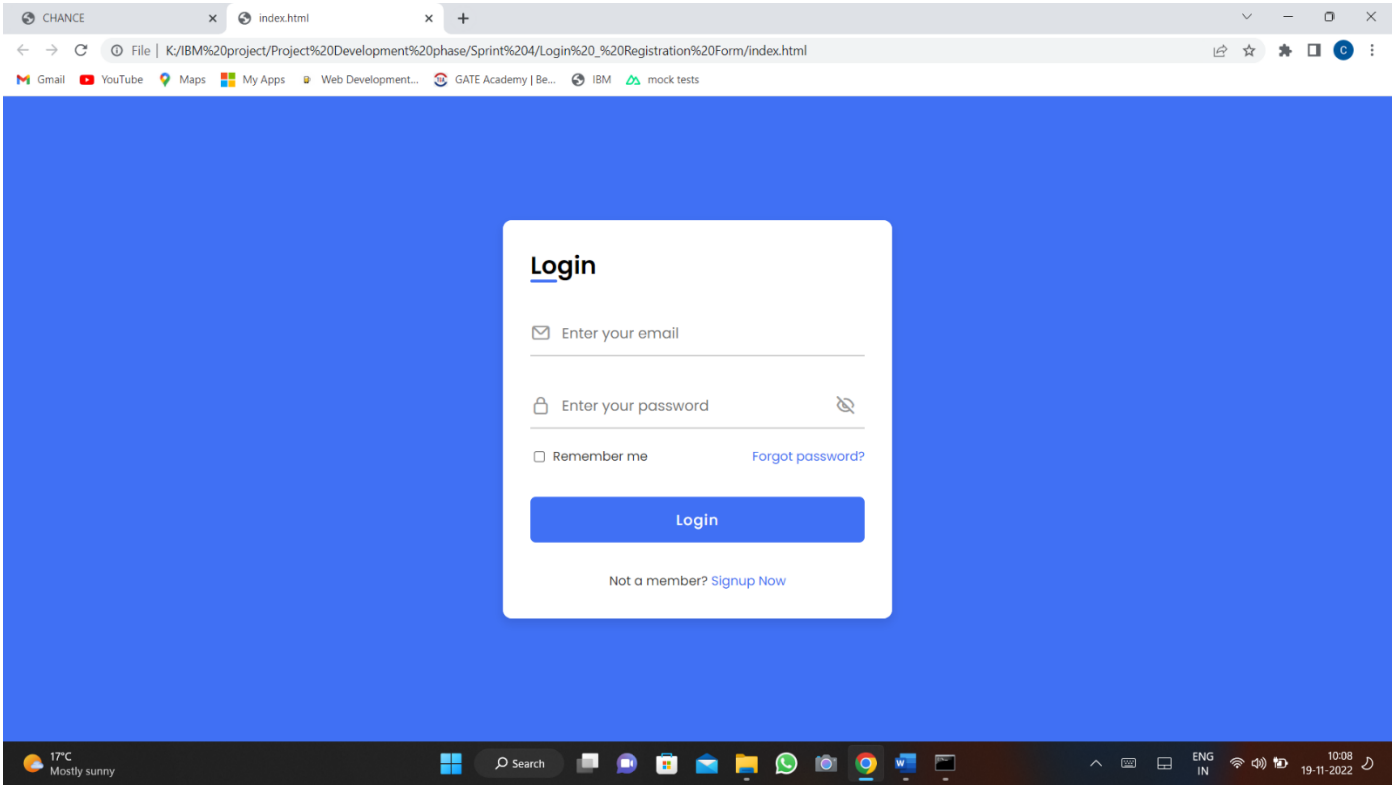

```
<AxesSubplot:xlabel='University Rating', ylabel='count'>
```

