UNIVERSITY ADMIT ELIGIBIlITY PREDICTOR

NALAIYA THIRAN PROJECT REPORT 2022

Submitted by

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TEAM ID : PNT2022TMID08852

Project Report

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1. INTRODUCTION

1.1 Project Overview

This is a new web-based University Admissions Predictor. It is a data science based application that asks for the users to input their academic transcripts data and calculates their chances of admission into the University Tier that they selected. It also provides an analysis of the data and shows how chances of admissions can depend on various factors. This document describes the scope, objectives and goals of the system. In addition to describing the non-functional requirements, this document models the functional requirements with use cases, interaction diagrams and class models. This document is intended to direct the design and implementation of the target system in an object-oriented language.

1.2 Purpose

In the current world scenario, it is not enough for a student to just have an Under Graduate degree. Most employers now look for higher qualifications in their new recruits. As a result, the demands for a good higher education are at an all-time high. A lot of students from India prefer to continue their higher education with foreign universities, especially in the United States. In order to get admitted to these foreign universities, a set of academic requirements are needed. However, because of the sheer number of universities of different levels, students are often stuck in a dilemma till the very last minute as to whether or not their applications will be accepted or not as no concrete documentation is available which lists the requirements

2. LITERATURE SURVEY

2.1 Existing problem

Today in college's student details are entered manually. The student details in separate records are tedious task. Referring to all these records updating is needed. There is a chance for more manual errors.

1.When the student comes in college.

2.First of all, he/she takes admission form from reception.

3.Fills it and submits it into office.

4.Filled form is first checked with documents like merit list a detail came from university and verified by an official person, if there is any mistake then it is corrected.

5.Atthetimeofsubmissionofitthefeesisdepositedbythecandidate.

6. At the time of submission of admission form admission number is assigned to the candidate by the institute.

7. Candidate gets the receipt of fees deposition

2.2 References

- https://www.scribd.com/doc/89740223/Common-Seat-Allotment
- https://www.cse.iitb.ac.in/~parth95/report.pdf

2.3 Problem Statement Definition

Create a web application that predicts a user's chances of admissions in the universities of their choice for PG Studies abroad.

