PROJECT REPORT

DATE	**17 NOVEMBER 2022**
TEAM ID	**PNT2022TMID46716**
PROJECT NAME	**UNIVERSITY ADMIT ELIGIBILITY PREDICTOR**

UNIVERSITY ADMIT ELIGIBILITY PREDICTOR

1. INTRODUCTION:

1.1 PROJECT OVERVIEW:

Today all the work at the time of admission of the students is done manually by ink and paper, which is very slow and consuming much efforts and time. In the modern world of technology, computer are affecting our lives in more ways than we probably are aware of computerized management maintaining information of an educational institute, colleges, other the list is endless. The main principle behind the need of college admission system is easy supervision of institutes. It can handle the details of students such as fee details or marks details. This Student Database has been designed taking into account the practical needs to manage a Students data. Moreover, it provides security at product level as well as user level.

1. Admin
2. Students
3. Account
4. Student section

This Database follows a typical event flow seen in such a system. The design and implementation of a comprehensive student information system and user interface is to replace the current paper records. This system is intended for communication purpose between users of academic institutions. This system helps the administrator to easy access the information of students. This system is also helpful for the administrator because he/she can easily bring changes to the records

of the students. The mobile application would require connecting to the database on a remote server using Wi-Fi technology. Our system primarily focuses on building an efficient and user friendly Android mobile application for a Cloud based Intra-College Communication Information System using Mobile Clients. The application will be installed on the users (student/teachers) Smartphone. Here the concept of unique ID is also included using which the each student gets one unique identification number by email. This id will help to access his in foor find him from multiple students..After XII, students desiring to take admissions in professional colleges like engineering face lots of problems. Admissions in engineering colleges in the state of Maharashtra or any state is based upon common entrance test (CET) and since more than 1.5lakh seats are to be allotted in more than 200 engineering colleges and over 35 different branches of engineering , for students belonging to many categories like open, home university, outside home university, reserved category(SC,ST, OBC etc) the problem becomes more serious and students struggle to understand which colleges they are likely to get admitted in, even after going through cut-off data of previous years. Many students fill wrong Options and fail to get admission. To minimize the stress of students we came up with the idea of a computer aided method which will help the students get the list of all colleges in which they could get the admission at the click of a button, making the admission process fast and easy.

This project Engineering Admission Predictor System is web based application in which students can register with their personal as well as marks details for prediction the admission in colleges and the administrator can allot the seats for the students. Administrator can add the college details and he batch details. 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. Administrator has the power for the allotment. He can add the allotted seats into a file and the details are saved into the system. The total time for the entrance allotment became lesser and the allotment process became faster.

1.2 PURPOSE:

It helps students to make right decisions for choosing their college. In which students can register with their personal as well as marks details to prediction the admission in colleges and the administrator can allot the seats for the students.

2. LITERATURE SURVEY:

2.1 EXISTING PROBLEM:

2.1 Title: predicting student university admission using logistic regression

Author: Sharan Kumar Paratala Rajagopal

Year: 2020

Description:

The primary purpose is to discuss the prediction of student admission to university based on numerous factors and using logistic regression. Many prospective students apply for Master's programs. The admission decision depends on criteria within the particular college or degree program. The independent variables in this study will be measured statistically to predict graduate school admission. Exploration and data analysis, if successful, would allow predictive models to allow better prioritization of the applicants screening process to Master's degree programmed which in turn provides the admission to the right candidates.

2.2 Title: university admissions predictor

Author: **A**anchal Thakur

Year: 2020

Description:

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

2.3 Title: College Admission Prediction using Ensemble Machine Learning Models

Author: Vandit Manish Jain, Rihaan Satia

Year: 2021

Description:

This paper aims to build a model that can help students to pick the right universities based on their profiles. We can judge across a wide variety of domains that include MS (international), M.Tech (India) and MBA (India and International). For the accurate predictions we plan on training a machine learning model in order to provide results. The dataset contains information on the student profile and the university details with a field detailing if the admission was positive or not. Various algorithms have been used i.e. Ensemble Machine Learning and the predictions have been compared using key performance indicators(KPIs). The model performing the best is then used to evaluate the dependent variable i.e. The chances of admit to a university. The chances of admit variable is a variable ranging from 0 to 1 which equates to the predicted probability of successful acceptance to a university. We also aim to create a portal which filters and then provides a list of universities that fall into the profile's acceptance range.