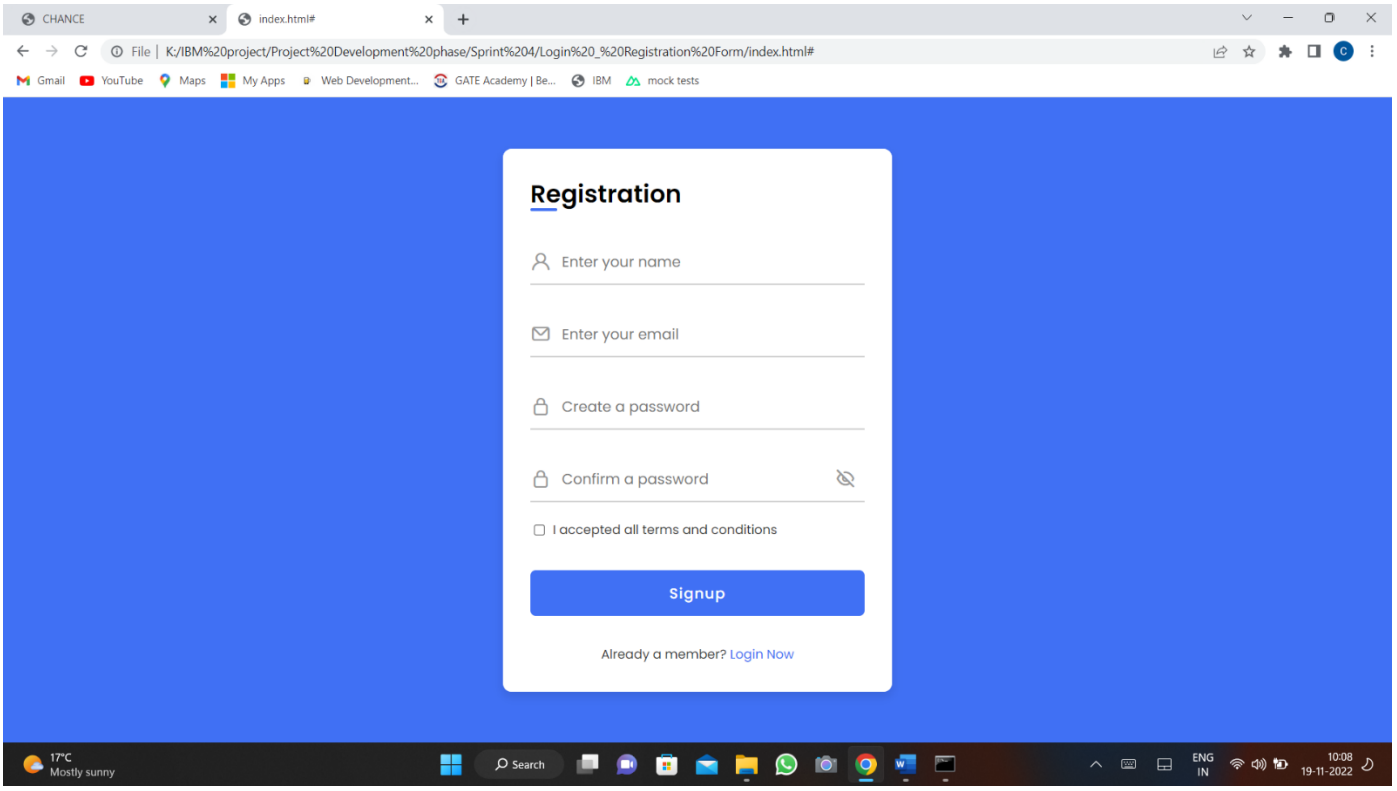


**FLOWCHART**


User enters web application
GRE score
University rating
SOP
TOEFL score
Enter details
LOR
Research
CGPA
Submit
Prediction
Display Output
Start

# RESULT


CHANCE
index.html
File | K:/IBM%20project/Project%20Development%20phase/Sprint%204/Login%20_%20Registration%20Form/index.html
Gmail
YouTube
Maps
My Apps
Web Development...
GATE Academy | Be...
IBM
mock tests
Login
Enter your email
Enter your password
Remember me
Forgot password?
Login
Not a member? Signup Now
17°C
Mostly sunny
Search
ENG
IN
10:08
19-11-2022


CHANCE
index.html#
File | K:/IBM%20project/Project%20Development%20phase/Sprint%204/Login%20_%20Registration%20Form/index.html#
Gmail
YouTube
Maps
My Apps
Web Development...
GATE Academy | Be...
IBM
mock tests
Registration
Enter your name
Enter your email
Create a password
Confirm a password
I accepted all terms and conditions
Signup
Already a member? Login Now
17°C
Mostly sunny
Search
ENG
IN
10:08
19-11-2022

## ADVANTAGES

- It helps student for making decision for choosing a right college.
- Here the chance of occurrence of error is less when compared with the existing system.
- Avoids data redundancy and inconsistency.
- It is fast, efficient and reliable.

