UNIVERSITY ELIGIBITY CRITERIA PREDICTOR

Team ID: PNT2022TMID18243

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1 . INTRODUCTION

1.1 Project Overview

Student admission for the Master's degree program consists of different criteria/scores which is taken into consideration before admitting the student to the degree program. This process is elaborative and requires lot of thought processing and analysis by the selection committee before choosing the right applicants to the Master's degree program.

1.2 Purpose

The purpose of this analysis is to demonstrate the top contributing scores which helps the student to get the admission into the Master's degree program.What factors contributes to successful admission to a Master's degree program? The analysis might seem straight forward but caution has to be exercised to consider the scores like GRE, TOEFL, university rating, SOP, LOR and CGPA and any outliers should not impact the decision making process.

2. LITERATURE SURVEY

2.1 Existing problem

1. Towards a maturity model for machine learning algorithm in students eligibility selection

(S. Sridhar, S. Mootha and S. Kolagati, "A University Admission Prediction System using Stacked Ensemble Learning," 2020)

• In this study, S. Sridhar, S. Mootha and S. Kolagati, the system proposed has been evaluated against various other machine learning algorithms including other deep learning methods.

. This model takes into consideration various factors related to the student including their experiences.

2. Prediction Probability of Getting an Admission into a University using Machine Learning. (A. Sivasangari, V. Shivani, Y. Bindhu, D. Deepa and R. Vignesh, 2021)

• In this study**,** A. Sivasangari, V. Shivani, Y. Bindhu, D. Deepa and R. Vignesh, "Prediction Probability of Getting an Admission into a University using Machine Learning," 2021 proposed the analysis of non-repairable systems.

• Proposed model provides the analysis of scores versus chance of prediction based on historical data so that students can understand whether their profile is suitable or not.

• The proposed model uses linear regression and random forest algorithms but cat boost algorithm is giving highest accuracy

3.University Admission Prediction Using Google Vertex AI.

(J. Katti, J. Agarwal, S. Bharata, S. Shinde, S. Mane and V. Biradar, "University Admission Prediction Using Google Vertex AI,2022)

The dataset includes LOR, GRE score, CGPA, TOEFL score, University rating, SOP, etc. Based on all these criterias, the admission to a particular university of an undergraduate will be predicted.

The proposed method considers diverse variables related to the student and his score in various tests.

4. Test Criteria Using Random Forest And Neural Network Algorithm

(A. I. Gufroni, P. Purwanto, F. Farikhin, A. Wibowo and B. Warsito,-2021)

- Exploratory Data Analysis To Identify The Most Important Feature Of University Admission Test Criteria Using Random Forest and Neural Network Algorithm.
- The Proposed Random Forest algorithm has a better accuracy rate, which is 85.17%, compared to the 80,27% accuracy rate of the Neural Network algorithm.
- This study is based on the admission test data so that that the most important feature found in this study can be used as a basis for policy making for admission tests to come.

5.Using Data Mining Techniques to Predict Student Performance

H. A. Mengash

● Using Data Mining Techniques to Predict Student Performance to Support Decision Making in University Admission Systems, ● proposed model found Artificial Neural Network technique has an accuracy rate above 79%, making it superior to other classification techniques considered (Decision Trees, Support Vector Machines, and Naïve Bayes).

2.2 References

1. S. Sridhar, S. Mootha and S. Kolagati, "A University Admission Prediction System using Stacked Ensemble Learning," 2020

2. A. Sivasangari, V. Shivani, Y. Bindhu, D. Deepa and R. Vignesh, 2021-Prediction Probability of Getting an Admission into a University using Machine Learning

3. J. Katti, J. Agarwal, S. Bharata, S. Shinde, S. Mane and V. Biradar, "University Admission Prediction Using Google Vertex AI,2022

4. A. I. Gufroni, P. Purwanto, F. Farikhin, A. Wibowo and B. Warsito,-2021-Test Criteria Using Random Forest And Neural Network Algorithm

5. H. A. Mengash-Using Data Mining Techniques to Predict Student Performance

2.3 Problem Statement Definition

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.Thus, we propose an interactive dashboard in which user can predict the delays if occurs.To build a user interface application to analyze the selection methods so universities and organizations can adjust and allocate the resources accurately and quickly.

3. IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes.It is a useful tool to help teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges.

3.2 Ideation and Brainstorming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem-solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich amount of creative solutions.

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

3.2.1 Brainstorm, Idea Listing and Grouping

Indra lekha

Make sure that the predictor is reliable enough for the user

verify and double check the info collected regarding the universities

put the model through rigorous tests

consider the scores secured in the entrance exam as well

Focus should be on helping the students to choose the right college

Eliminate the data redundancy that might appear in the model

Dhanuja

Identify the criteria based on which universities admit students

Research about the admission process in different universities

Ensure that the accuracy of the model is as high as possible

Decide upon the inputs to be submitted by the user

Test the model against some random data

Deploy classificatin algorithm when required

Anjhena

Check the availability of the specific courses as well

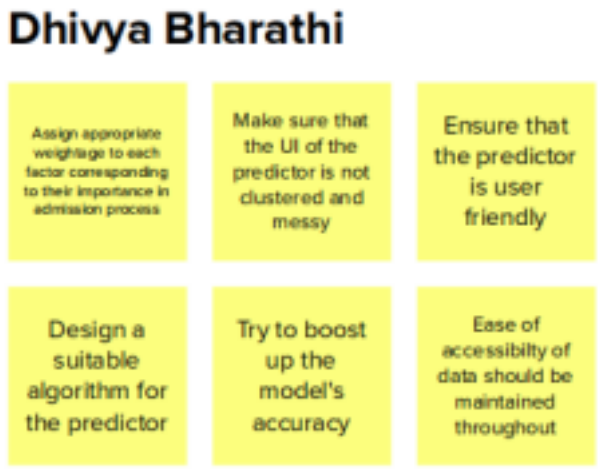
Use linear regression model when required

Make sure that the platform is easy to use

Display a video tutorial on the functioning of the module for the user

Discard any unnecessary data that might not be useful

Suggest suitable alternatives for the user which fits their demands and scores



3.2.2 Idea Prioritization

3.3 Proposed Solution

Project team shall fill in the following information in the proposed solution template

S.No.	Parameter	Description

1.	Problem Statement (Problem to be solved)	● 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
2.	Idea / Solution description	● Our project will help UG grads get into selected universities formaster's programmes based on their GRE, CGPA, and TOEFL scores. ● If the predicted output offers them a good image of their chances of admission to the university. ● This research will also help students who are currently preparing to have a better understanding. ● It will also give students with information about the university's research opportunities, admissions procedures, courses offered, and notable alumni

3.	Novelty / Uniqueness	There appear to be no web tools that forecast a student's qualifying criteria for admission to their preferred institution while simultaneously providing individualised advice on particular areas where they may improve
4.	Social Impact / Customer Satisfaction	This method will alleviate their concerns about being admitted to their selected university and reduce student anxiety. And this method will produce better results for students debating whether or not to attend university.
5.	Business Model (Revenue Model)	Universities face enormous pressure to accommodate more students while while ensuring student success. To alleviate this burden, they may employ predictive models to assist them simplify the student intake process and boost efficiency.

6.	Scalability of the Solution	The proposed solution will be implemented as a web application. As a result, it is easily available to everyone with internet connection and does not require any special software or gear. The dataset used for model training may be scaled based on admission data from accessible institutions

3.4 Problem Solution fit

4. REQUIREMENT ANALYSIS

4.1 Functional requirements

Following are the functional requirements of the proposed solution.

FR No	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)

FR -1	User Registration	Registration through Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	User Requirements	To begin the process of anticipating admission, eligibility of an applicant for admission to a university, activities to
		be completed are: The user is shown a list of universities that are available on the website. Submit all essential papers to the website's stated address. The UAEP system captures all of the information required for prediction based on the information supplied.
FR-4	User Details	Upload the required documents for admission prediction Curriculum Vitae (CV) or Resume Letter of Recommendation (LOR) GRE and TOEFL Score Marksheet SSLC and HSC Marksheet.

4.2 Non-Functional requirements

Following are the non-functional requirements of the proposed solution.