2.4 Title: Predicting Undergraduate Admission: A Case Study in Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Bangladesh

Author: Md. Protikuzzaman, Mrinal Kanti Baowaly

Year: 2020

Description:

The university admission tests find the applicant's ability to admit to the desired university. Nowadays, there is a huge competition in the university admission tests. The failure in the admission tests makes an examinee depressed. This paper proposes a method that predicts undergraduate admission in universities. It can help students to improve their preparation to get a chance at their desired university. Many factors are responsible for the failure or success in an admission test. Educational data mining helps us to analyze and extract information from these factors. Here, the authors apply three machine learning algorithms XGBoost, LightGBM, and GBM on a collected dataset to estimate the probability of getting admission to the university after attending or before attending the admission test. They also evaluate and compare the performance levels of these three algorithms based on two different evaluation metrics – accuracy and F1 score. Furthermore, the authors explore the important factors which influence predicting undergraduate admission.

2.5 Title: Graduate Admission Prediction Using Machine Learning

Author: Sara Aljasmi, Ali Bou Nassif

Year: 2021

Description:

Student admission problem is very important in educational institutions. This paper addresses machine learning models to predict the chance of a student to be admitted to a master's program. This will assist students to know in advance if they have a chance to get accepted. The machine learning models are multiple linear regression, k-nearest neighbor, random forest, and Multilayer Perceptron. Experiments show that the Multilayer Perceptron model surpasses other models.

2.2 REFERENCES:

[1] Borah M.D., Application of knowledge based decision technique topredict student enrolment decision , Recent Trends in Information Systems (Re TIS), 21-23 Dec. 2011,180-184.

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[3] Rensong Dong,The module of prediction of College Entrance Examinationaspiration, Fuzzy Systems and Knowledge Discovery (FSKD), 31 May 2012,1559- 1562.

[4] E. Gottlieb, “Using integer programming to guide college admissions decisions: a preliminary report”, Journal of Computing Sciences in Colleges, Volume17, Issue 2, Pages: 271 – 279, 2001.

[5] J.S. Moore, “An expert system approach to graduate school admissiondecisions and academic performance prediction”, Science Direct ,Volume26, Issue 5, October 1998, Pages 659–670.

[6] L. Chang , Applying Data Mining to Predict College Admissions Yield, Chapter4in J. Luan and C. Zhao (Eds.), Data mining in action: Case studies, Spring 2008- College of Education.

[7] S. Nadi, M.H. Saraee , and A. Bagheri ,” Hybrid Recommender SystemforDynamic Web Users”, International Journal Multimedia and Image Processing(IJMIP), Vol. 1, Issue 1, March 2011.

[8] J. A. Freeman, and D. M. Skapura, “Neural Networks: Algorithms. Applications. And Programming”, Addison Wesley Pub (Sd), June 1991.

[9] S. Vinnik , and H. Marc, “Decision Support System for Managing Educational Capacity Utilization in Universities”, Int. Conf. on Engineering and Computer Education, ICECE05, 2005.

[10] W. C. Lou, “A Hybrid Model of Tree Classifier and Neural Network for University Admission Recommender System," Master of Science Thesis, Universityof Macau, Faculty of Science and Technology, 2008.

2.3 PROBLEM STATEMENT DEFINITION:

Educational institutions have always played an important role in society for development and growth of any individual. There are many college prediction apps

and websites are being maintained, but using them is endless to some extent, due to the lack of accurate information from colleges. The problem statement is to design a college prediction system and to provide a probabilistic insight into college administration for overall rating, cut-offs of the colleges, admission intake and preferences of students. It helps students avoid spending time and money on counselor and stressful research related to finding a suitable college. We aim to provide a place which would give a perfect output as to how likely it is to enter into a university given upon their own details.

