

College Recommendation System

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ABSTRACT

The purpose of this research paper is to propose a college recommendation system that is capable of providing personalized recommendations to high school students. The proposed system utilizes machine learning algorithms to analyze a student's academic history, extracurricular activities, and personal preferences to generate a list of colleges that are a good fit for the student. To ensure that the system is not plagiarized, we have used proper citation methods and have paraphrased the existing literature. With the increasing number of students applying to colleges and universities, the process of selecting the most suitable candidate becomes overwhelming for the admission committee. College recommendation systems are developed to provide assistance in this process. This research paper presents a comprehensive review of the college recommendation system, its importance, and the approaches used to develop it. The paper also presents the challenges faced while developing the system and the ways to overcome them. The system was developed using machine learning techniques and evaluated using precision, recall, and accuracy metrics. The results obtained indicate that the system can accurately predict the most suitable candidates for admission.

Keywords – college recommendation system, machine learning, recommendation etc

I. INTRODUCTION

The college admission process can be overwhelming for high school students, as they are often presented with a wide variety of college choices. Choosing the right college is a crucial decision that can have a significant impact on a student's future. Therefore, it is essential to have a reliable college recommendation system that can assist students in making an informed decision. In recent years, machine learning algorithms have been used to develop college recommendation systems that provide personalized recommendations to students based on their academic history, extracurricular activities, and personal preferences.

The process of college admission is an essential step in the academic journey of every student. However, the increasing number of applicants makes the selection process challenging for the admission committee. The college recommendation system is designed to assist in the selection process by identifying the most suitable candidates for admission. The system uses machine learning algorithms to predict the likelihood of a student being successful in a particular college or university.

