PROJECT REPORT

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1. INTRODUCTION

1.1 Project Overview:

A lot of students in today's generation are interested in pursuing their education away from their home countries. The number of Foreign students pursuing their education from the India rapidly increased. With this trend in act, each applicant has to face a tough competition to get admission in their dream university. Generally, the students are unaware about the procedures, requirements and details of the universities. Many students seek help from the education consultancy firms to help them successfully secure admission in the universities which are best suitable for their profile, for this they have to invest huge amount of money as consultancy fees. The drawback of the currently available resources is that they are very limited and also they are not truly dependable taking into consideration of their accuracy and reliability. So, students are often worried about their eligibility to get into a university. The objective of this research is to develop a system using machine learning algorithms, we will name it as University Admit Eligibility Predictor (UAEP). It will help the students to identify the chances of their application to a university being accepted. With this, students can help themselves to shortlist the universities and get a fair idea about their admissions.

1.2 Purpose:

Many degree seeking aspirants are unaware about their eligibility and are often misled. The tool we build in this project will help them to check their eligibility. So, the purpose of the project is make is easier for the applicants to shortlist their preferred universities.

2. LITERATURE SURVEY

Anil B et al made a project on Multiple Machine Learning Classifiers for students' admission to university Prediction and they had used supervised learning classifiers models to classify applications into 'Accept' and 'Reject' and the drawbacks they faced were, lack of student database that led to less prediction.

Chithra Apoorva et al had done a project on Prediction for university Admission using Machine Learning. They created this project to help students to use this who want to purse their education in US. The limitations of the model are that it is basically made from data of Indian students studying masters in CSE in US. To overcome this some extra database must be added.

K. Jeevan Ratnakar et al performed a study on Graduate Admission Prediction using Machine Learning Techniques. They made use of multiple linear regression with backward elimination and multiple random forest with backward elimination and the drawbacks are they made use of less amount of database which resulted in less prediction of accuracy.

Vandit Manish Jain et al has already done a project on College Admission Prediction using ensemble machine learning models and they made this for students to choose their higher education which may

reduce the cost of individual. This project has shown only a slight variation in the accuracy of each algorithm when compared which may lead in choosing the best among them.

2.2 References:

1. Multiple Machine Learning Classifiers for students' admission to university Prediction, May 2019
2. Prediction for university Admission using Machine Learning, March 2020
3. Graduate Admission Prediction using Machine Learning Techniques, July 2021
4. College Admission Prediction using ensemble machine learning models, December 2021

2.3 Problem Statement Definition:

The aim of the project is to provide a publicly available web application which can be used to predict the chances of getting admission from certain university. The tool is built using machine learning techniques. The users can create their own account in the application, with which they can proceed further. Once logged in, the users can check their eligibility by providing the appropriate academic details.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map:

3.2 Brainstorming ideas:

- Extract data from various sources
- Study previous researches on this area
- Visit official university websites
- Get to know the admission process
- Search for ML models related to this
- Search and Study the dataset

Scope and Responsibilities:

- web app that allows users to enter their academic data
- provides them answers to the most common FAQ's that arise when thinking of admissions abroad for Post Graduate studies
- Provide customers with access to the application
- Provide customers access to the prediction model

3.3 Proposed solution:

The main objective of the model is to predict university admission accurately and efficiently in order to help students in selecting college and the idea we have proposed is using a machine learning model, to predict the eligibility. A linear regression model is used to predict the eligibility of the student for that college / university. The uniqueness of our project is unlike other models here, linear regression is best suited of prediction task and the project provides a personalized space for the users. The social impacts that our project makes are this method is cost effective, ease for students, safe and efficient and this business model will be able to users for free. If the application used with more students, it is planned to enhance for subscription for some features and the scalability of the solution is as the dataset size is huge, the noise associated with the data is also huge and the preprocessing to be done is also high in this case. The output depends on the input given to the model. The response of the data is purely dependent on the data which is collected from the previous records.

3.4 Problem solution fit

CUSTOMER SEGMENT:

Students who have recently completed their schooling and are ready to get admitted into top universities.