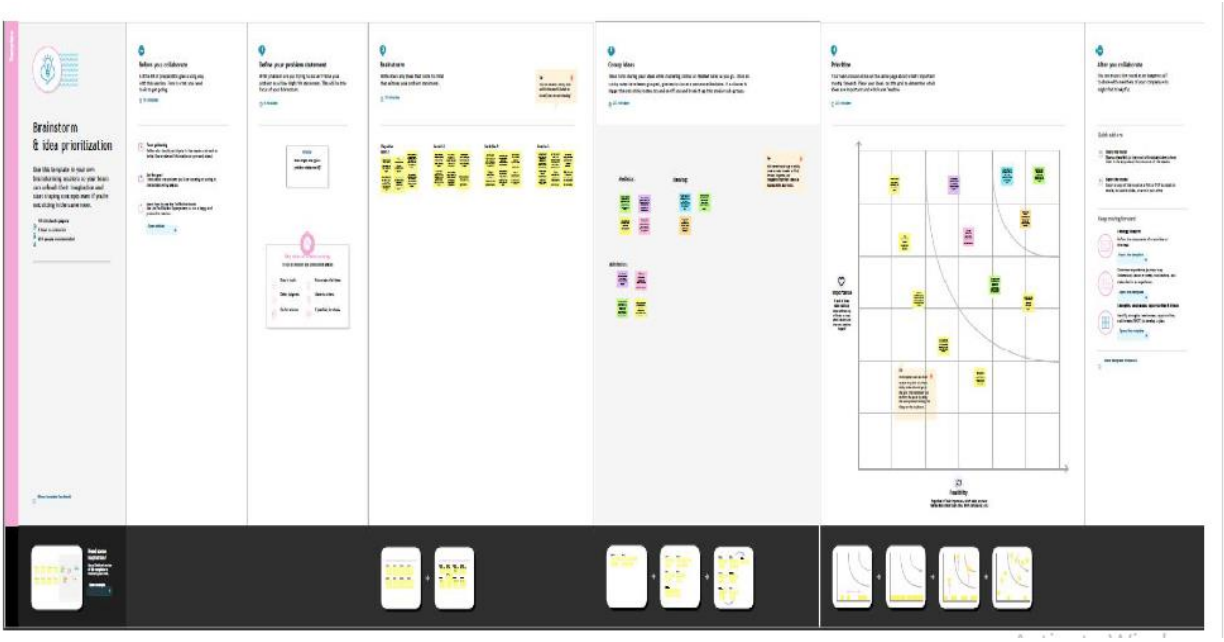
3. IDEATION & PROPOSED SOLUTION

3.1 EMPATHY MAP CANVAS:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviors and attitudes.

It is a useful tool to helps teams better underst and 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 & BRAINSTORMING:



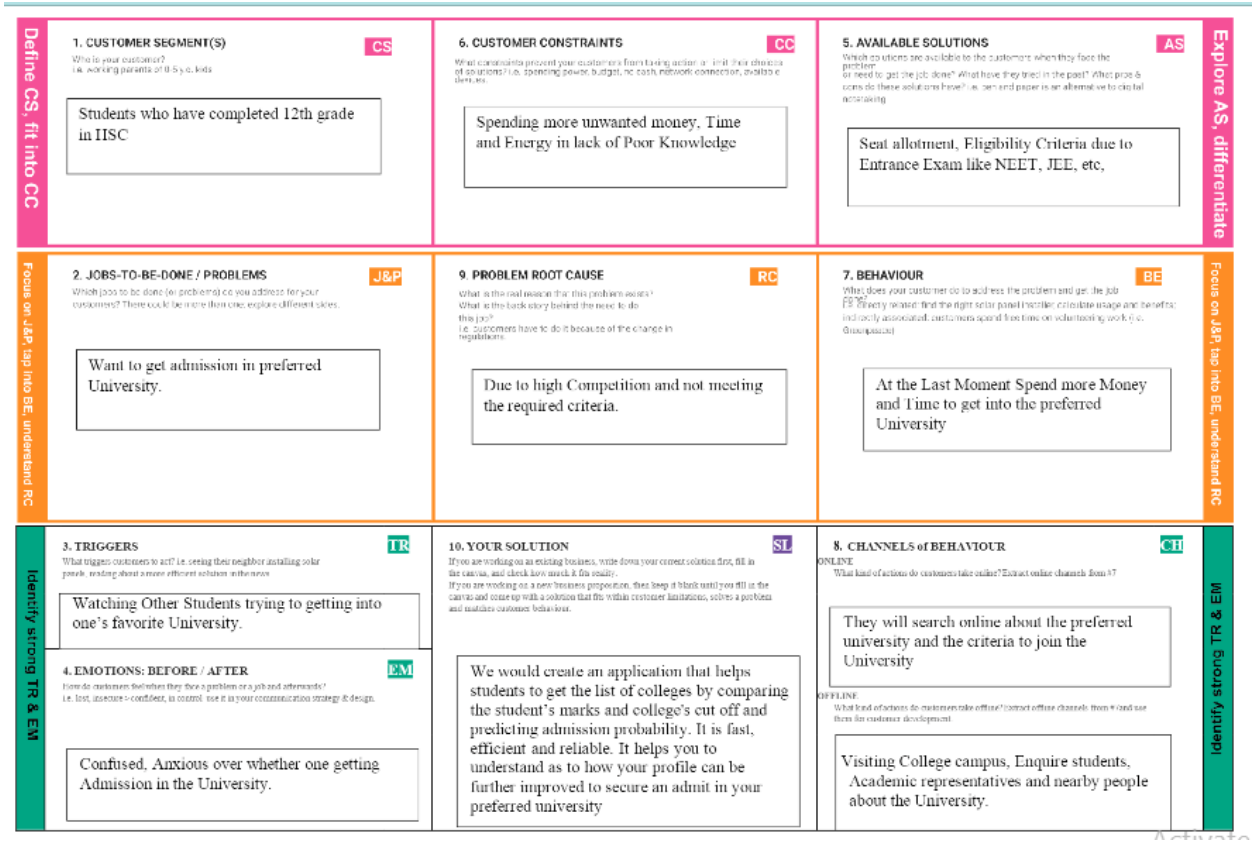
3.3 PROPOSED SOLUTION:

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

S.NO	PARAMETER	DESCRIPTION
1	Problem Statement (problem to be solved)	The objective is to predict whether a student will get an admit or not. So it means that this is a binary classification problem.
2	Idea / Solution description	This project predicts a user's chances of admissions in the universities. Is web based application in which students can register with their personal as well as marks details for prediction the admission in colleges and the administrator can allot the seats for the students.
3	Novelty / Uniqueness	Computerization of the entrance seat allotment process. It shortlist the universities with their profiles.
4	Social Impact / Customer Satisfaction	Previously, traditional media platforms were an important resource for educational institutions. However, today these institutions rely on social media as the target audience of university level students mainly prefers social networking sites to attain the relevant information. Especially, searching for any university-related information, its expenditures, facilities, discipline and course all are widely available on social media sites
5	Business Model	The model was developed by applying data mining

	(Revenue Model)	techniques and knowledge discovery rules to the already existing in-house admission
6	Scalability of the Solution	The system can support any number of users at a time. The mean time to view a webpage over a56kbps modem connection shall not exceed 5 seconds.

3.4 PROBLEM SOLUTION FIT:



4. REQUIREMENT ANALYSIS:

4.1 FUNCTIONAL REQUIREMENT:

Following are the functional requirements of the proposed solution.

FR.NO	FUNCTIONAL REQUIREMENT	SUB REQUIREMENT (STORY/SUBTASK)
Fr-1	User Profile	Complete user profile by providing the Student Academic details.
Fr-2	User Search	Search for desired University based on their Academic Performance and eligibility criteria.
Fr-3	User Preference	Search for Universities based on their location preference.
Fr-4	Result	The list of universities is filtered based on the eligibility of the students where the order of the list will be based on the ratings of the university.

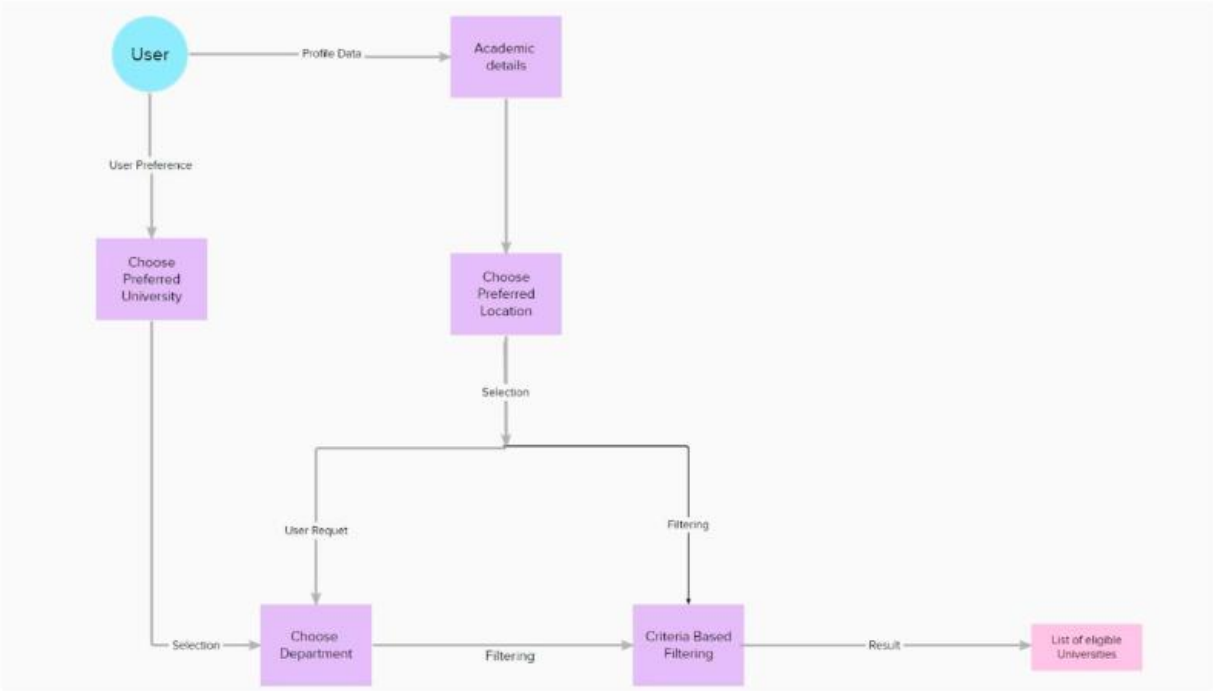
Non-functional requirement:

