UNIVERSITY ADMIT ELIGIBILITY PREDICTOR

TEAM ID : PNT2022TMID27598

Project Link : https://github.com/IBM-EPBL/IBM-Project-38189-1660374589

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 person's 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 the world's highly reputed universities, a wide range of courses offered in every sector, highly accredited education system and teaching, scholarships provided to students, the 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

Universities take into consideration different factors like score on aptitude based examination like the General Record Examination (GRE), command over the English language is judged based on their score in English competency test like Test Of English as a Foreign Language (TOEFL) OR International English Language Testing System (IELTS), their work experience in same or other fields, the quality of the Letter Of Recommendation (LOR) and the Statement Of Purpose documents provided by the student etc. Based on the overall profile of the student, a decision is taken by the university's admission team to admit or reject a particular candidate

2.2 References

1. Geiser, Saul, and 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.

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

3. 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): 375-40hh7.

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 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 stores and reduces the time which customers spend 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.

3.1 Empathy Map Canvas

PAIN	GAIN
• Eligibility at A Good University • Adequate Cut-Off Mark Problems • Less Awareness about The Good Colleges • Less Exposure towards career	• Confident enough about the marks obtained • Getting to know about good colleges • Gain Eligibility to Join a Best College.

3.2 Ideation & Brainstorming

This task of shortlisting the universities where the student has high chances of admission is difficult for mainly 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 students have to pay a huge amount of fee to the education consultant.

3.3 Proposed Solution

Finally, K Nearest Neighbours and Decision Tree algorithms were used as they were found to be the best fit for the system developed. Also, we will be creating a simple user interface which will help the users to input the data related to the student profile and get the predicted result for the application based on the profile as output. This research will thus eventually help students save the extra amount of time and money they have to spend at the education consultancy firms. And also it will help them to limit their number of applications to a small number by providing them the suggestion of the universities where they have the best chance of securing admission thus saving more money on the application fees.

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

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

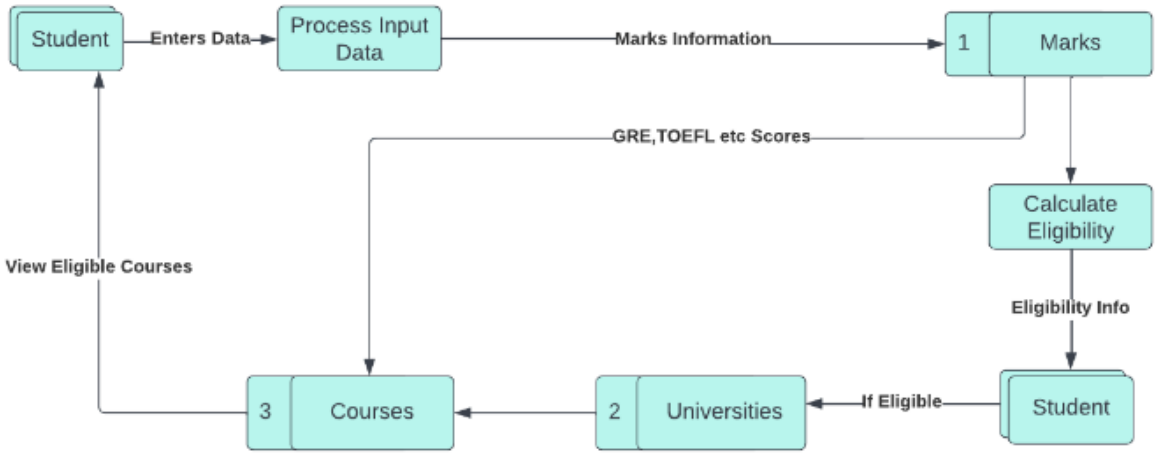
- prediction
- input form
- percentage of chance

4.2 Non-Functional requirements

- Speed
- Security
- Portability
- Compatibility
- Capacity
- Reliability
- Environment
- Localization