3. IDEATION AND PROPOSED SOLUTION

3.1 Empathy Map Canvas
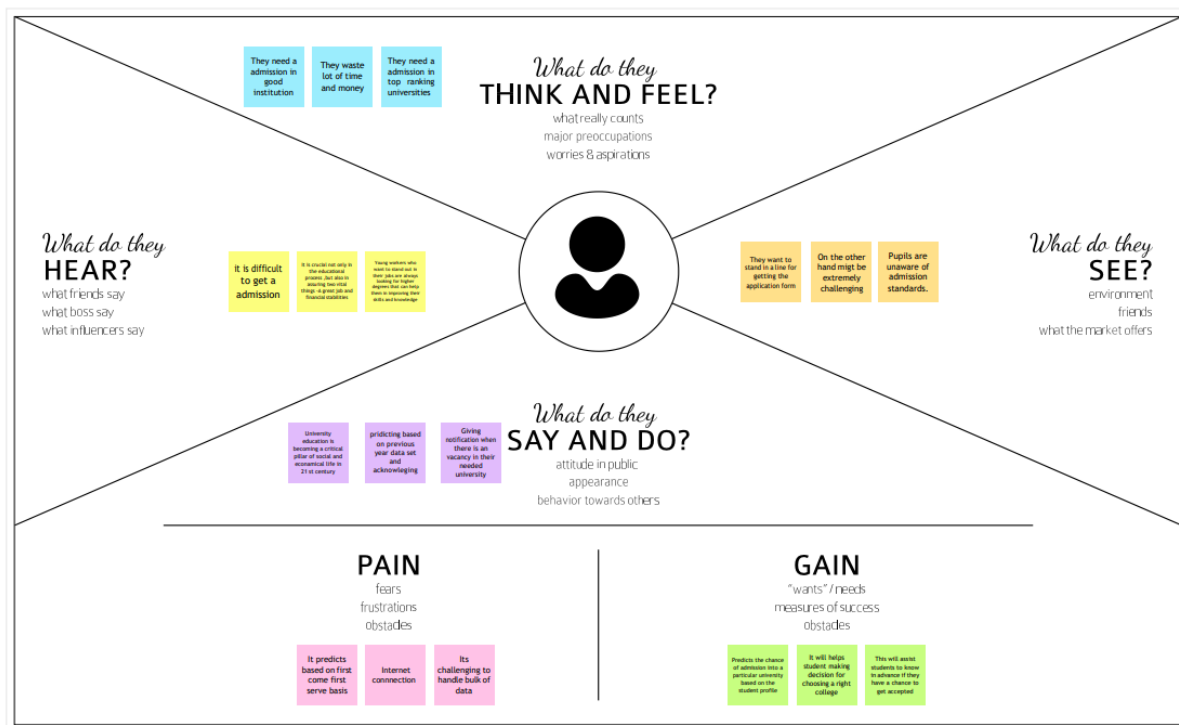
3.2 Ideation and Brainstorming

This task of shortlisting the universities where the student has high chances of admission is difficult for mainly for the international students, so they end up with applying to many universities in hopes of getting admission in few of them thus investing an extra amount of money in the applications. There are several portals and websites which provide information and help to students in shortlisting the universities, but they are not reliable. Most of the students don't take the risk of evaluating the colleges by themselves, and they seek the help of the education consultancy firms to do it for them. Again, for this student have to pay a huge amount of fee to the education consultant.

3.3 Proposed Solution

The main goal of the system is to automate the process carried out in the organization with improved performance and realize the vision of paperless admission. Some of the goals of the system are listed below:

• Manage large number of student details.

 • Manage all details of student who registered for the course

• Create student accounts and maintain the data is effectively.

 • View all the details of the students.

 • Reduce the workload in interview the students for selection

• Activities like updating, modification, deletion of records should be easier.

3.4 Problem Solution Fit

We will be developing a University Admit Eligibility Predictor system which will help the students to predict the chances of their application being selected for a particular university for which they wish to apply based on their profile. Also, the system will provide a recommendation of universities to the student to which the student has a high possibility of getting admission. Multiple machine learning classification algorithms were evaluated to develop the system.

4. REQUIREMENT ANALYSIS

4.1 Functional requirements

High Priority

1. The system shall provide the user access to the AI predictor, wherein the user will be able to fill in a form with their academic transcripts data (GRE score, TOEFL Score, CGPA, SOP Score, LOR Score, Research experience), choose the tier of university they wish to apply to (1-5(top level)) and then get a prediction of their chances of admissions to that level university based on the mapping between their requirements and the student's results.

 2. The system shall provide the administrator access to all the records in the database on a "read-only" basis.

Medium Priority

1. The system shall provide all users with answers to the most common FAQ's like – "Distribution of University Tiers", "University Admissions Criteria"

2. The system shall allow the user's details to be stored for the next time they return to the website. If the user chooses to take a new evaluation, the most recent inputs as well as prediction shall replace any previous data.

Low Priority

The system shall provide users an analysis of how the various factors mentioned in the form affect their chances of admissions as well as what is the general trend of applications to the various tiers of universities.

4.2 Non-Functional requirements

Reliability

• The system shall be completely operational all hours of the day unless system failure or upgradation work is to be performed

• Down time after a failure shall not exceed 24 hours

Usability

• No training is required to use the website.

• The form, home, about, FAQ and analysis pages load up within 10 seconds.

• The results from the predictor should not take more than 30 seconds.

Performance

• The system can support any number of users at a time.

• The mean time to view a web page over a 56Kbps modem connection shall not exceed 5 seconds.

Online user documentation and help

• The system shall provide a web page that explains how to navigate the site. This page should be customized based on what pages that user is allowed to access.