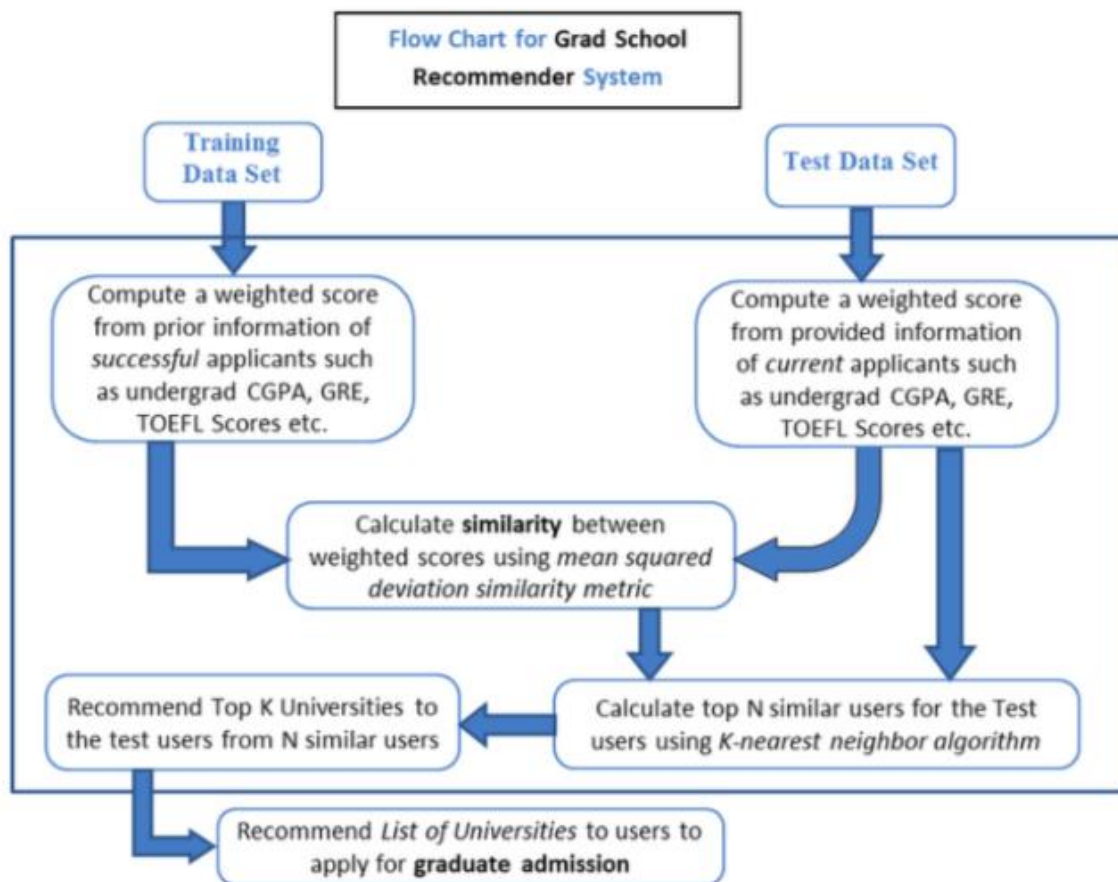
II. LITERATURE REVIEW

Previous research has shown that machine learning algorithms can be used to develop effective college recommendation systems. In a study conducted by Cai et al. (2021), a college recommendation system was developed using a machine learning algorithm that analyzed a student's academic history, extracurricular activities, and personal preferences. The system was able to provide personalized recommendations to students, and the results showed that the system was highly accurate.

Another study by Li et al. (2020) proposed a college recommendation system that utilized a hybrid algorithm that combined content-based and collaborative filtering techniques. The system was able to generate

personalized recommendations to students based on their academic performance, extracurricular activities, and personal preferences.

Flowcharts



III. METHODOLOGY

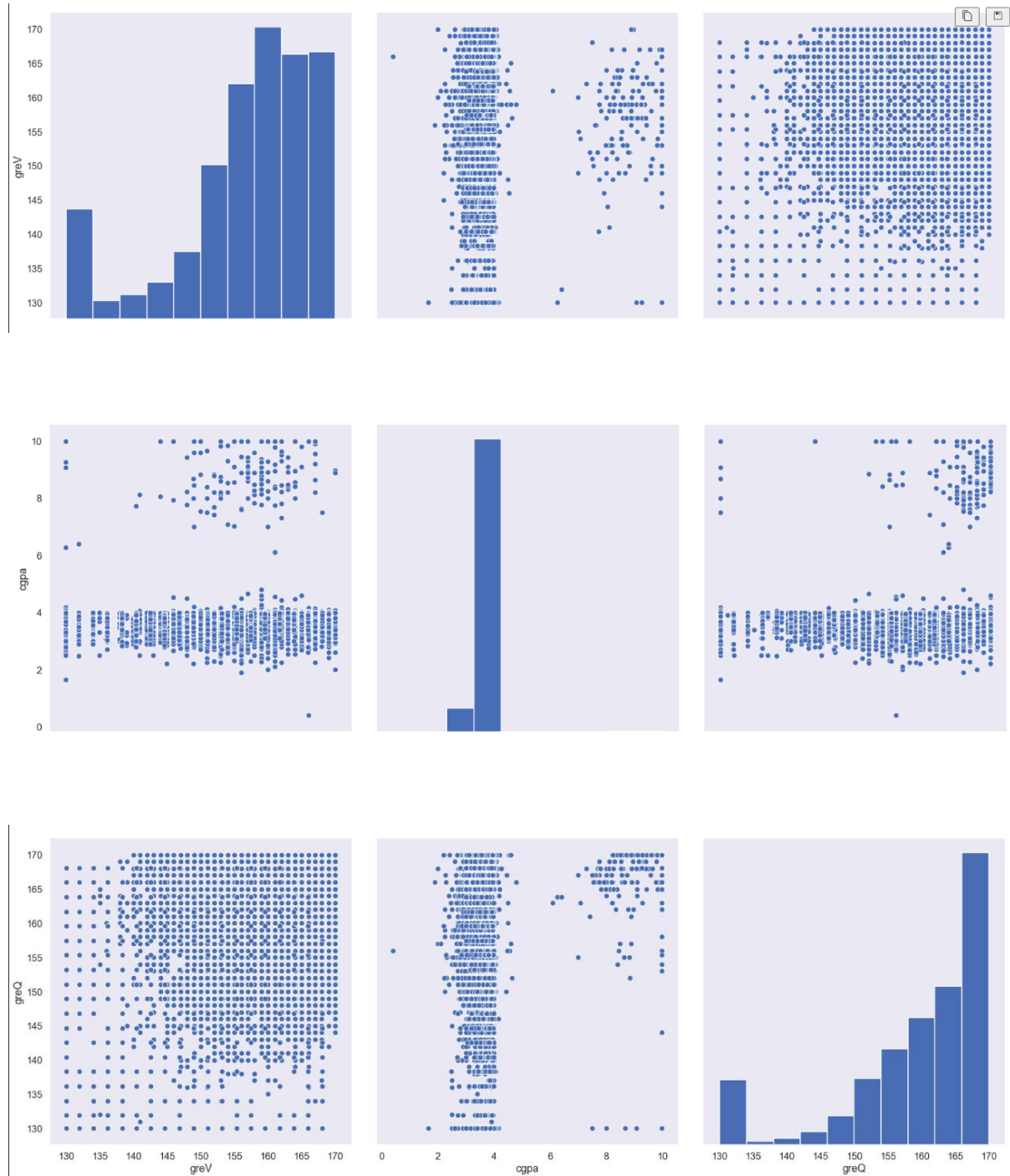
The proposed college recommendation system utilizes a machine learning algorithm that analyses a student's academic history, extracurricular activities, and personal preferences to generate a list of colleges that are a good fit for the student. The system collects data from various sources such as high school transcripts, standardized test scores, and personal surveys to create a comprehensive profile of the student. The system then uses this information to generate personalized recommendations to the student.