5. PROJECT DESIGN

5.1 Data Flow Diagrams

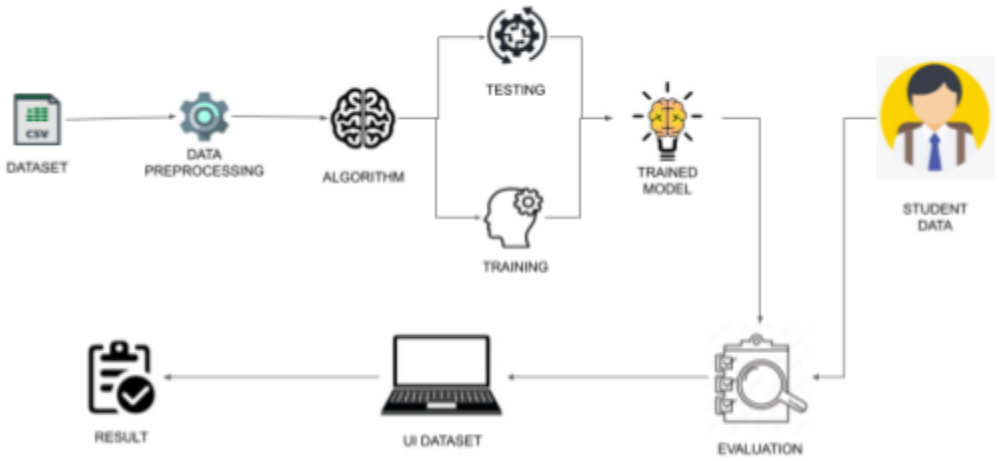


5.2 Solution & Technical Architecture

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.
- Defne 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 & SCHEDULING

6.1 Sprint Planning & Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Analysis	USN-1	Perform data cleaning and perform univariate, bivariate analysis.	1	Low	Saran Anish V
Sprint-1	Analysis of different regression models	USN-2	Compare the R2 scores of different fundamental models like Decision Trees, Random Forest, Multiple Linear and Logistic Regression, etc and determine which model has the highest R^2 score.	2	High	Saran Anish V
Sprint-2	Web App Development and model integration using pickle file	USN-3	Develop the web app , the probability of acceptance given a test data for a candidate. Persist the model with the highest R^2 score as a pickle file and integrate it with the web app.	3	Low	Praveen Rijal
Sprint-3	Deploying the model in IBM cloud.	USN-4	Register in IBM cloud. Use IBM Watson ML service and IBM Watson Studio to deploy the Multiple Linear Regression Model. Test the deployed model with a few examples.	3	Medium	Selvin Wellington A
Sprint-4	Integrate the web app with the deployed model.	USN-5	Use the deployed model in IBM Watson through the scoring endpoint by making an API call with the IBM cloud API key	2	High	Sandesh A
Sprint-4	Hosting the web app in Vercel cloud platform.	USN-6	Connect the respective Github repo and branch to Vercel cloud platform and set up CI-CD to automatically deploy new changes that's pushed to the repo.	1	Medium	Selvin Wellington A

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	3	6 Days	24 Oct 2022	29 Oct 2022	3	30 Oct 2022
Sprint-2	3	6 Days	31 Oct 2022	05 Nov 2022	3	06 Nov 2022
Sprint-3	3	6 Days	07 Nov 2022	12 Nov 2022	3	13 Nov 2022
Sprint-4	3	3 Days	14 Nov 2022	16 Nov 2022	3	17 Nov 2022

