NALAIYATHIRAN PROJECT BASED LEARNING

ON

PROFESSIONAL READINESS FOR INNOVATION EMPLOYABILITY AND
ENTERPREURSHIP

Submitted by

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of

Bachelor of Technology

in

Information Technology

Dr. Mahalingam College of Engineering and Technology

Pollachi - 642003

An Autonomous Institution

Affiliated to Anna University, Chennai - 600 025

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SYNOPSIS

1. INTRODUCTION

1.1 Project Overview

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.

1.2 Purpose

A persons education plays a vital role in their life. While planning for education students often have several questions regarding the courses, universities, job opportunities, expenses involved, etc. Securing admission in their dream university is one of their main concerns. It is seen that often students prefer to pursue their education from universities which have global recognition.

2. LITERATURE SURVEY

When it comes to international students the first choice of the majority of them is the United States of America. With the majority of worlds highly reputed universities, wide range of courses offered in every sector, highly accredited education system and teaching, scholarships provided to students, best job market and many more advantages make it the dream destination for the international 1 students. According to research, there are above 8 Million international students studying in more than 1700 public and 2500 private universities and colleges across the USA. (MasterPortal (2017))

2.1 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 on the basis of 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.

2.2 References

Geiser, Saul, and with Roger Studley. "UC and the SAT: Predictive validity and differential impact of the SAT I and SAT II at the University of California." *Educational Assessment* 8.1 (2002): 1-26.

Rothstein, Jesse M. "College performance predictions and the SAT." *Journal of Econometrics* 121.1-2 (2004): 297-317.

Leonard, David K., and Jiming Jiang. "Gender bias and the college predictions of the SATs: A cry of despair." *Research in Higher education* 40.4 (1999): 375-407.

2.3 Problem Statement Definition

Build an application that predicts the university admission chances of a student powered by machine learning models. Train the model and host it on IBM cloud. The majority of international students studying in the USA are from India and China. In the past decade, India has seen a huge increase in the number of students opting to pursue their education from foreign universities in countries like The USA, Ireland, Australia, Germany, etc. Although there are significant universities and colleges in India, students are finding it difficult to get admission in the highly ranked colleges and also getting a job is a challenge as the ratio of number students to the number work opportunities available is quite high. India is one of the leading counties in the number of software engineers produced each year; it becomes tough for the students to find jobs in elite companies due to high competition. This motivates a good number of students to pursue post-graduation in their field. It is seen that the number of students pursuing Masters in Computer Science field from universities in the USA is quite high; the focus of this research will be on these students.
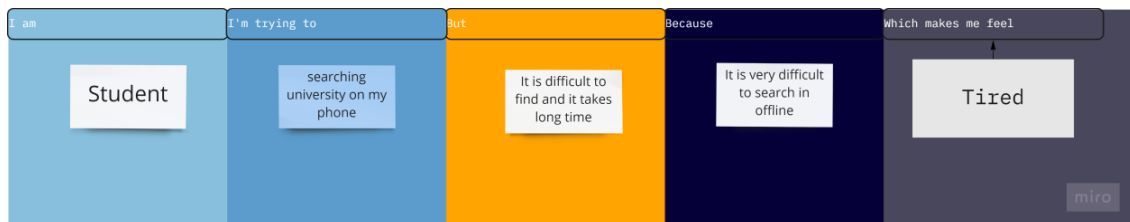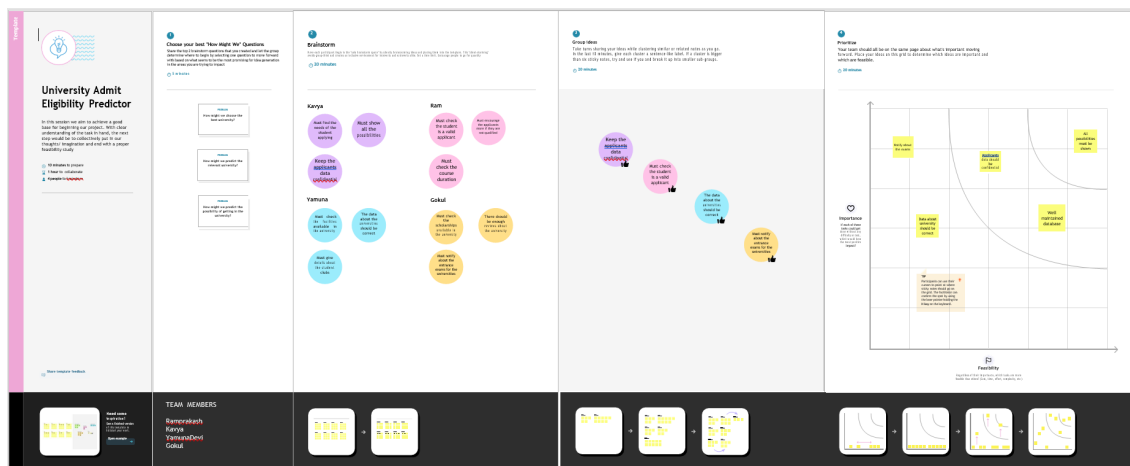
3. IDEATION & PROPOSED SOLUTION