5.PROJECT DESIGN

5.1 Data Flow Diagrams
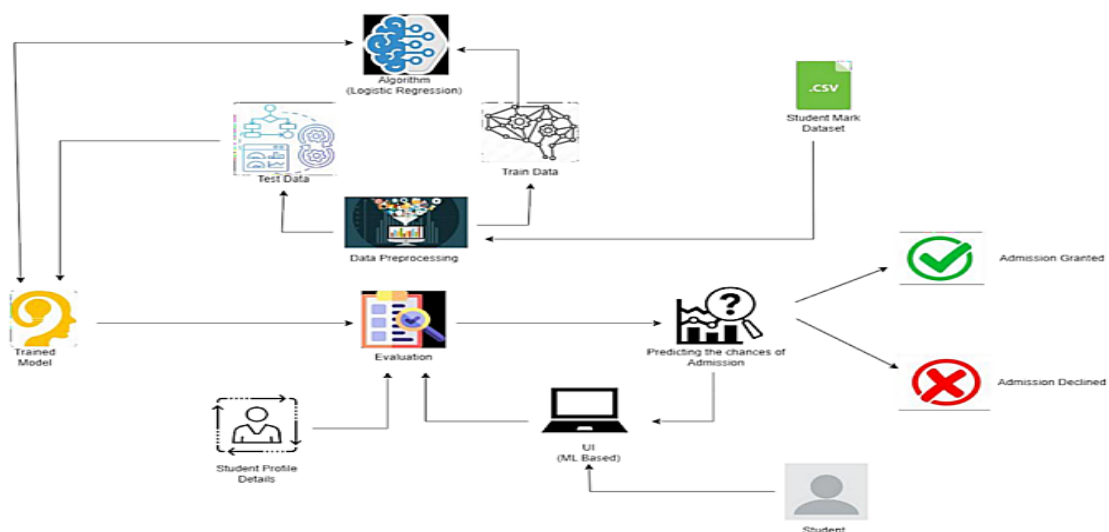
5.2 Solution and Technical Architecture

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

● Find the best tech solution to solve existing business problems.

● Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.

● Define features, development phases, and solution requirements. Provide specifications according to which the solution is defined, managed, and delivered.
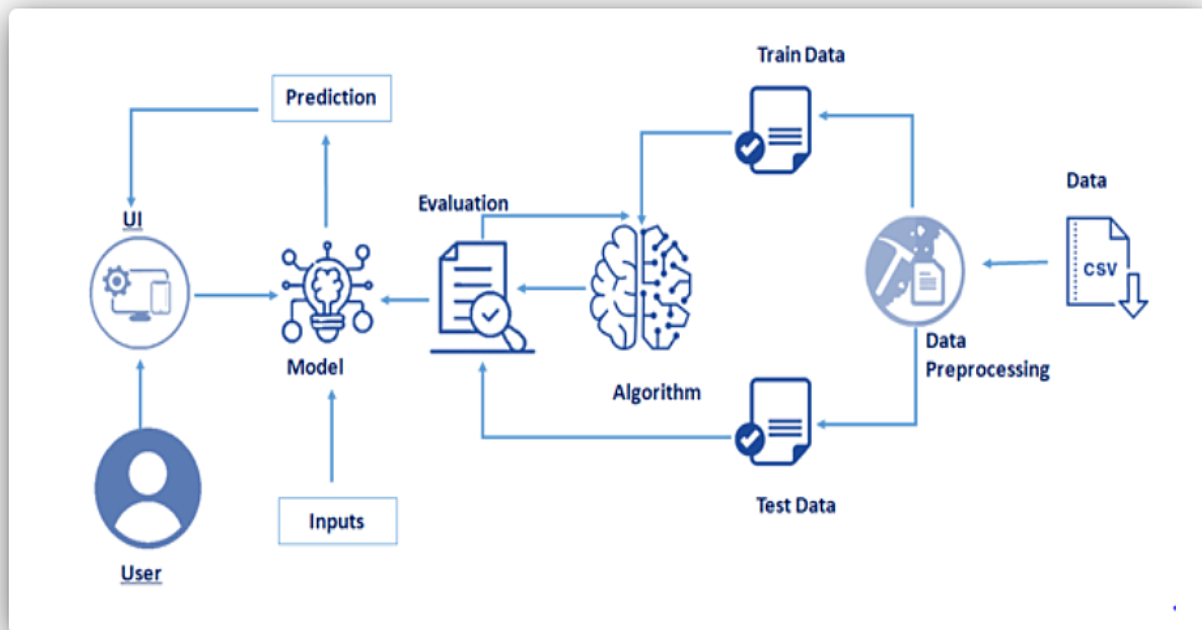
5.3 User Stories

A user story is an informal, natural language description of features of a software system. They are written from the perspective of an end user or user of a system, and may be recorded on index cards, post-it notes, or digitally in project management software.[1] Depending on the project, user stories may be written by different stakeholders like client, user, manager, or development team.