JOBS-TO-BE-DONE:

Need to predict the university where they can be admitted. The information they provide should be kept confidential. Right and accurate information about universities should be shared with them.

TRIGGERS:

Seeing students who use this predictor and get admissions to the desired university. The accuracy of past predictions.

CUSTOMER CONSTRAINTS:

Customers should receive the right information about the universities. Customer's personal data should be kept confidential. Time of prediction should be less. Prediction should be accurate.

BEHAVIOUR:

Customers spend more money to get admission in universities. Customers also spend time searching the details about universities.

CHANNELS of BEHAVIOUR:

Customers search about the colleges on the internet and gather the eligibility criteria and other information.

PROBLEM ROOT CAUSE:

There is more competition and admission criteria change every year.

YOUR SOLUTION:

To create a solution to predict university admission accurately and efficiently in order to help students in selecting college using

4. REQUIREMENT ANALYSIS

4.1 Functional requirements

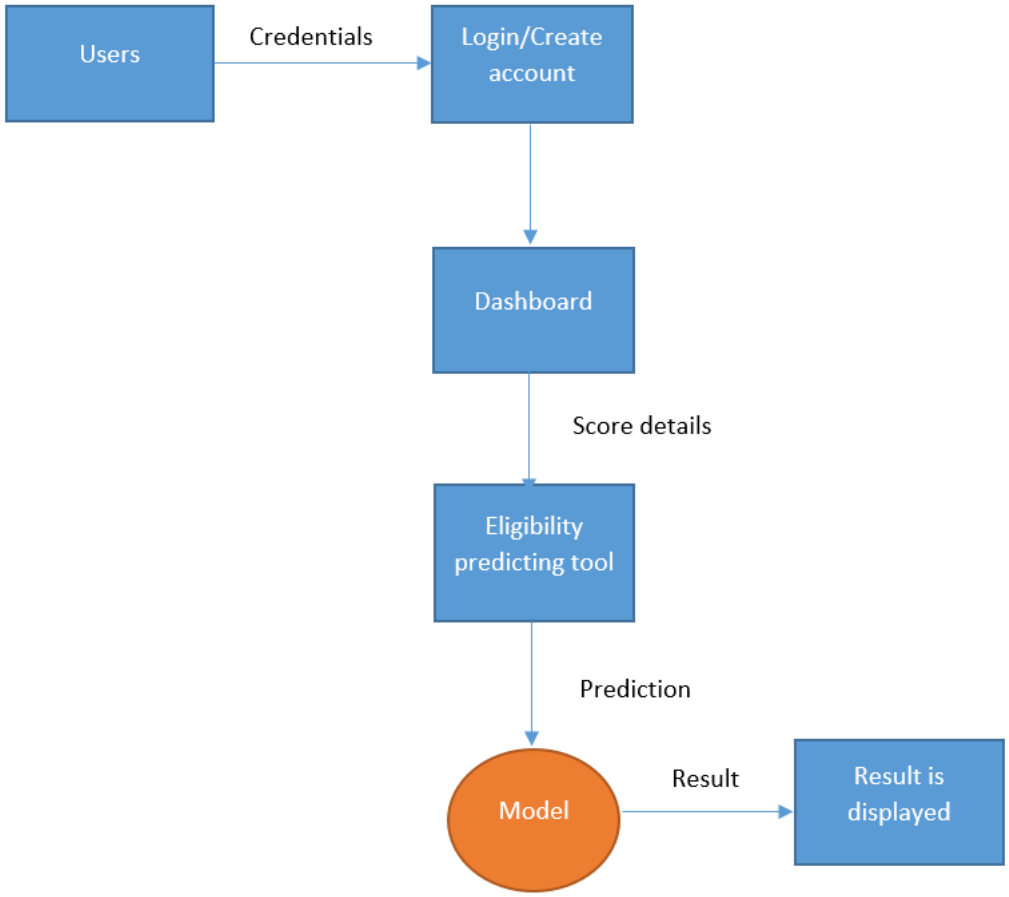
FR No	Functional Requirement (Epic)	Sub Requirement (Story / Sub Task)
FR 1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR 2	User Login	Login User Credentials
FR 3	Dashboard	Visualize trends in the admission process wrt to various factors
FR 4	User Details	Get User Details University tier, GRE score, TOEFL score, CGPA etc.
FR 5	Analysis	Perform the prediction
FR 6	Result	View the eligibility percentage