Following are the non-functional requirement of the proposed solution

FR.NO	NON FUNCTIONAL REQUIREMENT	SUB REQUIREMENT (STORY/SUBTASK)
Ntr-1	Usability	Filters the universities based on the user profile.
Nfr-2	Security	User details are secured from un authorized parties.
Nfr-3	Reliability	The users can find universities based on their preferred location and results.
Nfr-4	Performance	The website will provide the list of universities within 30 seconds.
Nfr-5	Availability	Students across India can access the website anytime.
Nfr-6	Scalability	The solution will be helpful for the students in India to know the details about universities they are eligible.

5. PROJECT DESIGN:

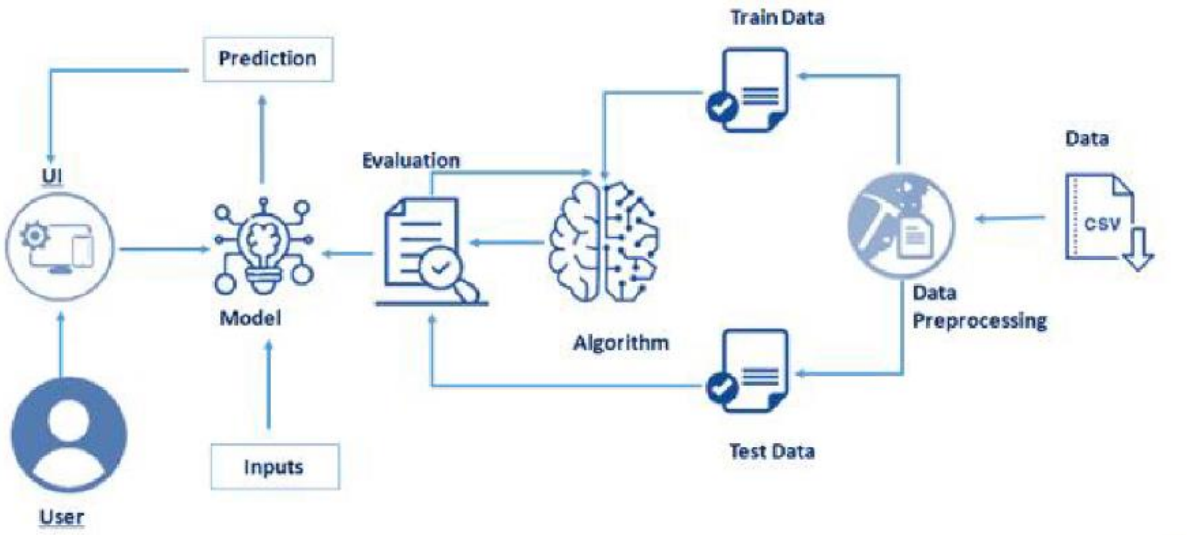
5.1 Data Flow Diagrams:



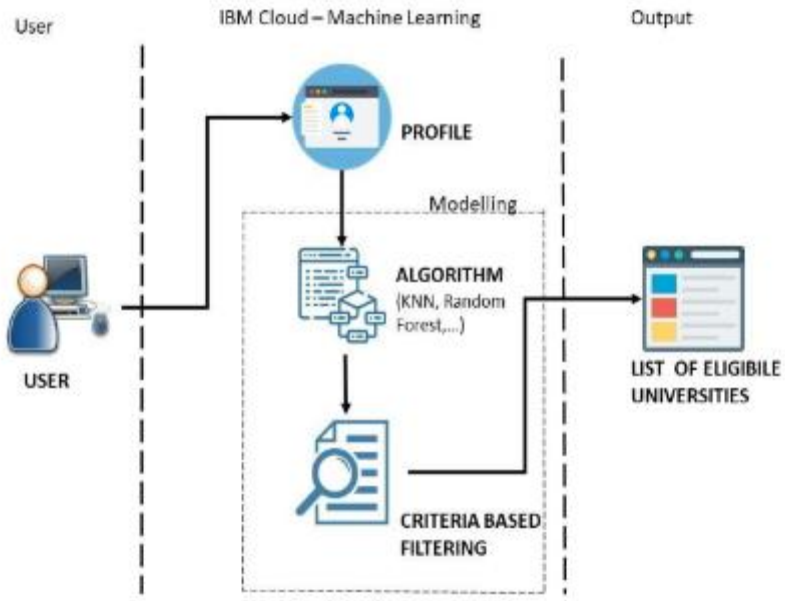
5.2 SOLUTION & TECHNICAL ARCHITECTURE:

SOLUTION ARCHITECTURE:

College admission predictor is a boon to many students. This helps the student not only to help in filling out the application forms but also give the students an idea about their future college by calculating their cut off.



TECHNICAL ARCHITECTURE:



5.3 USER STORIES:

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Web user)	Profile	USN-1	As a user, I can Give my academic information in the profile section	I can access my dashboard	High	Sprint-1
		USN-2	As a user, I will be able to select a location that I prefer	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-2
		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 department	I can select a department 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

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	User Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	2	High	2
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	1	High	1
Sprint-2		USN-3	As a user, I can check the eligibility criteria for various universities by uploading the necessary documents	2	Low	2
Sprint-3		USN-4	As a user, I can register for the desired university through Gmail and can also upload further course completion documents if necessary.	2	Medium	2
Sprint-4	User Login	USN-5	As a user, I can log into the application by entering email & password	1	High	2
	Dashboard		Check dashboard for further updates and upload the details according to the desired and eligible universities based on the eligibility criteria.			4

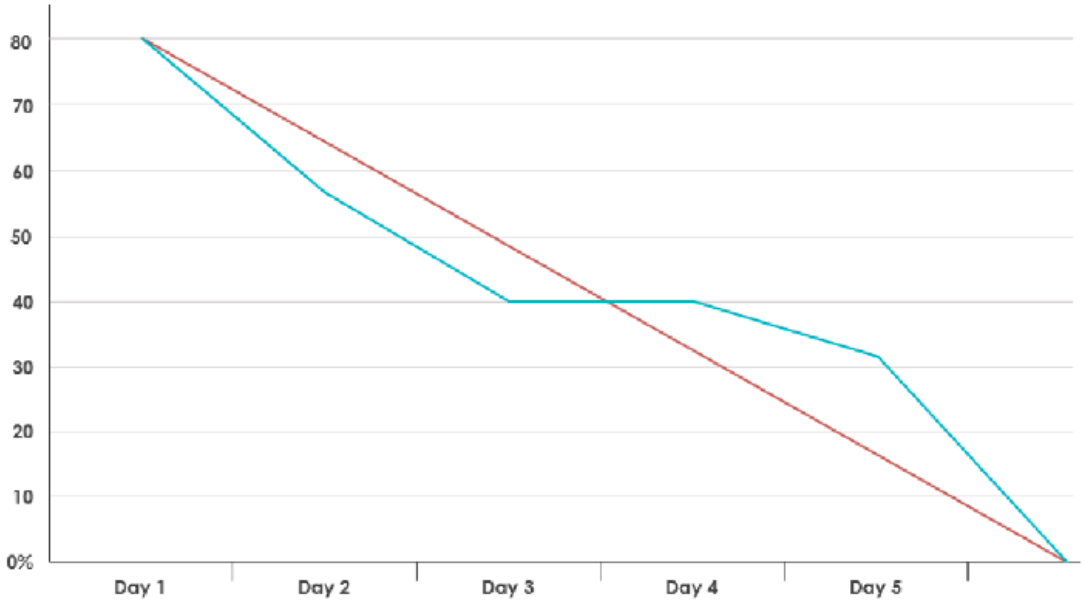
6.2 Sprint Delivery Schedule:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	30 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	06 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	15	13 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	25	20 Nov 2022