The project aims to develop an application that uses artificial intelligence with the help of chat bot to customize products for the customers which enhances the fame of ecommerce store and reduce the time which customers spends on choosing products. The application also uses IBM cloud storage for storing objects. An application that predicts the university admission chances of a student powered by machine learning models. Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. The primary objective of this research is to develop a system to solve the problems the international students are facing while applying for universities in the USA.

3.1 Empathy Map Canvas
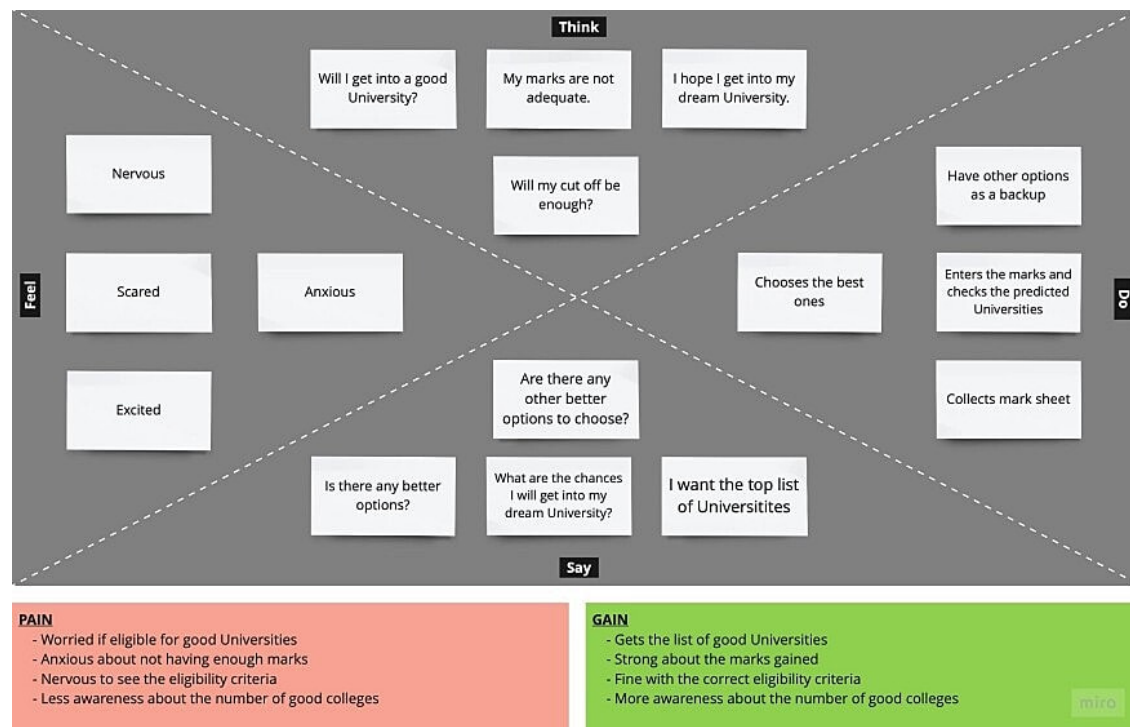
3.2 Ideation & Brainstorming

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 dont 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 students have to pay a huge amount of fee to the education consultant.

3.3 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 Regressorcan 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 butthe 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. Therequirements 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.