## DISADVANTAGES

- Machine errors are unavoidable when occurred. (Hardware failure, network failure, others).
- The predictions made are not 100% accurate but accurate to an acceptable value.

## APPLICATIONS

- Reach to geographically scattered student.
- Reducing time in activities
- Paperless admission with reduced man power
- Operational efficiency

## CONCLUSION

The project uses a Random forest regressor to predict the output and a web application is built to make the UI more accessible and easy using various technologies such as python, HTML5, CSS, Flask, Scikit, Matplot, Numpy, Pandas, Seaborn and other libraries. After the deployment of the web application, it can be accessed from anywhere with internet connection. This project reduces the long hours of analysis to predict the eligibility of the admission to a rated university.

## FUTURE SCOPE

The future scope of this project is wide. Few of them are:

- This can be implemented in less time for proper admission process.
- This can be accessed anytime anywhere, since it is a web application provided only an internet connection.
- The user had not need to travel a long distance for the admission and his/her time is also saved as a result of this automated system.

## BIBLIOGRAPHY


- L. Chang , Applying Data Mining to Predict College Admissions Yield, Chapter 4 in J. Luan and C. Zhao (Eds.), Data mining in action: Case studies, Spring 2008 - College of Education.
- Rensong Dong,The module of prediction of College Entrance Examination aspiration, Fuzzy Systems and Knowledge Discovery (FSKD), 31 May 2012 ,1559-1562.
- Data Visualizaton, Machine Learning

https://www.analyticsvidhya.com/blog/2017/09/common-machin elearningalgorithms/

- International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8, Issue-6 March 2020
- Journal of Network Communications and Emerging Technologies (JNCET) Volume 8,

Issue 4, April (2018)