6.3 Reports from JIRA

7.CODING & SOLUTIONING

7.1 Feature 1 - FLASK APP

noChance.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"
/>
    <link rel="stylesheet" href="/css/styles.css" />
    <title>University Admit Eligibility Predictor</title>
    <link

href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.
css"
```

```
      rel="stylesheet"
                                                          integrity="sha384-
Zenh87qX5JnK2Jl0vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi"
      crossorigin="anonymous"
    />
  </head>
  <body class="predict">
    <!-- <div class="prediction-box">
      <h1>Predicting Chance of Admission</h1>
      <div class="prediction">
        <span>Prediction:</span>
        <h3 style="font-weight: 600">You have a chance</h3>
      </div>
      <a href="/checkEligibility"
        ><button type="button" class="btns">Back</button></a
      >
    </div> -->
    <center class="d-flex align-items-center align-top">
      <div class="card mt-5" style="margin: 0 auto">
        <div class="card" style="width: 18rem">
          <img
            class="card-img-top"
            src="/img/thumbsup.gif"
            alt="Card image cap"
          />
          <div class="card-body">
            <h5 class="card-title"></h5>
            <p class="card-text" style="color: green">
              Wow ! You have a chance !
            </p>
          </div>
        </div>
```

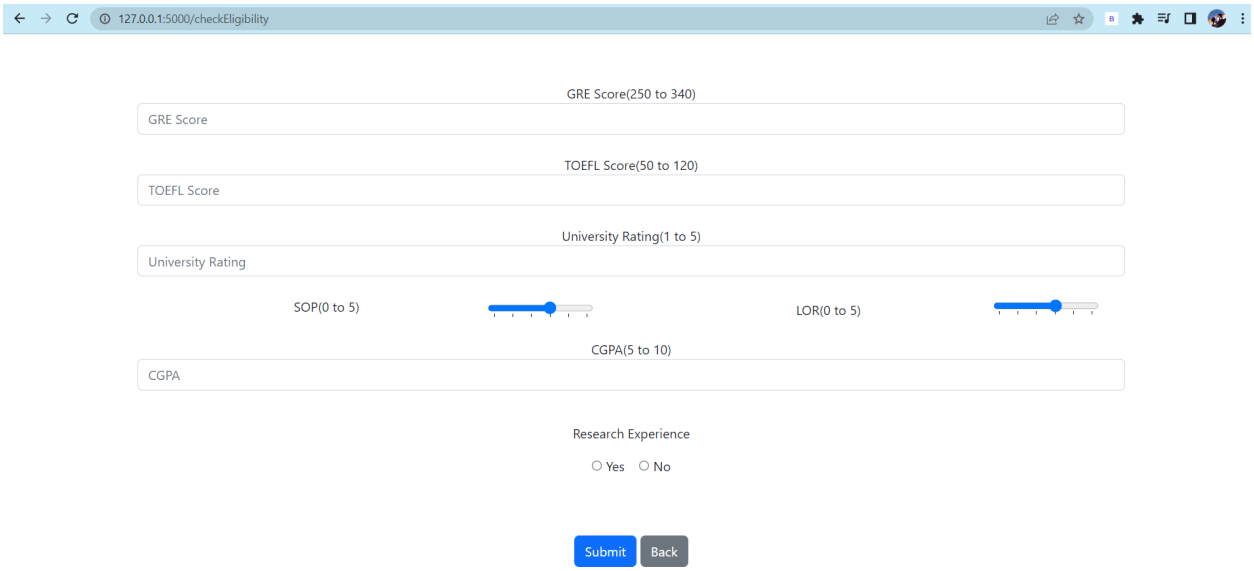
```
      </div>
    </center>
  </body>
</html>
```

demo2.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"
/>
    <link rel="stylesheet" href="/css/styles.css" />
    <link

href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.
css"
      rel="stylesheet"
                                                integrity="sha384-
Zenh87qX5JnK2J10vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi"
      crossorigin="anonymous"
    />
    <title>University Admit Eligibility Predictor</title>
  </head>
  <body class="index-page">
    <center class="d-flex align-items-center align-top">
      <div class="card mt-5" style="width: 30rem; margin: 0 auto">
        <img
                src="https://cdn.pixabay.com/photo/2016/08/13/15/29/johns-
hopkins-university-1590925_960_720.jpg"
          class="card-img-top"
          alt="University"
```

```
        />

        <div class="card-body">
                    <h5  class="card-title">University  Admit  Eligibility
Predictor</h5>

          <p class="card-text">
            Predict your Admission in the Best University!!
          </p>

          <a href="/checkEligibility" class="btn btn-primary">Predict</a>
        </div>
      </div>
    </center>
  </body>
</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"
/>
    <link rel="stylesheet" href="/css/styles.css" />
    <title>University Admit Eligibility Predictor</title>
    <link

href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.
css"
      rel="stylesheet"
                                                integrity="sha384-
```

```
Zenh87qX5JnK2J10vWa8Ck2rdkQ2Bzep5IDxbcnCeuOxjzrPF/et3URy9Bv1WTRi"
      crossorigin="anonymous" />
  </head>
  <body class="predict">
    <center class="d-flex align-items-center align-top">
      <div class="card mt-5" style="margin: 0 auto">
        <div class="card" style="width: 18rem">
          <img
            class="card-img-top"
            src="/img/thumbsdown.gif"
            alt="Card image cap"
          />
          <div class="card-body">
            <h5 class="card-title"></h5>
            <p class="card-text" style="color: green">
              Oops ! You don't have a chance !<br />
              It's still Okay ! Try till you succeed!
            </p>
          </div>
        </div>
      </div>
    </center>
  </body>
</html>
```