S.No.	Parameter	Description
1.	Problem Statement (Problem to besolved)	1. The User is a Student he needs a way to computerization of Entrance seat
		2. allotment and this**machine learning model helps to filter the Eligible students to enter a university admissionusing CS program**.
2.	Idea / Solution description	1. **Linear Regression Model** it is an algorithm based on the supervised learning of computers, it does the role of regression model predictive goalvalue.
		2. And also **Ridge regression , Random Forest** Methods are used to the parameter estimates in thehope of reducing uncertainty, increasing the **accuracy score above 80%**
		3. A GUI was developed to make the program, from anon-technical perspective, usable and user Friendly.
3.	Novelty / Uniqueness	1. The main goal of the system is **to automate theprocess** carried out in the organization with improved performance and realize the vision of paperless admission.
		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.

4.	Social Impact / Customer Satisfaction	The Socialimpacts of thesystem are listedbelow: 1. Managelarge number of student details. 2. Manage all details of student who registered for thecourse 3. Createstudent accounts and maintain the data iseffectively. 4. Viewall the details of the students. 5. Reduce the work load in interview the students forselection. 6. Activities like updating, modification, deletion ofrecords should be easier. 7. EasyAccessible and Userfriendly.
5.	Business Model(Revenue Model)	1. In the Business point of view paperless work and **man power saving**, fully **upgradable computerization process**, easy admission and **profitable approach** to right candidate for selects aright universities/college.

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.

Project Title: University Admit Eligibility Predictor | Project Design Phase-I - Solution Fit Template | Team ID: PNT2022TMID08827

Define CS, fit into CC

1. CUSTOMER SEGMENT(S) CS

Users:

Students- The people who will benefit the most from using this system are Indian students. Especially students looking to pursue their higher education from foreign universities, particularly in the United States.

Administrators-The administrator shall be able to access all the data stored in the application.

6. CUSTOMER CONSTRAINTS

The primary constrains of the system are:
• Provide customers access to the prediction model
• Provide answers to most common FAQs regarding PG Admissions abroad
• Provide administrator access to all records
• Provide analysis of how the various academic factors affect university admission

5. AVAILABLE SOLUTIONS AS

- Linear Regression Model it is an algorithm based on the supervised learning of computers, it does the role of regression model predictive goal value.
- And also Ridge regression. RandomForest Methods are used to the parameter estimates in the hope of reducing uncertainty, increasing the accuracy score above 80%

Focus on J&P, tap into BE, understand RC

2. JOBS-TO-BE-DONE / PROBLEMS J&P

- The students who are the beneficiary of this online admission process, face vivid problems in making an online transitions and filtering process.
- Among these problems the most common and frequently occurring problems for both rural and urban students are website are not working, connectivity, online payments, system requirements, cost of transactions and lack of customers care etc.

9. PROBLEM ROOT CAUSE RC

➢ The management of the online admission processes must focus to provide continuous follow-up, updation and the customer care to the students and customers.

7. BEHAVIOUR BE

The Behaviors of the system is,
➢ The entire process is very dynamic and no training is required to use the websites.
➢ Make it easier for fraudsters to manipulate the application process and eligibility requirements.

Focus on J&P, tap into BE, understand RC

3. TRIGGERS TR

➢ May produce the inaccurate results if the data if the data is not feed properly.
➢ It requires active internet connection.

4. EMOTIONS: BEFORE / AFTER EM

Before: There are lot of questions arrives in the users mind about the web application like How to handle the system?, If it is predict the eligibility of the admission process?
After: Attractive and organized system, user friendly interface, precise and reliable and finally fair admission process.

10. YOUR SOLUTION SL

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

8. CHANNELS of BEHAVIOUR CH

8.1 ONLINE
The candidate data is to be entered only once, No longer require to collect forms of all the candidates and file them, Paperless process, Man power saving and applicable for rural and urban students.

8.2 OFFLINE
The candidate's thoughts about the offline system are rigid learning schedules and inconvenience, High chances of distraction and inconvenient doubt resolution.

4. REQUIREMENT ANALYSIS

Requirements analysis, also called requirements engineering, is the process of determining user expectations for a new or modified product. These features, called requirements, must be quantifiable, relevant and detailed. In software engineering, such requirements are often called functional specifications. Requirements analysis is critical to the success or failure of a systems or software project. The requirements should be documented, actionable, measurable, testable, traceable, related to identified business needs or opportunities, and defined to a level of detail sufficient for system design.