## APPENDIX

Source Code

**Python code(ML model):**

```
# IMPORTING LIBRARIES , DATASET
import
pandas
as        pd
import
numpy as
np import matplotlib.pyplot as plt
import seaborn as sns
data=pd.read_csv('Admission_Predi
c
t.csv') print(data.columns,data.shape)

# DATA PRE-PROCESSING
print(data.isnu
ll().sum())
print(data.corr
())
```

```
print(data.info
())
print(data.desc ribe())
print("University
ratings:",set(data["University
Rating"]),"Research:",set(data["Res
e arch"]))

#DATA VISUALISATION
sns.barplot(data["GRE Score"],data["CGPA"])
sns.barplot(data["SOP"],data["CGPA"])
sns.barplot(data["TOEFL
Score"],data["CGPA"]) plt.scatter(data['GRE
Score'],data['CGPA']) plt.title('CGPA vs GRE
Score') plt.xlabel('GRE Score') plt.ylabe
l('CGPA
')
plt.show
()

plt.scatter(data['CGPA'],da
t a['SOP']) plt.title('SOP for
CGPA') plt.xlabel('CGPA')
plt.yla bel('S OP') plt.sh
ow()
plt.figure(figsize=(10, 10)) sns.heatmap(data.corr(), annot=True,
linewidths=0.05, fmt=
'.2f',cmap="magma") plt.show()
```

```
data.Research.value_counts()
sns.countplot(x="University
Rating",data=data)

data.Research.value_counts()
sns.countplot(x="University
Rating",data=data

sns.barplot(x="University Rating", y="Chance of Admit ", data=data)

# DATA TRANSFORMATION
x=data.drop(['Serial No.','Chance of Admit '],axis=1)
y=data['Chance of Admit '] print(x.shape,y.shape)

from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.
2) print(x_train.shape) print(x_te st.shape) print(y_tr
ain.shap e)

print(y_test.shape)

from sklearn.preprocessing import MinMaxScaler mms=MinMaxScaler()
x_train[x_train.columns]=mms.fit_transform(x_train[x_train.columns].value
s) x_test[x_test.columns]=mms.transform(x_test[x_test.columns].values)

# MODEL BUILDING(RANDOM FOREST REGRESSOR)
```

```
from sklearn.ensemble
importRandomForestRegressor
model=RandomForestRegressor()
model.fit(x_train,y_train)
y_pred=model.predict(x_test
) pri nt(
y_
pre
d) pri
nt(
y_t
est)

#evaluation from sklearn.metrics import mean_squared_error, r2_score,mean_absolute_error print('model score:',model.score(x_test,y_test)) print('Mean Absolute Error:', mean_absolute_error(y_test, y_pred)) print('Mean Squared Error:', mean_squared_error(y_test, y_pred)) print('Root Mean Squared Error:', np.sqrt(mean_squared_error(y_test, y_pred))) print('roc score:',roc_auc_score(y_test>0.5, y_pred>0.5)) print('recall score:',recall_score(y_test>0.5, y_pred>0.5))


# MODEL BUILDING(LINEAR REGRESSION)
x1=data.drop(['Serial No.','Chance of Admit '],axis=1) y1=data['Chance of Admit ']
x1_train,x1_test,y1_train,y1_test=train_test_split(x1,y1,test
_size=0.2) from sklearn.preprocessing import
StandardScaler sc=StandardScaler()
```

```
x1_train=sc.fit_transform(x1_train)
x1_test=sc.fit_transform(x1_test)

from sklearn.linear_model importLinearRegression

model1=LinearRegress
ion() model1.fit(x1_train,y1
_train)
y1_pred=model1.predi ct(x1_test) print('model score:',model1.score(x1_test,y1_test)) print('Mean Absolute Error:', mean_absolute_error(y1_test, y1_pred)) print('Mean Squared Error:', mean_squared_error(y1_test, y1_pred)) print('Root Mean Squared Error:', np.sqrt(mean_squared_error(y1_test, y1_pred)))print('roc score:',roc_auc_score(y1_test>0.5, y1_pred>0.5)) print('recall score:',recall_score(y1_test>0.5, y1_pred>0.5))

# MODEL BUILDING(LOGISTIC REGRESSION)
x2=data.iloc[:, 1:8].values y2=data.iloc[:,1:].values
x2_train,x2_test,y2_train,y2_test=train_test_split(x1,y1,test_size=0.
2) y2_train=y2_train>0.5
y2_test=y2_test>0.5

from sklearn.linear_model import
LogisticRegression model2=LogisticRegression()
model2.fit(x2_train,y2_train)

#evaluation from sklearn.metrics import
accuracy_score,roc_auc_score,recall_scor
```

```
e           y2_pred=model2.predict(x2_test)
print('model
score:',model2.score(x2_test,y2_test))
print('roc score:',roc_auc_score(y2_test,
y2_pred))                    print('recall
score:',recall_score(y2_test, y2_pred)) print(type(y2_test),type(y2_pred))

# SAVINGTHE MODEL
#Though the accuracy of Logistic regression model is more we
preferRandom forest regressor if we also want the percentage of chance
or else we can use Logistic regression model. import pickle

pickle.dump(model,open('model.pkl','wb'))
```