4.2 Nonfunctional requirements

NFR No	Non-functional Requirement	Description
NFR 1	Usability	Can be used to get details of Universities list No training is required to use the website. The results from the predictor should not take more than 30 seconds
NFR 2	Reliability	It would definitely be easier for students if they get relief from step of selecting best suited universities and colleges for application. Student eligibility for preferred university will be accurately predicted This system shall be completely operational all hours of the day unless system failure or upgradation work is to be performed. Relaunch after a failure shall not exceed 24 hours.
NFR 3	Performance	The web app will react faster even multiple users uses, it at the same time

5. Project Design

5.1 Data Flow Diagram



5.2 Technological Architecture

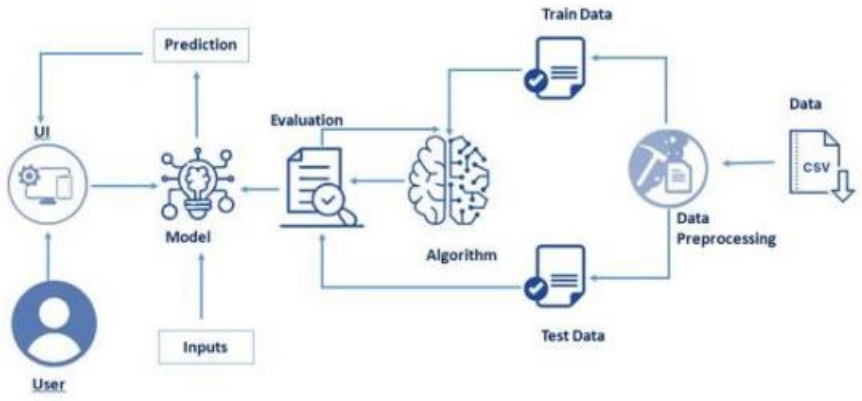


Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	How user interacts with application.	HTML, CSS, JavaScript/ReactJS
2.	Application Logic-1	Logic for a process in the application	Python
3.	Application Logic-2	Deploying the model.	IBM Watson STT service
4	Database	Data Type, Configurations etc.	MongoDB
5.	Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
6	Machine Learning Model	Purpose of Machine Learning Model	Linear Regression

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Flask
2.	Security Implementations	List all the security / access controls implemented, use of firewalls etc.	e.g. SHA-256, Encryptions, IAM Controls, OWASP etc.
3.	Availability	Justify the availability of application	Technology used
4.	Performance	Design consideration for the performance of the application (number of requests per sec, use of Cache, use of CDN's) etc.	Technology used

\5.3 User stories:

PROCESS	AWARENESS	ACQUISITION	SERVICE	LOYALTY
TOUCH POINT	Performs Statical Analysis on admission decision.	Applicable for both Rural and urban Students.	Avoids Data redundancy and Inconsistency	Reduce the work load in Interview the students for selection.
CUSTOMER THOUGHTS	Provide answers to most common FAQ's regarding the University prediction.	To provides the pre-Qualifications details of the universities.	The procedure of filtering and procedure have to be capable of conducting on any devices.	User friendly interface and collects the relevented information's like cgpa score , test scores,etc
OVERALL CUSTOMER EXPERIENCE				
PAIN POINTS	The Changes in the policies by the university can affect changes of admission	It Requires Active Internet Connection.	May produce inaccurate results if the data is not feed properly.	User maybe will facing bugs and data crashes.
IDEAS TO IMPROVE	Proper updates and Clear the cache memory's at certain intervals./Debugging can sometimes relatively straight forward.	Segregate investigation can be utilized independently or joined for upgrading dependability and precision forecast.	Can improve the Exactness or Accuracy /Quality of the Application(Above 92%)	Module of Expectation can incorporated with module of robotized handling framework and different modules like neural organization.