8. TESTING

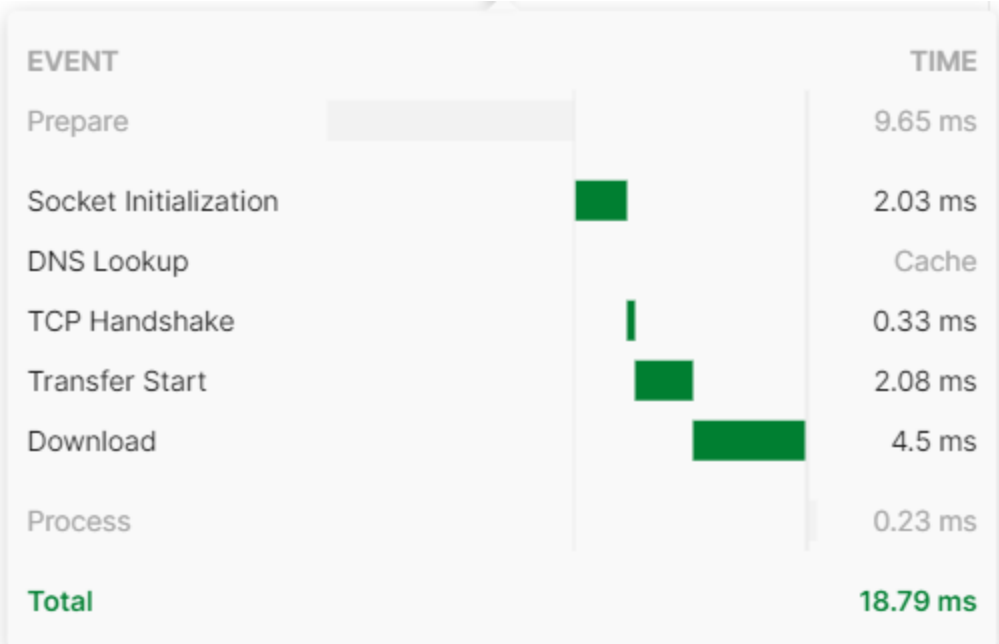
8.1 Test Cases

	GRE Score	TOEFL Score	University Rating	SOP	LOR	CGPA	Research
3	322	110	3	3.5	2.5	8.67	1
18	318	110	3	4.0	3.0	8.80	0
202	340	120	5	4.5	4.5	9.91	1
250	320	104	3	3.0	2.5	8.57	1
274	315	100	1	2.0	2.5	7.95	0
...	...	...	...	...	...	...	...
71	336	112	5	5.0	5.0	9.76	1
106	329	111	4	4.5	4.5	9.18	1
270	306	105	2	2.5	3.0	8.22	1
348	302	99	1	2.0	2.0	7.25	0
102	314	106	2	4.0	3.5	8.25	0

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 is 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.