**HTML:**

**Inde.html:**

```
<!DOCTYPE html>
<html>
<head>
        <title>University Admission Predictor</title>
</head>
<link rel="preconnect" href="https://fonts.gstatic.com">
<link
href="https://fonts.googleapis.com/css2?family=Raleway:wght@100&displ
ay=swap" rel="stylesheet">
```

```
<link
href="https://fonts.googleapis.com/css2?family=Noto+Sans+HK:wght@500
&display
=swap" rel="stylesheet">
<style type="text/css">


        h1,h2{



        }

font-family: 'Raleway', sans-serif; color: black;

        h2,h1,form,p,b{
            textalig
            n:
            left;
            colo
            r:
            blac k; } label,p,b{ font-
        family: 'Noto Sans HK',
            sans-serif; color: black;
        }
        .elements{ padding-top:
            2px;
        }
```

```
</style>
<body>

        <img
src="https://cdn4.vectorstock.com/i/1000x1000/39/73/graduation-hat-
stacked-books-school-vector-25773973.jpg" style="position: -webkit-
sticky; position: sticky; top: 0;" align="right">
        <h1 style="font-size: 4rem; text-decoration-line: underline; text-
decoration- thickness: auto;">University Admission Predictor</h1>
        <br>
        <br>
        <p style="font-size: 2rem; font-family: 'Raleway', sans-serif;">
<strong> ABOUT </strong></p>
        <p style="font-size: 2rem; font-family: 'Raleway', sans-
serif;">Enter your details to predict whether you'll get an admission or
not .</p>

        <form action="/predict" method="post" class="elements"
style="font-size: 1rem;">
                <p style="font-size: 1.7rem; font-family: 'Raleway', sans-serif;">
<strong> DETAILS</strong></p>
                 <p class="elements">GRE Score</p>
                <p><input type="text" name="gre" value="Score range 0-
340" style=" border-radius: 8px;"></p>
                 <p class="elements">TOEFL Score</p>
                <p><input type="text" name="tofl" value="Score range 0-
```

```
120" style=" border-radius: 8px;"></p>
                <p class="elements"><label>University Rating</label> </p>
                <select name="rating" style=" border-radius: 8px;">
                        <option value="1">1</option>
                        <option value="2">2</option>
                        <option value="3">3</option>
                        <option value="4">4</option>
                        <option value="5">5</option>
        </select>
                <br>

                <p class="elements">SOP</p>
                <p><input type="text" name="sop" value="Score range 0-
5" style=" border-radius: 8px;"></p>
                <p class="elements">LOR</p>
                <p><input type="text" name="lor" value="Score range 0-
5" style=" border-radius: 8px;"></p>
                 <p class="elements">CGPA</p>
                <p><input type="text" name="cgpa" value="Score range 0-
10" style=" border-radius: 8px;"></p>
                <p class="elements"><label>Research</label></p>
                <select name="research" style=" border-radius: 8px;">
                        <option value="Yes">Yes</option>
                        <option value="No">No</option>
        </select>
```

```
                    <p class="elements"> <input type = "submit" value =
"submit" style=" border-radius: 8px;"/> </p>
        </form>


</body>
</html>
```

**Chance.html:**

```
<!DOCTYPE html>
<html>
<head>
        <title>eligibility</title>
</head>
<body>

        <img src="https://thumbs.dreamstime.com/b/group-smilinggirls-
boys- students-standing-together-happy-friends-isolated-
whitebackground-flat-cartoon- style-vector-150091547.jpg" style="float:
right;">
        <div style="padding-top: 15%">
        <h2>Predicting chance of admission</h2>
        <h3>A MachineLearning Web App Using Flask</h3>
```

```
            <p>Prediction : <b>You've a <b>{{p}}</b> chance to get the admission
        !</b><img src="thumbsup.png" height="2%" width="2%" ></p>
    </div>
    </bod
        y>
        </html>
```