6. PROJECT PLANNING AND SCHEDULING

6.6 Sprint planning and estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Training the model	USN-1	Initial task is to train the model	2	High	Rakesh JV
Sprint-1	Home Page	USN-2	As a user, I can view the home page.	2	High	Mohammed Ashiq
Sprint-1		USN-3	As a user, I can see the login option on the home page.	1	Low	Vishaul V
Sprint-1		USN-4	As a user, I can create an account using email ID	2	Medium	Girinath R
Sprint-1	Login	USN-5	As a user, I can log into the application by entering username & password.	2	High	Rakesh J V
Sprint-2	Dashboard	USN-6	As a user, I can view the chance of admit based on exam scores.	2	High	Vishaul V
Sprint-2		USN-7	As a user, I can view the chance of admit based on various qualifications.	1	Medium	Mohammed Ashiq
Sprint-3	Enter Details	USN-8	As a user, I can enter the required application details to check the admit percentage.	2	High	Rakesh J V
Sprint-3		USN-9	As a user, I can enter my exam scores.	1	Medium	Girinath R

Sprint-4	Result	USN-10	As a user, I can get to know whether I am eligible or not.	2	High	Mohammed Ashiq
Sprint-4		USN-11	As a user, I can get to know my chance of admit.	1	Medium	Rakesh J V

6.7 Sprint 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	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

7. CODING & SOLUTION

7.1 Feature 1

Users can create their own account or they can log in with pre-existing account

Code for creating an account

```
<!DOCTYPE html>
<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">
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/sty.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
        </nav>
```

```
    </section>
    <section class="main">
                <div class="card">
                    <div class="card-body">
                    <h4 class="card-title" style="text-align: center;">Create
Your Account</h4>
                    <div class="container">
                        <form id="form" action="http://127.0.0.1:5000"
method="POST">
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="email" class="form-control"
name="email" placeholder="Email ID" style="margin: 15px; width: 270px;"
                                    autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="uname" placeholder="Username" style="margin: 15px; width: 270px;"
autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="pass" placeholder="Password" style="margin: 15px; width: 270px;"
required>
                                </div>
                            </div>
                            <div style="text-align: center; margin: 5px;">
                                <input class="btn btn-secondary" type="submit"
style="padding: 8px 20px;" value="Create">
                            </div>
                        </form>
                        <br>
                        <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                            <div style="text-align: center;">
                                <p>Already a user? </p>
                                <button  type="submit" class="btn btn-
primary">
                                    Log In
                                </button>
                            </div>
                        </form>
                    </div>
                    </div>
```

```
                </div>
    </section>
</body>
```

Code for Log in

```
<!DOCTYPE html>
<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">
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/sty.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
        </nav>
    </section>
    <section class="main">
                <div class="card" >
                    <div class="card-body">
                        <h4 class="card-title" style="text-align: center;">Log
In</h4>
                    <div class="container">
                        <form id="form"
action="http://127.0.0.1:5000/dashboard" method="POST">
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="uname" placeholder="Username" style="margin: 15px; width: 270px;"
autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
```

```
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="pass" placeholder="Password" style="margin: 15px; width: 270px;"
required>
                                </div>
                            </div>
                            <div style="text-align: center; margin: 5px;">
                                <input class="btn btn-secondary" type="submit"
style="padding: 8px 20px;" value="Log IN">
                            </div>
                        </form>
                        <br>
                        <form id="form" action="http://127.0.0.1:5000"
method="GET">
                            <div style="text-align: center;">
                                <p>New User? </p>
                                <button  type="submit" class="btn btn-
primary">
                                    Create your account
                                </button>
                            </div>
                        </form>
                    </div>
                    </div>
                </div>
    </section>
</body>
```