4.1 Functional requirement
- User Registration
- User Confirmation
- User Login
- Search
- User
- Analysis
- Prediction

4.2 Non-Functional requirements
- Performance
- Security
- Portability
- Availability
- Compatibility
- Scalability
- Capacity
- Reliability
- Environment
- Localization

5. PROJECT DESIGN
## 5.1 Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.
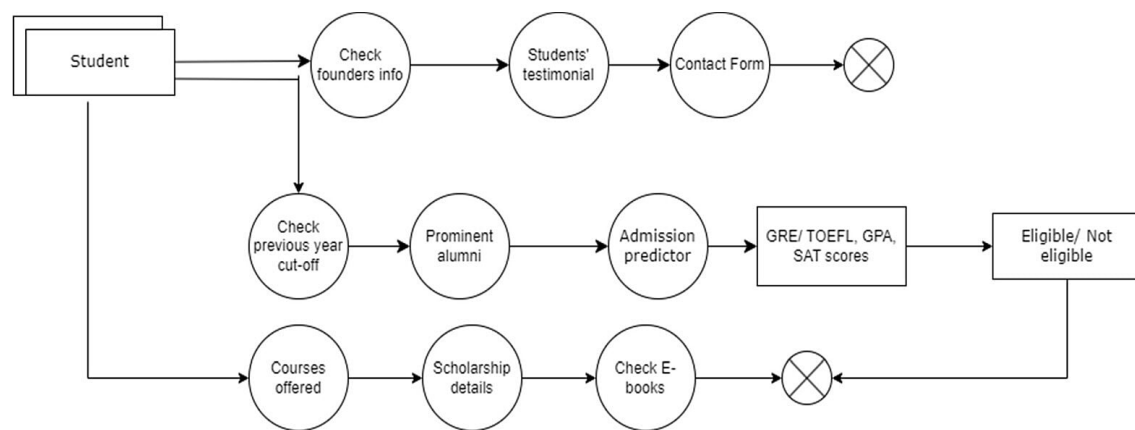
5.2 Solution & Technical Architecture

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.
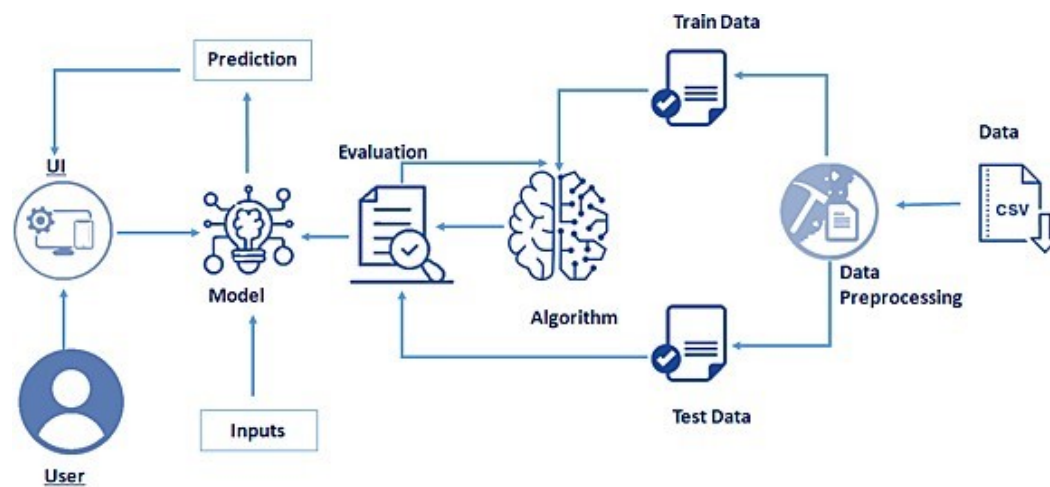
5.3 User Stories