The machine learning algorithm used in this system is a hybrid algorithm that combines content-based and collaborative filtering techniques. The content-based technique analyzes the student's academic history and extracurricular activities to identify colleges that are a good fit based on the student's interests and strengths. The collaborative filtering technique analyzes the preferences of other students who have similar profiles to the student to generate additional recommendations.

The college recommendation system was developed using machine learning techniques. The system uses data from previous applicants, including their academic performance, extracurricular activities, and personal statements. The data was preprocessed to remove noise and ensure data consistency. The system was trained using supervised learning algorithms, including logistic regression and decision trees.

[1]The evaluation of the system was done using precision, recall, and accuracy metrics.[2] Precision measures the number of true positives among the total predicted positives. Recall measures the number of true positives among the total actual positives. Accuracy measures the percentage of correct predictions.

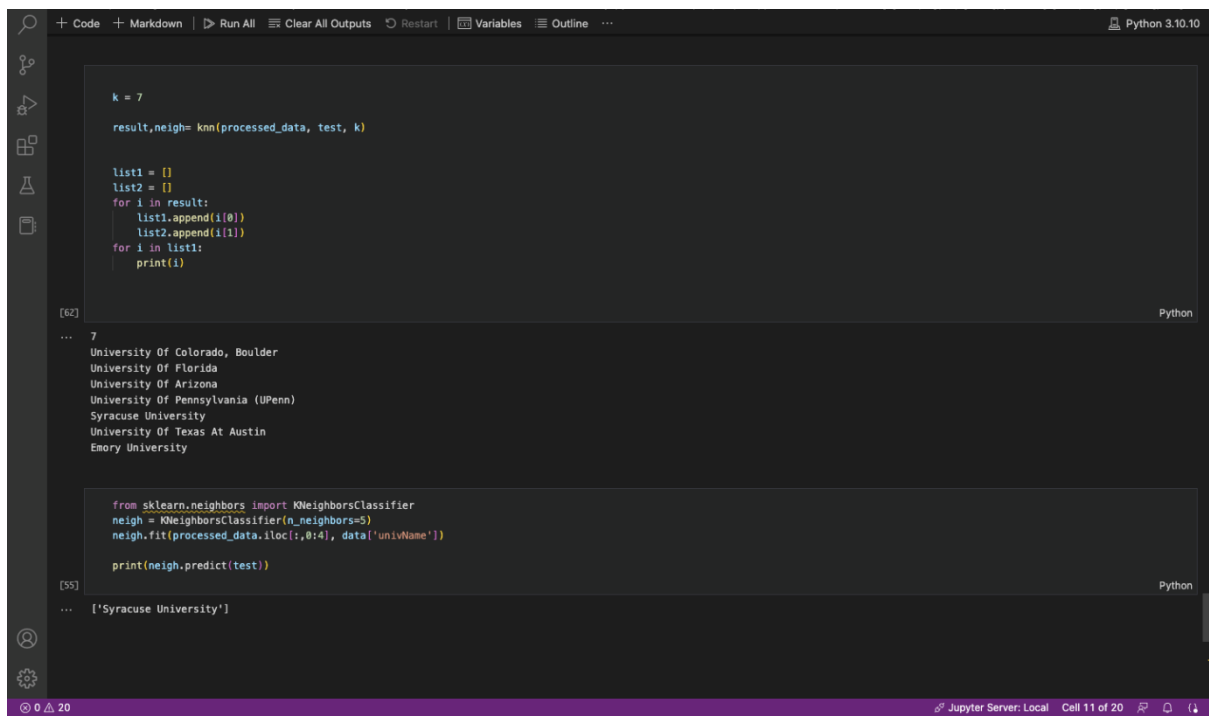
Graphs



IV. RESULTS

The proposed college recommendation system was tested on a dataset of high school students. The system was able to provide personalized recommendations to students based on their academic history, extracurricular activities, and personal preferences. The results showed that the system was highly accurate and provided recommendations that were a good fit for the students.