Flask code to connect with database

```
from flask import Flask, render_template, request, url_for, redirect, flash
from pymongo import MongoClient
import pickle
import requests
import json

app = Flask(__name__)

client = MongoClient('localhost', 27017, username='Rakesh',
password='Rakesh@123')

db = client.flask_db
login = db.login

@app.route('/', methods=('GET', 'POST'))
def index():
    if request.method=='POST':
        email = request.form['email']
```

```
        uname = request.form['uname']
        password = request.form['pass']
        login.insert_one({"email": email, 'usernmae': uname, 'password':
password})
        return render_template('dashboard.html')

    return render_template('home.html')

@app.route('/dashboard', methods=('GET', 'POST'))
def dashboard():
    if request.method=='POST':
        coll = login.find()
        uname = request.form['uname']
        password = request.form['pass']
        for i in coll:
            if(uname==i['usernmae'] and password==i['password']):
                return render_template('dashboard.html')
    if request.method=='GET':
        return render_template('dashboard.html')

    return render_template('home.html')
```

7.2 Feature 2

Users can use the tool to predict their eligibility by providing appropriate details.

```
<!DOCTYPE html>
<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">
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/style.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
```

```
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
            <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                    <button  type="submit" class="btn btn-danger">
                        Log Out
                    </button>
            </form>
        </nav>
    </section>
    <section class="main">

                <div class="card" >
                    <div class="card-body">
                    <h4 class="card-title">Enter the details here</h4>
                    <div class="container">
                        <form id="form" action="http://127.0.0.1:5000/result"
method="POST">
                            <div class="form-row">
                            <div class="col-md-6 col-sm-12">
                                <input type="text" class="form-control"
name="pname" placeholder="Name" style="margin: 15px;" autofocus required>
                            </div>
                            <div class="col-md-6 col-sm-12">
                                <input type="number" class="form-control"
name="cgpa" placeholder="CGPA" style="margin: 15px;"min="6" max="10"
step="0.01" required>
                            </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect01">University Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect01" name="university">
                                            <option selected
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>
```

```
                                    </div>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect02">SOP Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect02" name="sop">
                                            <option selected
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>
                                    </div>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect03">LOR Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect03" name="lor">
                                            <option selected
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>
                                    </div>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <input type="number" class="form-control"
name="research" placeholder="Research option" style="margin: 15px;" min="0"
max="1" required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
```

```
                                    <input type="number" class="form-control"
name="gre" placeholder="GRE score" min="260" max="340" style="margin: 15px;"
required>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <input type="number" class="form-control"
name="toefl" placeholder="TOEFL score" max="120" style="margin: 15px;"
required>
                                </div>
                            </div>
                            <div style="text-align: center; margin: 5px;">
                                <input class="btn btn-secondary" type="submit"
style="padding: 8px 30px;" value="Submit">
                            </div>
                        </form>
                    </div>
                    </div>
                </div>
    </section>
    <section class="footer">
        <div style="color: white;">
            <p>&#169; Copyrights reserved</p>
        </div>
    </section>
</body>
```

Flask code for prediction

```
@app.route('/result', methods = ['POST'])
def result():
    if request.method == 'POST':
        arr = []
        name = request.form.get("pname")

        arr.append(int(request.form.get("gre")))
        arr.append(int(request.form.get("toefl")))
        arr.append(int(request.form.get("university")))
        arr.append(int(request.form.get("sop")))
        arr.append(int(request.form.get("lor")))
        arr.append(float(request.form.get("cgpa")))
        arr.append(int(request.form.get("research")))
        API_KEY = "BxlhEelaznEcKp22GNMIYzkR39dv03gwxMsLiHyK30Vb"
        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 ',
'CGPA', 'Research', 'Chance of Admit ']],
                                            "values": [arr]}]}

        response_scoring = requests.post(
            'https://us-south.ml.cloud.ibm.com/ml/v4/deployments/011d1e6b-
5f8e-4901-bbe4-02011304d2c8/predictions?version=2022-11-17',
            json=payload_scoring,
            headers={'Authorization': 'Bearer ' + mltoken})

        ans = response_scoring.json()
        final = round(ans['predictions'][0]['values'][0][0] * 100, 2)
        chance = ""
        if(final>=50.00): chance = "have"
        else: chance = "not have"

        return render_template("chance.html", prediction=[name, final,
chance])
```

7.3 Database Schema:

Collection name: login

Email string
Username string
Password string

8. TESTING

8.1 Test Cases:

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

8.2 User Acceptance Test Case:

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:

- Mean squared error: 0.003794669554300508
- Variance score: 77.92013613144768%
- Root mean squared error: 0.06160088923303387
- Mean absolute error: 0.0478339061617796
- R2 score: 0.7792013613144768

10. ADVANTAGES & DISADVANTAGES

Advantages:

It helps students to make right decisions for choosing their college. In which students can register with their personal information and can use academic details to predict the admission in colleges. The application will relieve the stress of finding the admit chance of the user.