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. Depending on the project, user stories may be written by different stakeholders like client, user, manager, or development team.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer	Landing page	USN-1	As a user, I can view the details about the university	I can access the university landing page	Medium	Sprint-1
		USN-2	As a user, I can view the latest news about the university	I can access the latest news	Medium	Sprint-1
		USN-3	As a user, I can fill the contact form for queries	I can fill and submit the contact form	Low	Sprint-2
		USN-4	As a user, I can see the social media profiles of the university	I can reach out to them via social media	Medium	Sprint-1
		USN-5	As a user, I can see testimonials of students who graduated from the university	I can access the testimonials	Medium	Sprint-1
	Admissions	USN-6	As a user, I can see the previous year cut- off marks	I can download the previous year cut-off details	High	Sprint-2
		USN-7	As a user, I can read about proud alumni of the university	I can access the details of alumni of the university	Medium	Sprint-2
		USN-8	As a user, I can predict my eligibility for admission at the university	I can get result as either eligible/not eligible	High	Sprint-2
	Courses offered	USN-9	As a user, I can see the courses offered by the university for PG students	I can access the course details	Medium	Sprint-3
	Events	USN-10	As a user, I can check various technical events about to happen in the university	I can register for the events	Low	Sprint-3
	E-books	USN-11	As a user, I can download and read e- books relating to visa formalities	I can download the e- books	High	Sprint-3

6. PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	UserStory Number	User Story/Task	Story Points	Priority	Team Members
Sprint-1	Exploratory DataAnalysis	US1	Perform data cleaning if required and perform univariate, bivariateand multivariate analysis.	1	Low	Yamuna devi V
Sprint-1	Analysis of different regression models	US2	Compare the R2 scores of different fundamental regression models like Decision Trees, Random Forest, Multiple Linear Regression, LogisticRegression, etc and determine which modelhas the highest R^2 score.	2	Medium	Kavya R
Sprint-2	Web App Development and model integration using pickle file	US3	Develop the web app to predict theprobability of acceptance given a test data fora candidate. Persist the model with a pickle file and integrate it with the web app.	3	High	Gokul P
Sprint-3	Deploying the modelin IBM cloud.	US4	Register in IBM cloud. Use IBM Watson ML service and IBM Watson Studio to deploy the Logistic Regression Model. Testthe deployed model with few examples.	3	High	Ramprakash S U
Sprint-4	Integrate the webapp with the deployed model.	US5	Use the deployed model in IBMWatson through the scoring endpoint by making an API call with the IBM cloudAPI key.	3	Medium	Ramprakash S U

6.2 Sprint Delivery Schedule
  PROJECT TRACKER, VELOCITY & BURNDOWN CHART

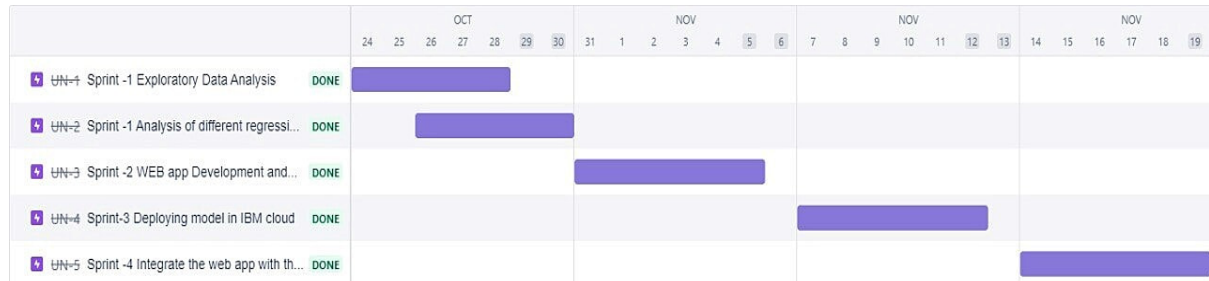| Sprint	Total Story Points	Duration	Sprint StartDate	Sprint End Date (Planned)	Story points completed (as on planned date)	Sprint release date(Actual)
Sprint-1	3	6 days	24 Oct2022	29 Oct2022	3	30 Oct 2022
Sprint-2	3	6 days	31 Oct2022	05 Nov2022	3	06 Nov 2022
Sprint-3	3	6 days	07 Nov2022	12 Nov2022	3	11 Nov 2022
Sprint-4	3	6 days	14 Nov 2022	19 Nov 2022	3	18 Nov 2022

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint).
Let's calculate 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

		OCT							NOV						NOV						NOV					
		24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
UN-1 Sprint -1 Exploratory Data Analysis	DONE																											
UN-2 Sprint -1 Analysis of different regressi...	DONE																											
UN-3 Sprint -2 WEB app Development and...	DONE																											
UN-4 Sprint-3 Deploying model in IBM cloud	DONE																											
UN-5 Sprint -4 Integrate the web app with th...	DONE																											