FR No.	**Non-Functional Requirement**	**Description**

NFR-1	**Usability**	A logical interface is required to make the system easy to use and to speed up typical processes. The product might be utilised by two types of people: administrators and ordinary users. The system should be user-friendly and provide instructions wherever possible. The website must be responsive and compatible with all devices via which it is accessible.
NFR-2	**Security**	If any mistakes or faults occur, the system should be able to roll back to a normal condition. The system should enable user authentication and permission, allowing only authorised users to use the site's features. To maintain consistency and stability, the backend database must be backed up on a regular basis.
NFR-3	**Reliability**	Data corruption is avoided by employing backup methods and strategies. At the moment of input, all data stored for user variables will be committed to the database.

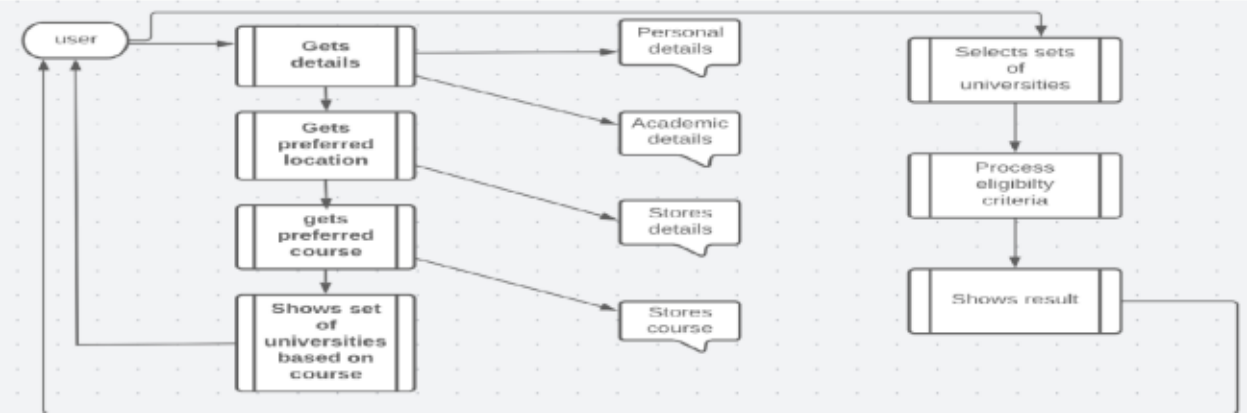
NFR-4	**Performance**	The use of indexes in the database helps speed up search and filter processes. The website must handle the request efficiently and as quickly as feasible. The user's internet requirements should not have a significant impact on system performance.

NFR-5	**Availability**	The system should be available at all times, allowing the user easy access. If the hardware or database fails, a substitute page will be displayed, and the database should be obtained from the data folder.
NFR-6	**Scalability**	The admission or intake season is a critical moment when the system experiences a high volume of traffic. The system should be able to manage a decent quantity of user traffic while yet delivering results quickly. It must be able to handle several concurrent users.