Our application is free resource and can be easily used. This also saves the user money as they don't need to consult some consultancies to find the admit chance instead they can use this model to find the admit chance. The application doesn't require any vast knowledge.

The user interface developed in our application is simple and very much user friendly. The users can also view the past trends in admission processes

Disadvantages:

The model doesn't rate the sop/lor, instead the user himself has to give the rating. People without basic knowledge on rating them can't use it effectively.

Data set collection we used is smaller, for better prospects the model must be built with broad data.

Also there may be a chance that the university may also reject the application even. Though the person got high admit rate because the slots of university maybe filled or other person reason.

The user must not entirely depend on the application.

11. CONCLUSION:

Hence the model we built is done using liner regression has provided the better performance. It has the lowest error rate than the other related models. The application we built is made with a neat simple User interface so this application reduces the task of the user and help him to find the admit from the university.

12. FUTURE SCOPE:

- Need to collect more valid data for future models for more accuracy.
- Need to involve a method to rate the sop/lor by the model rather than the user itself.
- Need to increase the purity of the overall application.

13. APPENDIX

Source code:

Create and account code

```
<!DOCTYPE html>
<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">
```

```
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/sty.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
        </nav>
    </section>
    <section class="main">
                <div class="card">
                    <div class="card-body">
                    <h4 class="card-title" style="text-align: center;">Create
Your Account</h4>
                    <div class="container">
                        <form id="form" action="http://127.0.0.1:5000"
method="POST">
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="email" class="form-control"
name="email" placeholder="Email ID" style="margin: 15px; width: 270px;"
                                    autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="uname" placeholder="Username" style="margin: 15px; width: 270px;"
autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="password" class="form-
control" name="pass" placeholder="Password" style="margin: 15px; width:
270px;" required>
```

```
                            </div>
                        </div>
                        <div style="text-align: center; margin: 5px;">
                            <input class="btn btn-secondary" type="submit"
style="padding: 8px 20px;" value="Create">
                        </div>
                    </form>
                    <br>
                    <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                        <div style="text-align: center;">
                            <p>Already a user? </p>
                            <button  type="submit" class="btn btn-
primary">
                                Log In
                            </button>
                        </div>
                    </form>
                </div>
                </div>
            </div>
    </section>
</body>
```

Login page code

```
<!DOCTYPE html>
<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">
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/sty.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
```

```
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
        </nav>
    </section>
    <section class="main">
                <div class="card" >
                    <div class="card-body">
                        <h4 class="card-title" style="text-align: center;">Log
In</h4>
                    <div class="container">
                        <form id="form"
action="http://127.0.0.1:5000/dashboard" method="POST">
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="text" class="form-control"
name="uname" placeholder="Username" style="margin: 15px; width: 270px;"
autofocus required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="password" class="form-
control" name="pass" placeholder="Password" style="margin: 15px; width:
270px;" required>
                                </div>
                            </div>
                            <div style="text-align: center; margin: 5px;">
                                <input class="btn btn-secondary" type="submit"
style="padding: 8px 20px;" value="Log IN">
                            </div>
                        </form>
                        <br>
                        <form id="form" action="http://127.0.0.1:5000"
method="GET">
                            <div style="text-align: center;">
                                <p>New User? </p>
                                <button  type="submit" class="btn btn-
primary">
                                    Create your account
                                </button>
                            </div>
                        </form>
                    </div>
                    </div>
                </div>
    </section>
</body>
```