**Nochance.html:**

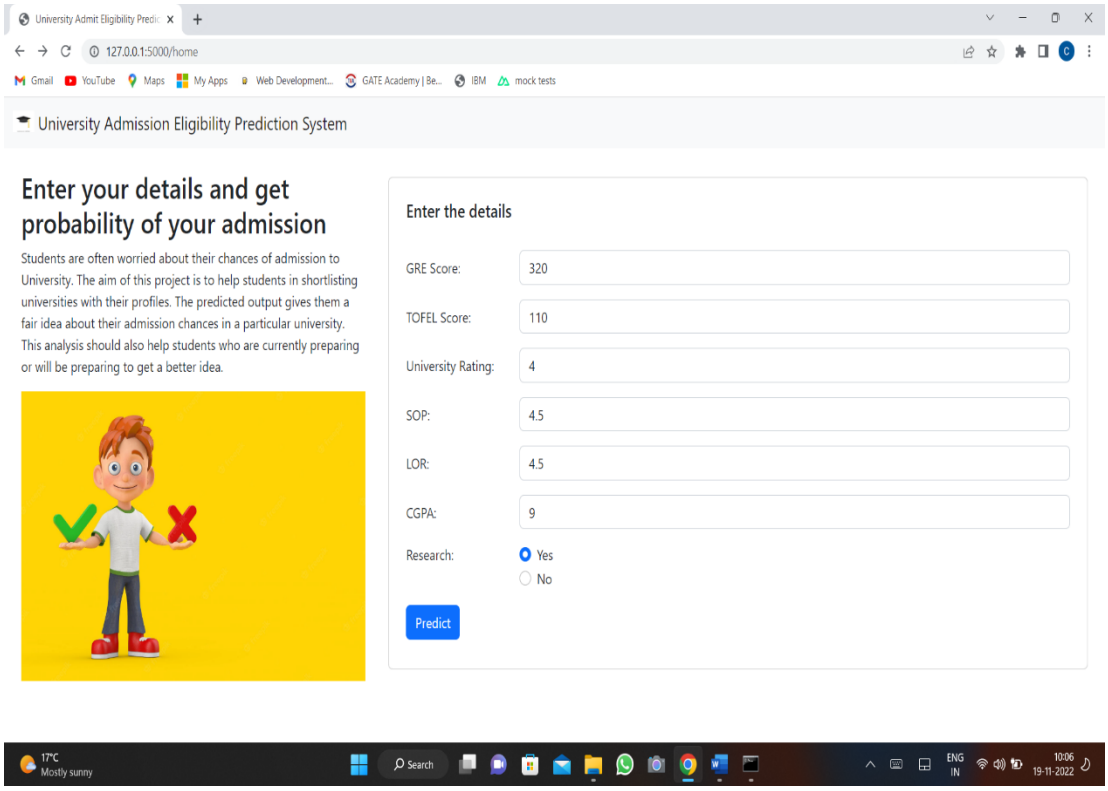
```
        <!DOCTYPE html>
        <html>
        <head>
            <title>eligibility</title>
        </head>
        <body>
            <img
        src="https://ih1.redbubble.net/image.638538259.9192/st,small,845x845-
        pad,1000x1000,f8f8f8.u1.jpg" style="float: right; " height="50%" width="50%">
            <div style="padding-top: 15%">
            <h2>Predicting chance of admission</h2>
              <h3>A MachineLearning Web App Using Flask</h3>
            <p>Prediction : <b>You do not have a chance!</b><img
        src="thumbsdown.png"
        height="2%" width="2%"></p>
            </div>
        </body>
        </html>
```

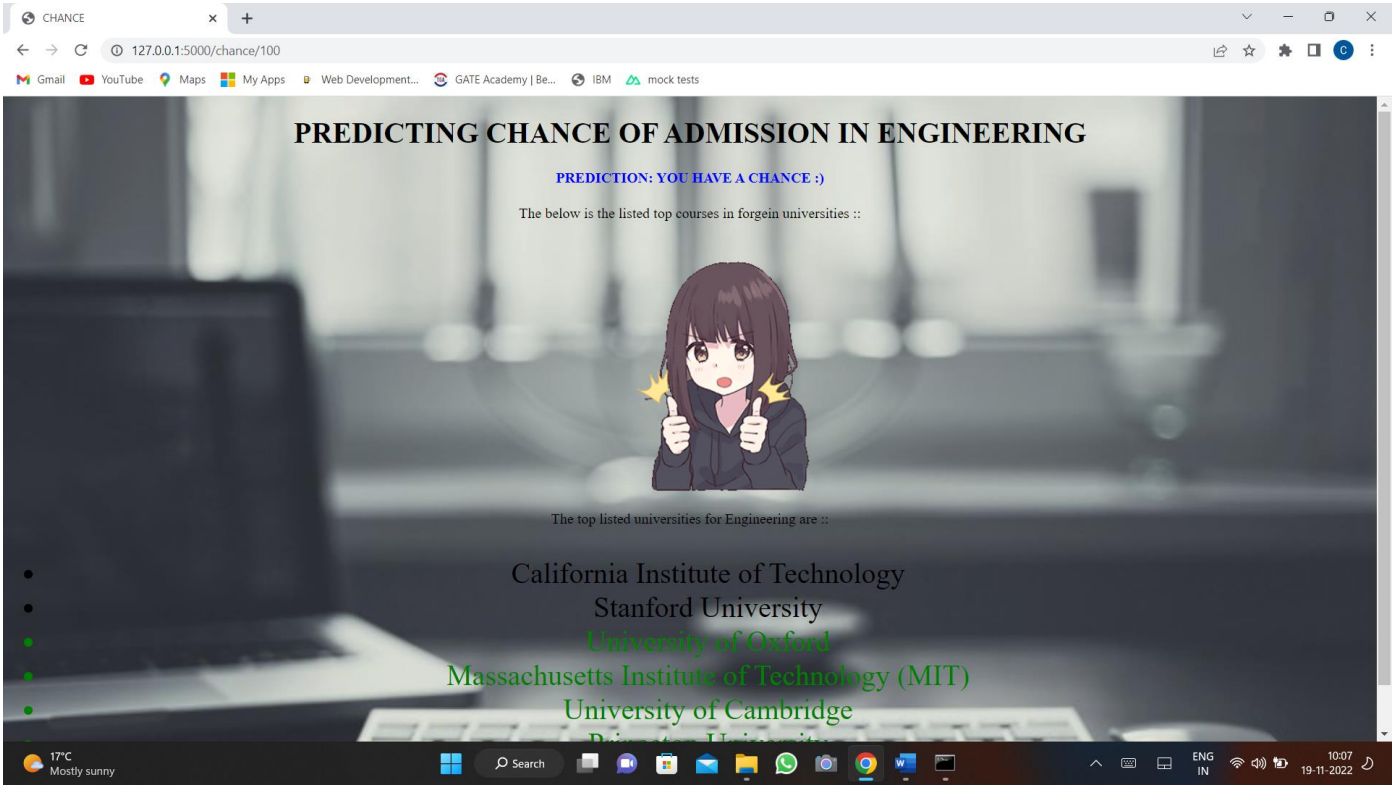
**Python code for backend:** import pickle