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

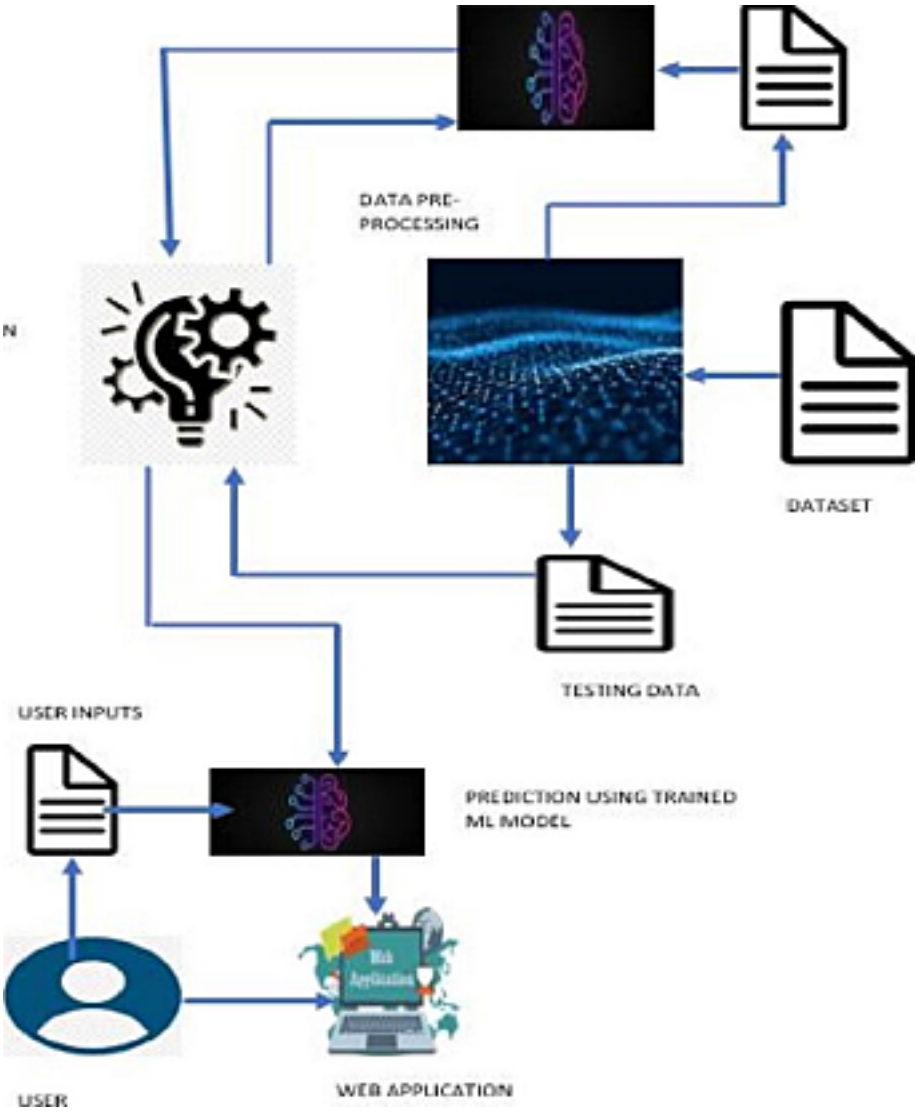


5.1 User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Personal Details	USN-1	As a user, I can provide academic information on my profile.	I can access my dashboard.	High	Sprint-1
		USN-2	As a user, I will be able to select a preferred location.	I can receive the list of location in the dropdown to select.	High	Sprint-1
	Search	USN-3	As a user I can search for my preferred University.	I can use the search bar.	Medium	Sprint-2
	User Preference	USN-4	As a user, I can select my preferred university from the list to check my eligibility for the particular university.	I can use the dropdown list provided to select the University.	Medium	Sprint-1
		USN-5	As a user, I can select my preferred location.	I can select my preferred location.	High	Sprint-1
		USN-6	As a user, I will be able to select my preferred Course.	I can select a course from the dropdown list.	Medium	Sprint-1
	Result	USN-7	As a user, I can view the list of universities that I am eligible in accordance to my preferred location.	I can view the list of universities filtered by the model .	High	Sprint-3
		USN-8	As a user, I can access the link to the university that I am eligible from the list.	I can access the university link.	Medium	Sprint-3
		USN-9	As a user, I can access the location link of the university that I am eligible from the list.	I can access the university location link.	Low	Sprint-3
		USN-10	From the list of universities, I can select and view the eligibility for the particular University.	I can view the eligible university.	Medium	Sprint-3

5.2 Solution & Technical Architecture



5.3 Technologies

Table-1: Components & Technologies:

Component	Description	Technology
User Interface	The user interacts with the application through a Web UI	HTML, CSS, Python, Flask
Application Logic-1	Logic for collecting the input from the user	Java / Python
Application Logic-2	Integrating Machine Learning model with our application	Python/Java

Application Logic-3	Logic for a process in the application	Python/Java
Database	Data Type, Configurations,Numeric Data etc.	MySQL, NoSQL, etc.
Cloud Database	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
File Storage	File storage requirements	IBM Block Storage or Other Storage Service or Local Filesystem
External API-1	Purpose of External API used in the application	IBM Weather API, etc.
External API-2	Purpose of External API used in the application	Aadhar API, etc.
Machine Learning Model	Predictive modelling is a mathematical process used to predict future events or outcomes by analysing patterns in a given set of input data	Object Recognition Model, etc.
Infrastructure (Server / Cloud)	Application Deployment on Local System Local Server Configuration: Built-in Flask web server	Flask,Web server etc…