Dashboard code

```
<!DOCTYPE html>
<html>
    <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">
        <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
        integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
        <link rel="stylesheet" href="../static/stylee.css"/>
        <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
        <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head" style="padding: 20px;">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
            <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                    <button  type="submit" class="btn btn-danger">
                        Log Out
                    </button>
            </form>
        </nav>
    </section>
<div class="main">
    <div style="margin-bottom: 30px;">
        <form id="form" action="http://127.0.0.1:5000/predict" method="POST">
            <div style="text-align: center;">
                <button  type="submit" class="btn btn-secondary">
                    Check Your Eligibility!
                </button>
            </div>
        </form>
    </div>
    <h5 style="text-align: center; color:white">You can visualize the trends
in admission from the below graphs</h5>
    <div class="gallery">
        <a target="_blank" href="img_5terre.jpg">
```

```
            <img src="../static/gre.png" alt="Cinque Terre" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over GRE
scores</div>
    </div>

    <div class="gallery">
        <a target="_blank" href="img_forest.jpg">
            <img src="../static/toefl.png" alt="Forest" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over TOEFL
scores</div>
    </div>

    <div class="gallery">
        <a target="_blank" href="img_lights.jpg">
            <img src="../static/sop.png" alt="Northern Lights" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over SOP
rating</div>
    </div>

    <div class="gallery">
        <a target="_blank" href="img_mountains.jpg">
            <img src="../static/lor.png" alt="Mountains" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over LOR
rating</div>
    </div>
    <div class="gallery">
        <a target="_blank" href="img_mountains.jpg">
            <img src="../static/cgpa.png" alt="Mountains" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over CGPA</div>
    </div>
    <div class="gallery">
        <a target="_blank" href="img_mountains.jpg">
            <img src="../static/res.png" alt="Mountains" width="600"
height="400">
        </a>
        <div class="desc">Distribution of chance of admit over Research
options</div>
    </div>
```

```
</div>
</body>
</html>
```

Prediction page code

```
<!DOCTYPE html>
<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">
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/style.css"/>
    <link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
            <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                    <button  type="submit" class="btn btn-danger">
                        Log Out
                    </button>
            </form>
        </nav>
    </section>
    <section class="main">

                <div class="card" >
                    <div class="card-body">
                    <h4 class="card-title">Enter the details here</h4>
                    <div class="container">
                        <form id="form" action="http://127.0.0.1:5000/result"
method="POST">
                            <div class="form-row">
```

```
                            <div class="col-md-6 col-sm-12">
                                <input type="text" class="form-control"
name="pname" placeholder="Name" style="margin: 15px;" autofocus required>
                            </div>
                            <div class="col-md-6 col-sm-12">
                                <input type="number" class="form-control"
name="cgpa" placeholder="CGPA" style="margin: 15px;"min="6" max="10"
step="0.01" required>
                            </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect01">University Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect01" name="university">
                                            <option selected
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>
                                    </div>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect02">SOP Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect02" name="sop">
                                            <option selected
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>
                                    </div>
                                </div>
                            </div>
```

```
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <div class="input-group mb-3"
style="margin: 15px;">
                                        <div class="input-group-prepend">
                                            <label class="input-group-text"
for="inputGroupSelect03">LOR Rating</label>
                                        </div>
                                        <select class="custom-select"
id="inputGroupSelect03" name="lor">
                                            <option selected
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>
                                    </div>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <input type="number" class="form-control"
name="research" placeholder="Research option" style="margin: 15px;" min="0"
max="1" required>
                                </div>
                            </div>
                            <div class="form-row">
                                <div class="col-md-6 col-sm-12">
                                    <input type="number" class="form-control"
name="gre" placeholder="GRE score" min="260" max="340" style="margin: 15px;"
required>
                                </div>
                                <div class="col-md-6 col-sm-12">
                                    <input type="number" class="form-control"
name="toefl" placeholder="TOEFL score" max="120" style="margin: 15px;"
required>
                                </div>
                            </div>
                            <div style="text-align: center; margin: 5px;">
                                <input class="btn btn-secondary" type="submit"
style="padding: 8px 30px;" value="Submit">
                            </div>
                        </form>
                    </div>
                    </div>
                </div>

    </section>
    <section class="footer">
```

```
        <div style="color: white;">
            <p>&#169; Copyrights reserved</p>
        </div>
    </section>
</body>
```