6. PROJECT PLANNING AND SCHEDULING

6.1 Sprint Planning and Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Nandhitha.K Alagu Nandhitha.S Haripriya.S Swathiga.V
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Nandhitha.K Haripriya.S Alagu Nandhitha.S Swathiga.V
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Swathiga.V Nandhitha.K Haripriya.S Alagu Nandhitha.S
Sprint-1		USN-4	As a user, I can register for the application through Gmail	2	Medium	Haripriya.S Alagu Nandhitha.S Nandhitha.K Swathiga.V
Sprint-1	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Swathiga.V Alagu Nandhitha.S Nandhitha.K Haripriya.S
	Dashboard					

6.2 Sprint Delivery Schedule

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	31 Oct 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	05 Sept 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	12 Sept 2022

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let'scalculate the team's average velocity(AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

6.3 Reports from JIRA

	T	NOV
✓ ⚡ UAEP-1 Sprint-1 DONE	▮	
☑ UAEP-2 Dataset DONE		
✓ ⚡ UAEP-3 Sprint-2 DONE	▬	
☑ UAEP-4 Designing the UI DONE		
✓ ⚡ UAEP-5 Sprint-3 DONE		▬
☑ UAEP-7 Final Result Page DONE		
✓ ⚡ UAEP-6 Sprint-4 DONE		▬▬
☑ UAEP-8 Deploying the project DONE		

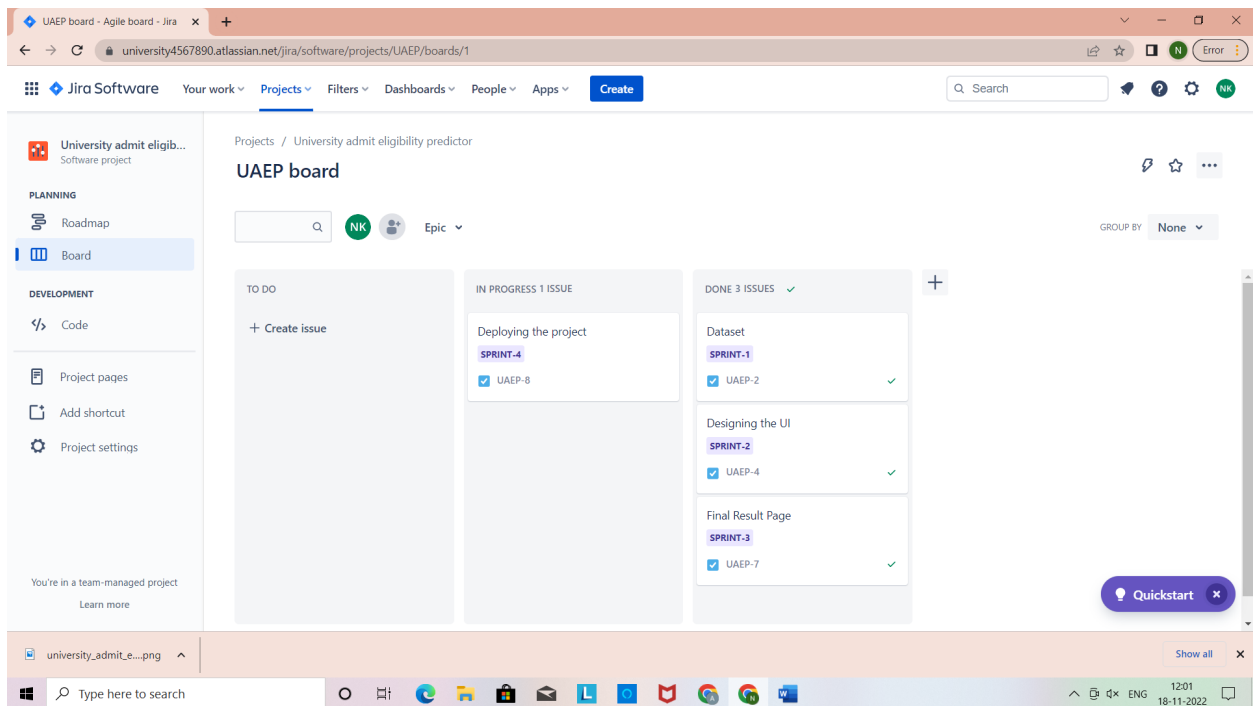UAEP board - Agile board - Jira | + | ∨ – □ ✕

← → ⟳ 🔒 university4567890.atlassian.net/jira/software/projects/UAEP/boards/1 ⤢ ☆ ⊡ N Error