7. CODING & SOLUTIONING

7.1 Feature 1- FLASK APP

The following is the flask app code and working:

```
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:
API_KEY = "Sv7WDB3Z_qZyWbgIhUOb59SVrBjYJAU5VE4o1btaO7uP"
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": [{"field":[ 'GRE Score',
                                  'TOEFL Score',
                                  'University Rating',
                                  'SOP',
                                   'LOR ',
```

```python
                                        'CGPA',
                                        'Research'],
    "values": [arr]
    }] }
   response_scoring = requests.post(
    'https://eude.ml.cloud.ibm.com/ml/v4/deployments/b1e18f27-54d8-4e57-82a6-
    acaa092e7db0/predictions?version=2022-11-16',
    json=payload_scoring,
    headers=header
    ).json()
    result = response_scoring['predictions'][0]['values']
   if result[0][1][1] > 0.5:
    return redirect(url_for('chance', percent=result[0][1][1]*100))
   else:
   return redirect(url_for('no_chance', percent=result[0][1][1]*100))
   else
   return redirect(url_for("demo2"))
   @app.route("/home")
   def demo2():
   return render_template("demo2.html")
   @app.route("/chance/")
   def chance(percent):
   return render_template("chance.html", content=[percent])
   @app.route("/nochance/")
   def no_chance(percent):
   return render_template("noChance.html", content=[percent])
   @app.route('/')
    def catch_all():
   return redirect(url_for("demo2"))
   if _name_ == "_main_":
   app.run()
```

7.1 Feature 2 - UI

The following is the UI code for the application.

Index.html:

```html
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<meta name="viewport" content="width=device-width, initial-scale=1, maximum-scale=1,
userscalable=no">
<link rel="stylesheet" type="text/css" rel="noopener" target="_blank"
href="../static/css/styles.css">
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
Zenh87qX5JnK2Jl0vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi"
crossorigin="anonymous">
<script type="text/javascript" src="../static/js/script.js" async></script>
<title>University Admit Eligibility Predictor</title>
</head>
<body>
<nav class="navbar navbar-expand-lg bg-light">
<div class="container-fluid">
<a class="navbar-brand text-responsive-h" href="/">
<img src="..\static\img\hat.png" alt="Logo" width="30" height="24" class="d-inline-block align-
texttop ">
University Admission Eligibility Prediction System
</a>
</div>
</nav>
{% block body %}
<h1> Index Page </h1>
{% endblock %}
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
OERcA2EqjJCMA+/3y+gxIOqMEjwtxJY7qPCqsdltbNJuaOe923+mo//f6V8Qbsw3"
crossorigin="anonymous"></script>
</body>
</html>
```

Demo2.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">
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.
</p>
<div class="d-flex justify-content-right">
<img src="../static/img/yes-no.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>
</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"
```

```html
checked>
<label class="form-check-label" for="yes_no_radio">
No
</label>
</div>
</div>
</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 %}
```

Chance.html:

```html
{% extends 'index.html' %}
{% block body %}
<div class="container text-center p-4">
<div class="d-flex justify-content-center">
<div class="card" style="width: 34rem;">
<img src="..\static\img\Chance.jpg" class="card-img-top" alt="...">
<div class="card-body">
<h5 class="card-title">You Have Chance</h5>
<p class="card-text">The model has predicted that you have <strong>{{content[0]}}%</strong>
chance</p>
<a href="/home" class="btn btn-primary">Go Back</a>
</div>
```