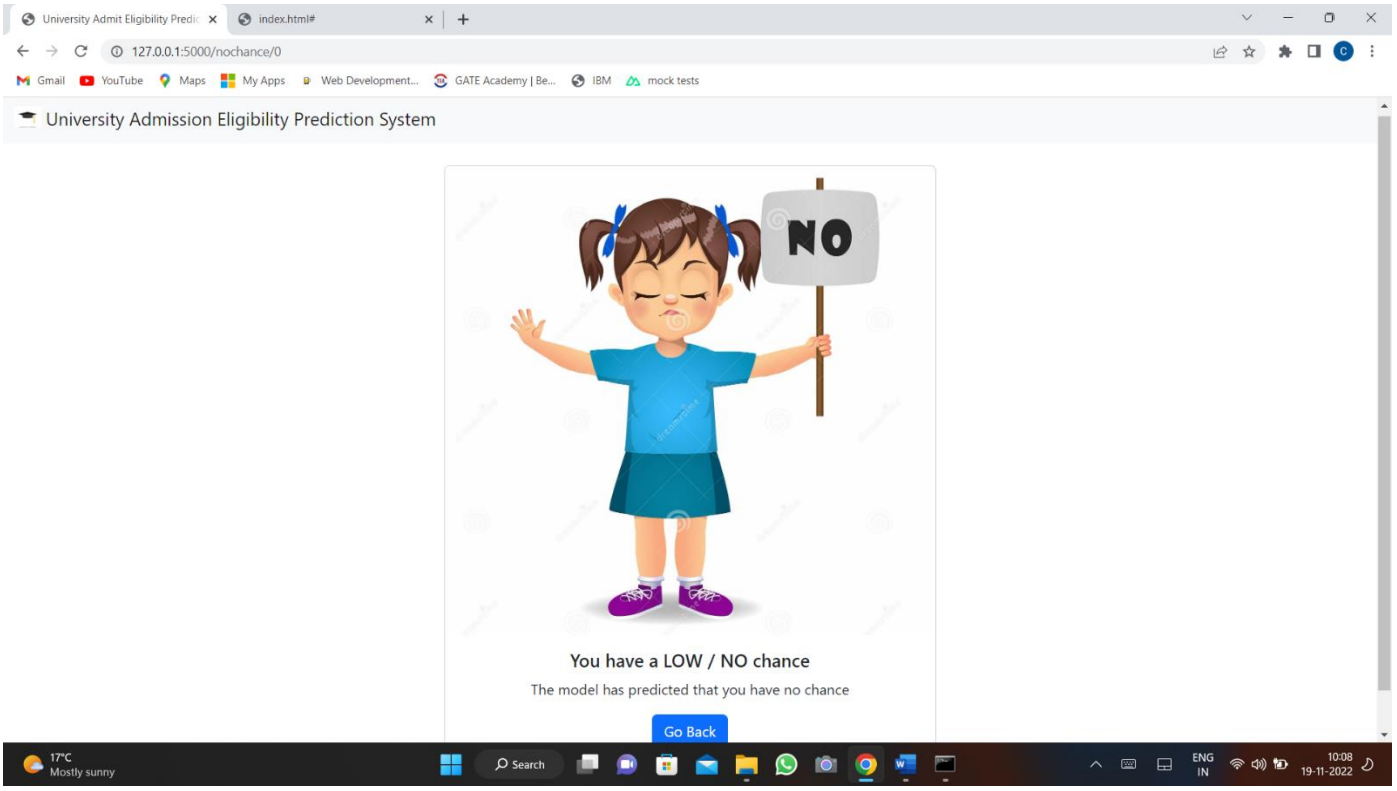
```
from flask importFlask ,
request,render_template from
math import ceil app = Flask(
name__)
model = pickle.load(open("model.pkl","rb"))


@ap
p.ro
ute('/
') def
inde
x():
        return render_template('index.html')


@app.route('/predict',methods =
['GET','POST']) def admin():
   gre=(eval(request.form["gre"])290)/(340-290)
   tofl=(eval(request.form["tofl"])-
   92)/(120-92)
   rating=(eval(request.form["rating"])-
   1.0)/4.0
   sop=(eval(request.form["sop"])-
   1.0)/4.0
   lor=(eval(request.form["lor"])-1.0)/4.0
   cgpa=(eval(request.form["cgpa"])290.0)/(340.0-290.0)
   research=request.form["research"]
```

```
    if
        (research
        =="Yes"
        ):
        research
        =1 else: research=0
    preds=[[gre,tofl,rating,sop,lor,cgpa,res
    ea rch]] xx=model.predict(preds) if
    (xx>0.5): return
    render_template("chance.html",p=str(ceil(xx[0]*100))+"%
    ") returnrender_template("nochance.html")
if __name__== '_main_':
    app.run(debug = False,
    port=4000)
```