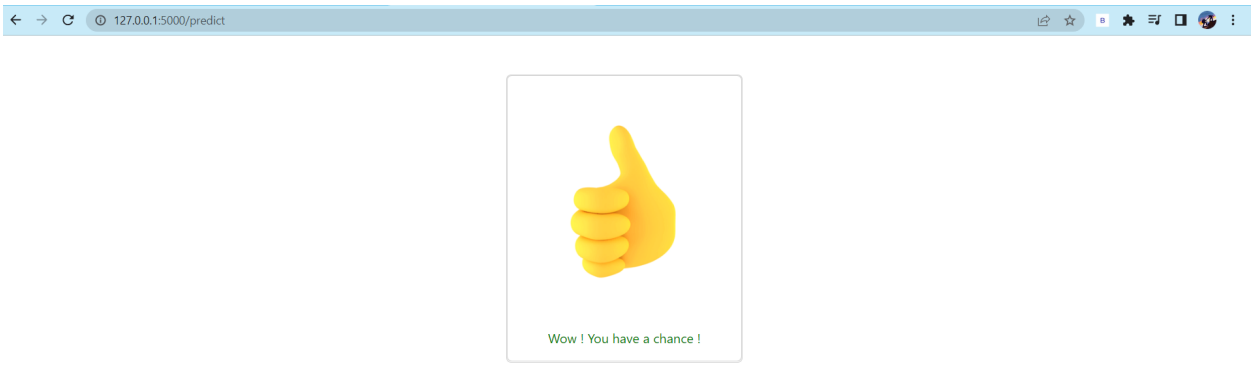
9. RESULTS

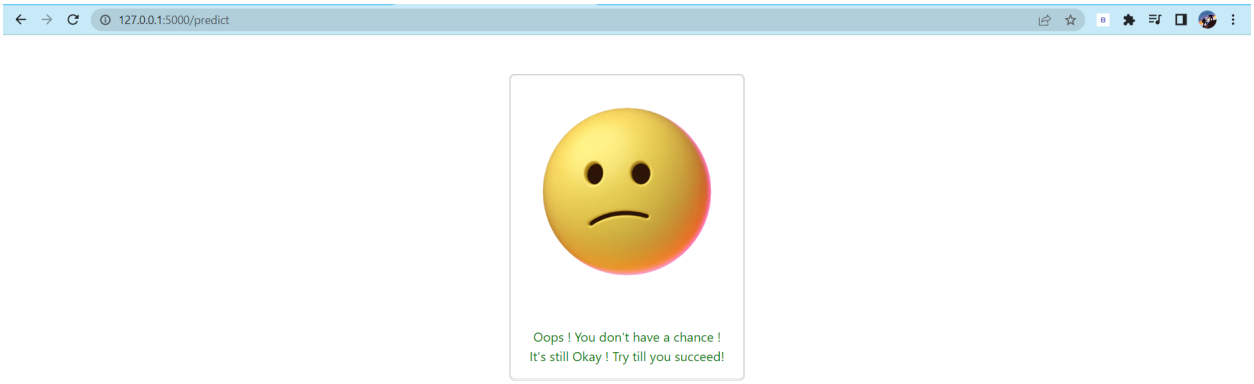
9.1 Performance Metrics

The Performance is the Accuracy of the model trained.

The training accuracy of the model is 95%.

The testing accuracy of the model is 82.1%.





10. ADVANTAGES & DISADVANTAGES

- ADVANTAGES

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

- DISADVANTAGE

  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 whether we can get admission in the desired University or not

12. FUTURE SCOPE

Collecting the Data from Universities and Creating a dataset which helps suggest universities based on the Marks entered by the use will help the students to easily enter a University of their wish by just using the Application and avoiding charges in Consultancy services. The education system will also have a great impact as the Universities will stop counselling and will only admit based on ML predictions

13.APPENDIX

GitHub and Project link Demo: https://github.com/IBM-EPBL/IBM-Project-38189-1660374589