Table 2: Application Characteristics:

Characteristics	**Description**	**Technology**
Security Implementations	Http authentication, Session based authentication	e.g. Flask security
Availability	Higher compatibility with latest technologies and allows customization	Flask
Performance	Integrated support for unit testing. ● RESTful request dispatching. ● Uses Jinja templating. ● Support for secure cookies	Flask
Open-Source Frameworks	Flask	Micro web framework with python

Scalable Architecture	Size is everything, and Flask's status as a microframework means that you can use it to grow a tech project such as a web app incredibly quickly. Its simplicity of use and few dependencies enable it to run smoothly even as it scales up and up.	Flask

6. PROJECT PLANNING AND SCHEDULING

6.1 Sprint Planning & Estimation

Preparation Phase	1	a) Access the resources in the project dashboard. b) Explore the dataset provided in the workspace. c) Create a GitHub account & collaborate with Project Repository in the project workspace. d) Set up the prerequisites for the project.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

Ideation Phase	2	a) Literature survey relevant to the selected project. b) Preparation of an Empathy Map to identify the user pros and cons. c) List the ideas by organizing the brainstorming session and prioritize	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

			the top 3 ideas based on their feasibility & importance.		
Project Design Phase-I		3			
Proposed Solution		3.1	Preparation of proposed solution document, which includes the Problem statement, Idea description, novelty, feasibility of the idea, business model, social impact and scalability of the solution.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

Problem SolutionFit	3.2	Prepared problem solution fit document which has designed a value proposition that addresses the customers' job, pros and cons to the particular application.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Solution Architecture	3.3	Develop effective architecture for the proposed solution which provides ground for application development projects.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Project Design Phase-II	4			

Solution Requirements	4.1	Identify the Functional and Non Functional requirements of the proposed solution.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

Customer Journey	4.2	Preparation of customer journey map to understand the user interactions which describes the stages that the customer experiences over time.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Data Flow Diagram and User stories	4.3	Generate Data flow diagram for the Project which maps out the flow of information for the application.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Technology Architecture	4.4	Develop effective technical architecture for the proposed solution which describes the logical software and hardware capabilities that are required to support the development of the application.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

Project Planning Phase	5			

Milestones & Activity List	5.1	Prepare Milestone and Activity list of the project.	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Sprint Plan	5.2	Prepare Sprint Delivery plan of the project	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Project Development	6			
Delivery of Sprint-1	6.1	Implement the coding phase of Sprint-1	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Delivery of Sprint-2	6.2	Implement the coding phase of Sprint 2	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed
Delivery of Sprint-3	6.3	Implement the coding phase of Sprint-3	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

Delivery of Sprint-4	6.4	Implement the coding phase of Sprint-4	INDRA LEKHA R DHANUJA S.V DHIVYA BHARATHI P ANJHENA A	Completed

6.2 Sprint Delivery Schedule

A milestone schedule, or milestone chart, is a timeline that uses milestones to divide a project schedule into major phases. A milestone chart is a way to visualize the most important steps of our project. Each milestone the team achieves brings us closer to completing the project. As a result, milestones provide a sense of accomplishment and show the team how the work they're doing contributes to the overarching project objective.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	Indralekha R
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	Dhanuja SV
Sprint-2		USN-3	As a user, I can register for the application through Facebook	2	Low	Anjhena A
Sprint-3		USN-4	As a user, I can register for the application through Gmail	2	Medium	Dhivya Bharathi P
Sprint-4	Login	USN-5	As a user, I can log into the application by entering email & password	1	High	Anjhena A
	Dashboard		As a user,I can view my dashboard and check for any updates and upload the details to check my eligibility status.			Indralekha R

7. **ADVANTAGES & DISADVANTAGES**

ADVANTAGES:

- Applicants' Convenience
- Logistics
- Increases Accuracy and Efficiency

DISADVANTAGES:

- Low Computer Literacy
- Data inavailablity

8.CONCLUSION

our team brainstormed as to how we could improve the status quo. And this is how our admit predictor was born.We firmly believe that our Admit Predictor will significantly help students with their application process. Using this software, the entrance seat allotment became easier and can be implemented using system. The main advantage of the project is the computerization of the entrance seat allotment process.