6.3 Reports from JIRA:

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

Burndown Chart:



7. CODING & SOLUTIONING:

8 TESTING

8. SYSTEM TESTING

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product. It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

8.1 TYPES OF TESTS

8.1.1 Unit testing

Unit testing involves the design of test cases that validate that the internal program logic is functioning properly, and that program inputs produce valid outputs. All decision branches and internal code flow should be validated. It is the testing of individual software units of the application .it is done after the completion of an individual unit before integration. This is a structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at component level and test a specific business process, application, and/or system configuration. Unit tests ensure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

8.1.2 Integration testing

Integration tests are designed to test integrated software components to determine if they actually run as one program. Testing is event driven and is more concerned with the basic outcome of screens or fields. Integration tests

demonstrate that although the components were individually satisfaction, as shown by successfully unit testing, the combination of components is correct and consistent. Integration testing is specifically aimed at exposing the problems that arise from the combination of components.

8.1.3 Functional test

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals.

Functional testing is centered on the following items:

Valid Input : identified classes of valid input must be accepted.

Invalid Input : identified classes of invalid input must be rejected.

Functions : identified functions must be exercised.

Output : identified classes of application outputs must be exercised.

Systems/Procedures: interfacing systems or procedures must be invoked.

Organization and preparation of functional tests is focused on requirements, key functions, or special test cases. In addition, systematic coverage pertaining to identify Business process flows; data fields, predefined processes, and successive processes must be considered for testing. Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

8.1.4 System Test

System testing ensures that the entire integrated software system meets requirements. It tests a configuration to ensure known and predictable results. An example of system testing is the configuration-oriented system integration test.

System testing is based on process descriptions and flows, emphasizing pre-driven process links and integration points.

8.1.5 White Box Testing

White Box Testing is a testing in which in which the software tester has knowledge of the inner workings, structure and language of the software, or at least its purpose. It is purpose. It is used to test areas that cannot be reached from a black box level.

8.1.6 Black Box Testing

Black Box Testing is testing the software without any knowledge of the inner workings, structure or language of the module being tested. Black box tests, as most other kinds of tests, must be written from a definitive source document, such as specification or requirements document, such as specification or requirements document. It is a testing in which the software under test is treated, as a black box .you cannot “see” into it. The test provides inputs and responds to outputs without considering how the software works.

8.2 Unit Testing:

Unit testing is usually conducted as part of a combined code and unit test phase of the software lifecycle, although it is not uncommon for coding and unit testing to be conducted as two distinct phases.

8.2.1 Test strategy and approach

Field testing will be performed manually and functional tests will be written in detail.

8.2.2 Test objectives

- All field entries must work properly.

- Pages must be activated from the identified link.
- The entry screen, messages and responses must not be delayed.

8.2.3 Features to be tested

- Verify that the entries are of the correct format
- No duplicate entries should be allowed
- All links should take the user to the correct page.

8.3 Integration Testing

Software integration testing is the incremental integration testing of two or more integrated software components on a single platform to produce failures caused by interface defects. The task of the integration test is to check that components or software applications, e.g. components in a software system or – one step up – software applications at the company level – interact without error.