⠿ ◆ Jira Software   Your work ∨   Projects ∨   Filters ∨   Dashboards ∨   People ∨   Apps ∨   **Create**   🔍 Search   🔔 ❓ ⚙ NK

University admit eligib...
Software project

PLANNING

🗺 Roadmap

▥ Board

DEVELOPMENT

</> Code

▤ Project pages

⬚ Add shortcut

⚙ Project settings

You're in a team-managed project
Learn more

Projects / University admit eligibility predictor

UAEP board

🔍   NK ⊕   Epic ∨   GROUP BY   None ∨

TO DO

＋ Create issue

IN PROGRESS 1 ISSUE

Deploying the project
SPRINT-4
☑ UAEP-8

DONE 3 ISSUES ✓   ＋

Dataset
SPRINT-1
☑ UAEP-2   ✓

Designing the UI
SPRINT-2
☑ UAEP-4   ✓

Final Result Page
SPRINT-3
☑ UAEP-7   ✓

💡 Quickstart ✕

🖼 university_admit_e....png ∧   Show all ✕

⊞ 🔍 Type here to search   O ⧉ 🌐 📁 🛍 ✉ L ◎ 🛡 🌐 🌐 W   ∧ ⊡ ◁× ENG 12:01 18-11-2022 💬

7.CODING AND SOLUTIONING

7.1 Feature 1

```python
1   from flask import Flask, render_template, redirect, url_for, request
2   import requests
3
4   app = Flask(__name__)
5
6   @app.route("/", methods = ['POST', 'GET'])
7   def index():
8       if request.method == 'POST':
9           arr = []
10          for i in request.form:
11              val = request.form[i]
12              if val == '':
13                  return redirect(url_for("demo2"))
14              arr.append(float(val))
15
16          # deepcode ignore HardcodedNonCryptoSecret: <please specify a reason of ignoring this>
17          API_KEY = "wf8mge_OQdwVO8ao2kmWCtfxOfLWl8442SH44V85v2Ls"
18          token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={
19              "apikey": API_KEY,
20              "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'
21          })
22          mltoken = token_response.json()["access_token"]
23          header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}
24          payload_scoring = {
25              "input_data": [{"fields":[  'GRE Score',
26                                          'TOEFL Score',
27                                          'University Rating',
28                                          'SOP',
29                                          'LOR ',
30                                          'CGPA',
31                                          'Research'],
32                              "values": [arr]
33                              }]
34          }
35
36          response_scoring = requests.post(
37              'https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8308fd4c-24a5-46ab-96fa-263657ae4ad0/predictions?version=2022-10-18'
38              json=payload_scoring
```

7.2 Feature 2

```
1   {% extends 'index.html' %}
2   {% block body %}
3       <div class="p-4">
4           <div class="row mb-3">
5               <div class="col-4">
6                   <h2 class="text-responsive-h">
7                       Enter your details and get probability of your admission
8                   </h2>
9                   <p class="text-responsive">
10                      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
11                  </p>
12                  <div class="d-flex justify-content-right">
13                      <img src="../static/img/animated-teach.gif" border="0" alt="..." />
14                  </div>
15              </div>
16              <div class="col-8">
17                  <div class="card p-2 ms-2 my-2">
18                      <div class="card-body">
19                          <h5 class="card-title pb-4">
20                              Enter the details
21                          </h5>
22                          <form action="/" method="post" id="theForm">
23                              <div class="row mb-3">
24                                  <label for="gre" class="col-lg-2 col-form-label">GRE Score:</label>
25                                  <div class="col-lg-10">
26                                      <input type="number" class="form-control" id="gre" name="gre" min="250" max="340" required>
27                                  </div>
28                              </div>
29                              <div class="row mb-3">
30                                  <label for="tofel" class="col-lg-2 col-form-label">TOFEL Score:</label>
31                                  <div class="col-lg-10">
32                                      <input type="number" class="form-control" id="tofel" name="tofel" min="50" max="120" required>
33                                  </div>
34                              </div>
35                              <div class="row mb-3">
36                                  <label for="university_rating" class="col-lg-2 col-form-label">University Rating:</label>
37                                  <div class="col-lg-10">
38                                      <input type="number" class="form-control" id="university_rating" step="0.01" name="university_rating" min="1" max="5" required>
```

```
37                                  <div class="col-lg-10">
38                                      <input type="number" class="form-control" id="university_rating" step="0.01" name="university_rating" min="1" max="5" required>
39                                  </div>
40                              </div>
41                              <div class="row mb-3">
42                                  <label for="sop" class="col-lg-2 col-form-label">SOP:</label>
43                                  <div class="col-lg-10">
44                                      <input type="number" class="form-control" id="sop" name="sop" step="0.01" min="1" max="5" required>
45                                  </div>
46                              </div>
47                              <div class="row mb-3">
48                                  <label for="lor" class="col-lg-2 col-form-label">LOR:</label>
49                                  <div class="col-lg-10">
50                                      <input type="number" class="form-control" id="lor" name="lor" step="0.01" min="1" max="5" required>
51                                  </div>
52                              </div>
53                              <div class="row mb-3">
54                                  <label for="cgpa" class="col-lg-2 col-form-label">CGPA:</label>
55                                  <div class="col-lg-10">
56                                      <input type="number" class="form-control" id="cgpa" name="cgpa" step="0.01" min="5" max="10" required>
57                                  </div>
58                              </div>
59                              <fieldset class="row mb-3">
60                                  <legend class="col-form-label col-sm-2 pt-0">Research:</legend>
61                                  <div class="col-sm-10">
62                                      <div class="form-check">
63                                          <input class="form-check-input" type="radio" name="yes_no_radio" id="gridRadios1" value="1">
64                                          <label class="form-check-label" for="yes_no_radio">
65                                              Yes
66                                          </label>
67                                      </div>
68                                      <div class="form-check">
69                                          <input class="form-check-input" type="radio" name="yes_no_radio" id="gridRadios2" value="0" checked>
70                                          <label class="form-check-label" for="yes_no_radio">
71                                              No
72                                          </label>
73                                      </div>
```