Result page code

```
<!DOCTYPE html>
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css
"
    integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link rel="stylesheet" href="../static/style.css"/>
    <link
href="https://fonts.googleapis.com/css2?family=Poppins:wght@300;400&display=sw
ap" rel="stylesheet">
    <title>University Admit Eligibility Predictor</title>
</head>
<body class="header">
    <section class="head">
        <nav class="navbar navbar-expand-lg navbar-light">
            <a class="navbar-brand" style="color: white; font-size:
35px;">University Admit Eligibility Predictor</a>
            <form id="form" action="http://127.0.0.1:5000/login"
method="POST">
                    <button  type="submit" class="btn btn-danger">
                        Log Out
                    </button>
            </form>
        </nav>
    </section>
    <div class="main">
        <h2 style="color: white; ">Hi {{prediction[0]}}, You <b>do
{{prediction[2]}} a chance</b></h2>

        <h3 style="color: white; ">You have <b>{{prediction[1]}}%</b> to get
admit.
            If the eligibility percent is greater than 50%, you are considered
to be eligible. </h3>
```

```
        <br><br>
        <form id="form" action="http://127.0.0.1:5000/dashboard" method="GET">
            <div style="text-align: center;">
                <button  type="submit" class="btn btn-light">
                    Back to the dashboard!
                </button>
            </div>
        </form>
      </div>
</body>
```

Flask integration

```
from flask import Flask, render_template, request, url_for, redirect, flash
from pymongo import MongoClient
import requests
import json

app = Flask(__name__)

client = MongoClient('localhost', 27017, username='Rakesh',
password='Rakesh@123')

db = client.flask_db
login = db.login

@app.route('/', methods=('GET', 'POST'))
def index():
    if request.method=='POST':
        email = request.form['email']
        uname = request.form['uname']
        password = request.form['pass']
        login.insert_one({"email": email, 'usernmae': uname, 'password':
password})
        return render_template('login.html')

    return render_template('home.html')

@app.route('/login', methods=('GET', 'POST'))
def loginacc():
    return render_template('login.html')

@app.route('/dashboard', methods=('GET', 'POST'))
def dashboard():
    if request.method=='POST':
        coll = login.find()
        uname = request.form['uname']
        password = request.form['pass']
```

```
        for i in coll:
            if(uname==i['usernmae'] and password==i['password']):
                return render_template('dashboard.html')
    if request.method=='GET':
        return render_template('dashboard.html')

    return render_template('login.html')

@app.route('/predict', methods=('GET', 'POST'))
def predict():
    return render_template('index.html')

@app.route('/result', methods = ['POST'])
def result():
    if request.method == 'POST':
        arr = []
        name = request.form.get("pname")

        arr.append(int(request.form.get("gre")))
        arr.append(int(request.form.get("toefl")))
        arr.append(int(request.form.get("university")))
        arr.append(int(request.form.get("sop")))
        arr.append(int(request.form.get("lor")))
        arr.append(float(request.form.get("cgpa")))
        arr.append(int(request.form.get("research")))
        API_KEY = "BxlhEelaznEcKp22GNMIYzkR39dv03gwxMsLiHyK30Vb"
        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 ',
'CGPA', 'Research', 'Chance of Admit ']],
                                           "values": [arr]}]}

        response_scoring = requests.post(
            'https://us-south.ml.cloud.ibm.com/ml/v4/deployments/011d1e6b-
5f8e-4901-bbe4-02011304d2c8/predictions?version=2022-11-17',
            json=payload_scoring,
            headers={'Authorization': 'Bearer ' + mltoken})
```

```
        ans = response_scoring.json()
        final = round(ans['predictions'][0]['values'][0][0] * 100, 2)
        chance = ""
        if(final>=50.00): chance = "have"
        else: chance = "not have"

        return render_template("chance.html", prediction=[name, final,
chance])

if(__name__ == '__main__'):
    app.run()
```

Github link: https://github.com/IBM-EPBL/IBM-Project-34503-1660236664.git

Project demo link:
https://drive.google.com/file/d/1Y5VHmF7_TEHuz8lbYwuDpHtKu9nsh_49/view?usp=sharing