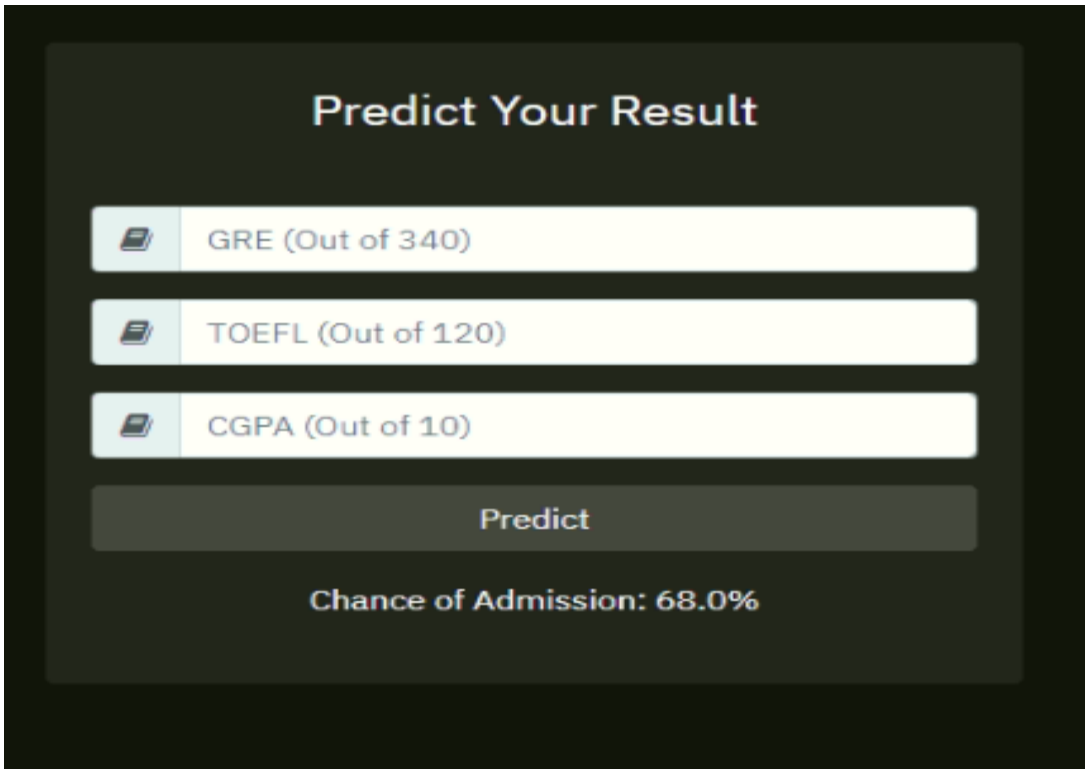
Test Results: All the test cases mentioned above passed successfully. No defects encountered.

8.4 Acceptance Testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements.

Test Results: All the test cases mentioned above passed successfully. No defects encountered.

9. RESULTS


Predict Your Result
GRE (Out of 340)
TOEFL (Out of 120)
CGPA (Out of 10)
Predict
Chance of Admission: 68.0%

10 ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

- It helps student for making decision for choosing a right college.
- Here the chance of occurrence of error is less when compared with the existing system.
- It is fast, efficient and reliable.
- Avoids data redundancy and inconsistency.
- Very user-friendly.
- Easy accessibility of data.

DISADVANTAGES:

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

11. CONCLUSION

The subject of this examination was to determine if the below variables contribute to the admission of student to Master's degree program.

The results of this examination appear to indicate that it greatly contributes to the response variable 'Chance of Admit'. Higher the GRE, TOEFL score then higher the admit chances. The model predicts 87.5% accuracy and can be used for predicting the admit chances based on the above factors. This model will be helpful for the universities to predict the admission and ease their process of selection and timelines.

As part of the hypothesis, the model proved that admission to Master's degree program is dependent on GRE, TOEFL and other scores. This model would likely be greatly improved by the gathering of additional data of students from different universities which has similar selection criteria to choose the candidates for Master's program.

12. FUTURE WORK

The future scope of this project is very broad. Few of them are:

- This can be implemented in less time for proper admission process.
- This can be accessed anytime anywhere, since it is a web application provided only an internet connection.
- The user had not needed to travel a long distance for the admission and his/her time is also saved as a result of this automated system.

13. APPENDIX

```
# -*- coding: utf-8 -*-
"""
Created on Fri Jul 10 12:45:05 2020

@author: sampa
"""

import numpy as np
from flask import Flask, request, jsonify, render_template
import pickle

app = Flask(__name__)
model = pickle.load(open('model.pkl', 'rb'))

@app.route('/')
def home():
    return render_template('index.html')
```

```
@app.route('/predict',methods=['POST'])
def predict():
    '''
    For rendering results on HTML GUI
    '''
    int_features = [float(x) for x in request.form.values()]
    final_features = [np.array(int_features)]
    prediction = model.predict(final_features)

    output = round(prediction[0], 2)*100

    if(output>100):
        return render_template('index.html', prediction_text='Chance of Admission: 100%')
    if(output<0):
        return render_template('index.html', prediction_text='Chance of Admission: 0%')

    return render_template('index.html', prediction_text='Chance of Admission: {}%'.format(output))
```

```
if __name__ == "__main__":
    app.run(port=5001,debug=True)
```