8.TESTING

8.1 Test Cases

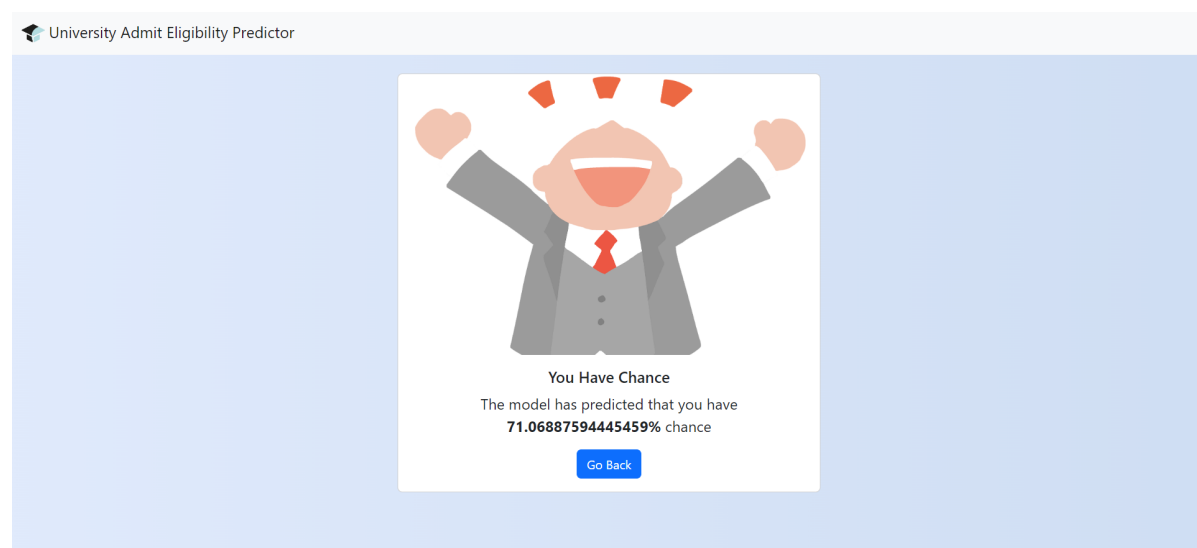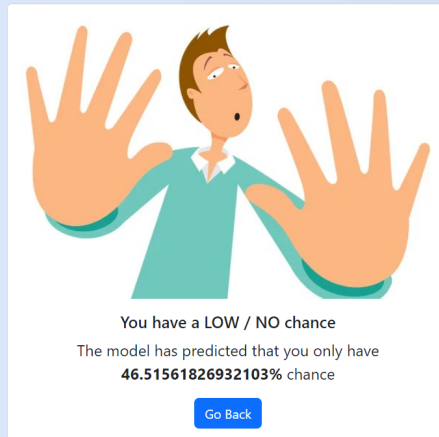|	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
1									
2	1	337	118	4	4.5	4.5	9.65	1	0.92
3	2	324	107	4	4	4.5	8.87	1	0.76
4	3	316	104	3	3	3.5	8	1	0.72
5	4	322	110	3	3.5	2.5	8.67	1	0.8
6	5	314	103	2	2	3	8.21	0	0.65
7	6	330	115	5	4.5	3	9.34	1	0.9
8	7	321	109	3	3	4	8.2	1	0.75
9	8	308	101	2	3	4	7.9	0	0.68
10	9	302	102	1	2	1.5	8	0	0.5
11	10	323	108	3	3.5	3	8.6	0	0.45
12	11	325	106	3	3.5	4	8.4	1	0.52
13	12	327	111	4	4	4.5	9	1	0.84
14	13	328	112	4	4	4.5	9.1	1	0.78
15	14	307	109	3	4	3	8	1	0.62
16	15	311	104	3	3.5	2	8.2	1	0.61
17	16	314	105	3	3.5	2.5	8.3	0	0.54
18	17	317	107	3	4	3	8.7	0	0.66
19	18	319	106	3	4	3	8	1	0.65
20	19	318	110	3	4	3	8.8	0	0.63
21	20	303	102	3	3.5	3	8.5	0	0.62
22	21	312	107	3	3	2	7.9	1	0.64
23	22	325	114	4	3	2	8.4	0	0.7
24	23	328	116	5	5	5	9.5	1	0.94
25	24	334	119	5	5	4.5	9.7	1	0.95
26	25	336	119	5	4	3.5	9.8	1	0.97
27	26	340	120	5	4.5	4.5	9.6	1	0.94
28	27	322	109	5	4.5	3.5	8.8	0	0.76