b) UI output screenshot:


University Admit Eligibility Predic
127.0.0.1:5000/home
Gmail
YouTube
Maps
My Apps
Web Development...
GATE Academy | Be...
IBM
mock tests
University Admission Eligibility Prediction System
Enter your details and get probability of your admission
Students are often worried about their chances of admission to University. The aim of this project is to help students in shortlisting universities with their profiles. The predicted output gives them a fair idea about their admission chances in a particular university. This analysis should also help students who are currently preparing or will be preparing to get a better idea.
Enter the details
GRE Score:
320
TOFEL Score:
110
University Rating:
4
SOP:
4.5
LOR:
4.5
CGPA:
9
Research:
Yes
No
Predict
17°C
Mostly sunny
Search
ENG
IN
10:06
19-11-2022


CHANCE
127.0.0.1:5000/chance/100
Gmail
YouTube
Maps
My Apps
Web Development...
GATE Academy | Be...
IBM
mock tests
PREDICTING CHANCE OF ADMISSION IN ENGINEERING
PREDICTION: YOU HAVE A CHANCE :)
The below is the listed top courses in forgein universities ::
The top listed universities for Engineering are ::
California Institute of Technology
Stanford University
University of Oxford
Massachusetts Institute of Technology (MIT)
University of Cambridge
17°C
Mostly sunny
Search
ENG
IN
10:07
19-11-2022


University Admit Eligibility Predic
index.html#
127.0.0.1:5000/nochance/0
Gmail
YouTube
Maps
My Apps
Web Development...
GATE Academy | Be...
IBM
mock tests
University Admission Eligibility Prediction System
NO
You have a LOW / NO chance
The model has predicted that you have no chance
Go Back
17°C
Mostly sunny
Search
ENG
IN
10:08
19-11-2022