```
</div>
</div>
</div>
{%endblock%}
```

Nochance.html:
```
{% extends 'index.html' %}
{% block body %}
<div class="container text-center p-4">
<div class="d-flex justify-content-center">
 <div class="card" style="width: 34rem;">
 <img src="..\static\img\noChance.png" class="card-img-top" alt="...">
 <div class="card-body">
 <h5 class="card-title">You have a LOW / NO chance</h5>
 <p class="card-text">The model has predicted that you only have
<strong>{{content[0]}}%</strong> chance</p>
 <a href="/home" class="btn btn-primary">Go Back</a>
 </div>
 </div>
 </div>
</div>
{%endblock%}
```

DATASET

	Serial No.	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research	Chance of Admit
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. TESTING

8.1 Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status		
LoginPage_TC_001	UI	Home Page	Verify The UI elements in Home Page		1.Enter URL and click go 2.Verify Home page	https://127.0.0.1:5000/	Application should show below home page	Working as expected	Pass		
LoginPage_TC_002	UI	Home Page	Verify the UI elements in Login/Signup popup		1.Enter URL and click go 2.Click the text box to enter scores 3.Verify home page with below UI elements: a.GRE score b.TOFEL score c.University Rating d.SOP e.LOR f. CGPA g.Research. 4.Click Submit button to know prediction	https://127.0.0.1:5000/	1.Should be able to enter the scores 2.The image should be displayed on the the screen 3.we can know the chance of admit	Working as expected	pass		
LoginPage_TC_003	Functional	WEB Page	Verify user is able to predict the chance of admit		1.Enter URL(https://127.0.0.1:5000) and click go 2.Enter the scores in the given fields 3.Click on Submit Button, once you have entered all the scores	a.GRE score-337 b.TOFEL score-118 c.University Rating-4 d.SOP-4.5 e.LOR-4.5 f.CGPA-9.65 g.Research -Yes	Application should show "You have 94% chance to get the admission!"	Application should show "You have 94% chance to get the admission!"	pass		
LoginPage_TC_004	Functional	web page	Verify user is able to predict the chance of admit		1.Enter URL(https://127.0.0.1:5000) and click go 2.Enter the scores in the given fields 3.Click on Submit Button, once you have entered all the scores	a.GRE score-270 b.TOFEL score-118 c.University Rating-3 d.SOP-3.5 e.LOR-3 f.CGPA-7.65 g.Research -no	Application should show "You don't have chance to get the admission!"	Application should show "You don't have chance to get the admission!"	pass		

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.

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the University Admit Eligibiltiy Predictor at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	0	0	1	2	3
Duplicate	1	0	0	0	1
External	0	0	1	0	1
Fixed	0	1	1	0	2
Not Reproduced	0	1	0	0	1
Skipped	0	0	0	0	0
Won't Fix	0	1	0	0	1
Totals	1	3	3	2	9

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
View Home page	10	0	0	10
Enter the scores	20	0	0	20
Click Submit button	2	0	0	2
Image displayed	6	0	2	4
Selecting from Drop down	5	0	0	5
Final Report Output	35	0	15	20
Version Control	5	0	2	3

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%.

Metrics:

Linear Regression Model

```
In [55]:  from sklearn.metrics import accuracy_score, recall_score, roc_auc_score, confusion_matrix

          print('Accuracy Score:', (accuracy_score(y_test, y_pred)))
          print('Recall Score:', (recall_score(y_test, y_pred)))
          print('ROC AUC Score:', (roc_auc_score(y_test, y_pred)))
          print('Confussion Matrix:\n', confusion_matrix(y_test, y_pred))

          Accuracy Score: 0.9666666666666667
          Recall Score: 1.0
          ROC AUC Score: 0.75
          Confussion Matrix:
           [[ 2  2]
           [ 0 56]]
```

Tune the Mode

Hyperparameter Tuning - Validation Method

MODELING AND TRAINING

```
In [48]:  from sklearn.ensemble import GradientBoostingRegressor
          rgr = GradientBoostingRegressor()
          rgr.fit(X_train,y_train)

Out[48]:  GradientBoostingRegressor()

In [49]:  rgr.score(X_test,y_test)

Out[49]:  0.733470845801191
```

You Have Chance

The model has predicted that you have
99.98907651050891% chance

Go Back

You have a LOW / NO chance

The model has predicted that you only have
43.14560466224287% chance

Go Back

10. ADVANTAGES & DISADVANTAGES

ADVANTAGES
1. Know the percentage
2. Lower investigation
3. Provide Relevant Material
4. Reduce time consumption
5. Good user experience

DISADVANTAGES
1. Significant investments required
2. Unable to capture changes
3. Privacy concerns

11. CONCLUSION

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

12. FUTURE SCOPE
The future scope of this project is very broad. 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. This project is used specifically of education industry but still according to requirements of students and universities. It can be used as a module in many university websites to better knowledge of universities for interested students.

13. APPENDIX

13.1 Source code

Source code is update in Coding & Solution Feature 1 itself

13.2 GitHub & Project Demo Link

GitHub: https://github.com/IBM-EPBL/IBM-Project-2561-1658474870

Video Demo link :https://youtu.be/AfiMv8JFF90