8.2 User Acceptance Testing

User Acceptance Testing (UAT) is a type of testing performed by the end user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final phase of testing after functional, integration and system testing are done. The User Acceptance of this product is not surveyed enough to give a solid conclusion. The theoretical and hypothetical acceptance is calculated to be high enough to conclude that this product is usable and valuable.

9. RESULTS

9.1 Performance Metrics

The Performance is the Accuracy of the model trained. The training accuracy of the model is 92%. The testing accuracy of the model is 89%.

You have a LOW / NO chance
The model has predicted that you only have
46.51561826932103% chance

Go Back

10. ADVANTAGES AND DISADVANTAGES

➤ **ADVANTAGE**

- 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.
- It is fast, efficient and reliable
- Avoids data redundancy and inconsistency
- Very user-friendly
- Easy accessibility of data
- Number of personnel required is considerably less
- Provides more security and integrity to data.

➤ **DISADVANTAGE**

- Required active internet connection.
- System will provide inaccurate results if data entered incorrectly.

11.CONCLUSION

We have successfully developed an application using python flask, HTML, CSS. By using the application, we can predict weather we can get admision in the desired University or not.

12. FUTURE SCOPE

In future we would like to enhance the existing model in such a way that consumer feels the same way when purchasing in store using Virtual reality and other upcoming technologies. Research to improve the accuracy of the system is under progress.

13.APPENDIX

GitHub link: https://github.com/IBM-EPBL/IBM-Project-2540-1658473925

Source Code:

```python
from flask import Flask, render_template, redirect, url_for, request
import requests

app = Flask(__name__)

@app.route("/", methods = ['POST', 'GET'])
def index():
    if request.method == 'POST':
        arr = []
        for i in request.form:
            val = request.form[i]
            if val == '':
                return redirect(url_for("demo2"))
            arr.append(float(val))

        # deepcode ignore HardcodedNonCryptoSecret: <please specify a reason of ignoring this>
        API_KEY = "wf8mge_OQdwVO8ao2kmWCtfxOfLWl8442SH44V85v2Ls"
        token_response = requests.post('https://iam.cloud.ibm.com/identity/token', data={
            "apikey": API_KEY,
            "grant_type": 'urn:ibm:params:oauth:grant-type:apikey'
            })
        mltoken = token_response.json()["access_token"]
        header = {'Content-Type': 'application/json', 'Authorization': 'Bearer ' + mltoken}
        payload_scoring = {
            "input_data": [{"fields":[  'GRE Score',
                                        'TOEFL Score',
                                        'University Rating',
                                        'SOP',
                                        'LOR ',
                                        'CGPA',
                                        'Research'],
                        "values": [arr]
                        }]
                    }

        response_scoring = requests.post(
            'https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8308fd4c-24a5-46ab-96fa-263657ae4ad0/predictions?version=2022-10-18'
            json=payload_scoring
```

```html
{% extends 'index.html' %}
{% block body %}
    <div class="p-4">
        <div class="row mb-3">
            <div class="col-4">
                <h2 class="text-responsive-h">
                    Enter your details and get probability of your admission
                </h2>
                <p class="text-responsive">
                    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
                </p>
                <div class="d-flex justify-content-right">
                    <img src="../static/img/animated-teach.gif" border="0" alt="..." />
                </div>
            </div>
            <div class="col-8">
                <div class="card p-2 ms-2 my-2">
                    <div class="card-body">
                        <h5 class="card-title pb-4">
                            Enter the details
                        </h5>
                        <form action="/" method="post" id="theForm">
                            <div class="row mb-3">
                                <label for="gre" class="col-lg-2 col-form-label">GRE Score:</label>
                                <div class="col-lg-10">
                                    <input type="number" class="form-control" id="gre" name="gre" min="250" max="340" required>
                                </div>
                            </div>
                            <div class="row mb-3">
                                <label for="tofel" class="col-lg-2 col-form-label">TOFEL Score:</label>
                                <div class="col-lg-10">
                                    <input type="number" class="form-control" id="tofel" name="tofel" min="50" max="120" required>
                                </div>
                            </div>
                            <div class="row mb-3">
                                <label for="university_rating" class="col-lg-2 col-form-label">University Rating:</label>
                                <div class="col-lg-10">
                                    <input type="number" class="form-control" id="university_rating" step="0.01" name="university_rating" min="1" max="5" required>
```

```html
                                    <div class="col-lg-10">
                                        <input type="number" class="form-control" id="university_rating" step="0.01" name="university_rating" min="1" max="5" required>
                                    </div>
                                </div>
                                <div class="row mb-3">
                                    <label for="sop" class="col-lg-2 col-form-label">SOP:</label>
                                    <div class="col-lg-10">
                                        <input type="number" class="form-control" id="sop" name="sop" step="0.01" min="1" max="5" required>
                                    </div>
                                </div>
                                <div class="row mb-3">
                                    <label for="lor" class="col-lg-2 col-form-label">LOR:</label>
                                    <div class="col-lg-10">
                                        <input type="number" class="form-control" id="lor" name="lor" step="0.01" min="1" max="5" required>
                                    </div>
                                </div>
                                <div class="row mb-3">
                                    <label for="cgpa" class="col-lg-2 col-form-label">CGPA:</label>
                                    <div class="col-lg-10">
                                        <input type="number" class="form-control" id="cgpa" name="cgpa" step="0.01" min="5" max="10" required>
                                    </div>
                                </div>
                                <fieldset class="row mb-3">
                                    <legend class="col-form-label col-sm-2 pt-0">Research:</legend>
                                    <div class="col-sm-10">
                                        <div class="form-check">
                                            <input class="form-check-input" type="radio" name="yes_no_radio" id="gridRadios1" value="1">
                                            <label class="form-check-label" for="yes_no_radio">
                                                Yes
                                            </label>
                                        </div>
                                        <div class="form-check">
                                            <input class="form-check-input" type="radio" name="yes_no_radio" id="gridRadios2" value="0" checked>
                                            <label class="form-check-label" for="yes_no_radio">
                                                No
                                            </label>
                                        </div>
```

```html
                                </fieldset>
                                <div class="row lg-3">
                                    <div class="col-lg-2 mb-2 me-3">
                                        <button type="submit" class="btn btn-primary" id="button">Predict</button>
                                    </div>
                                    <div class="col-lg-2" id="spinner">
                                        <div class="spinner-border text-primary m-1" role="status">
                                            <span class="visually-hidden">Loading...</span>
                                        </div>
                                        <div class="spinner-grow text-primary m-1" role="status">
                                            <span class="visually-hidden">Loading...</span>
                                        </div>
                                    </div>
                                </div>
                            </form>
                        </div>
                    </div>
                </div>
            </div>
        </div>
{% endblock %}
```