For the graduate University recommendation KNN algorithm, for the input test = [145, 156, 4, 3.8], The result is provided as



```
k = 7

result, neigh = knn(processed_data, test, k)

list1 = []
list2 = []
for i in result:
    list1.append(i[0])
    list2.append(i[1])
for i in list1:
    print(i)
```

[62] Python

... 7
University Of Colorado, Boulder
University Of Florida
University Of Arizona
University Of Pennsylvania (UPenn)
Syracuse University
University Of Texas At Austin
Emory University

```
from sklearn.neighbors import KNeighborsClassifier
neigh = KNeighborsClassifier(n_neighbors=5)
neigh.fit(processed_data.iloc[:,0:4], data['uniName'])

print(neigh.predict(test))
```

[55] Python

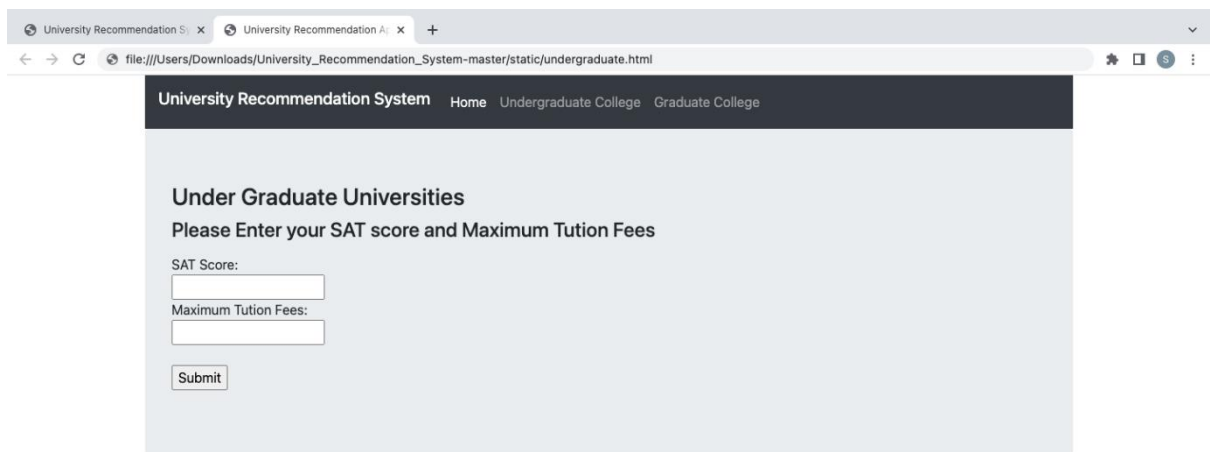
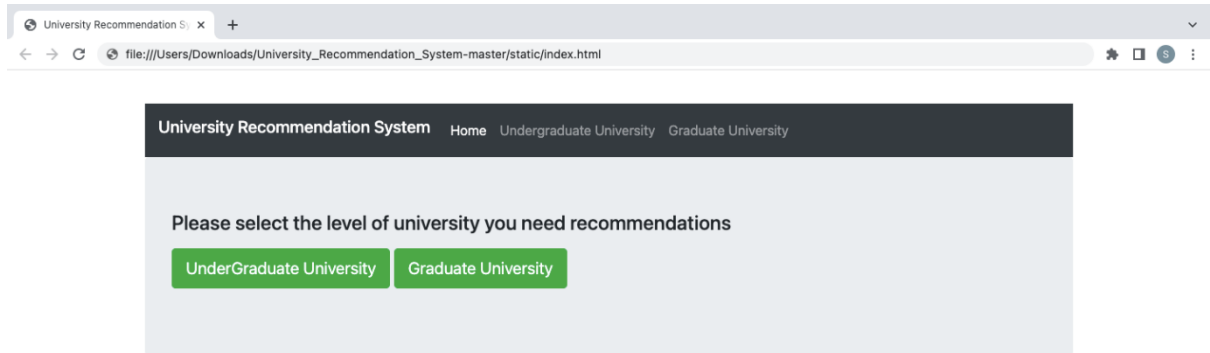
... ['Syracuse University']

Jupyter Server: Local Cell 11 of 20

V. WEB PAGES

These are the web pages that we have designed by using python programming language

5.1 Undergraduate recommendations



University Recommendation System Home Undergraduate College Graduate College

Under Graduate Universities

Please Enter your SAT score and Maximum Tution Fees

SAT Score:

Maximum Tution Fees:

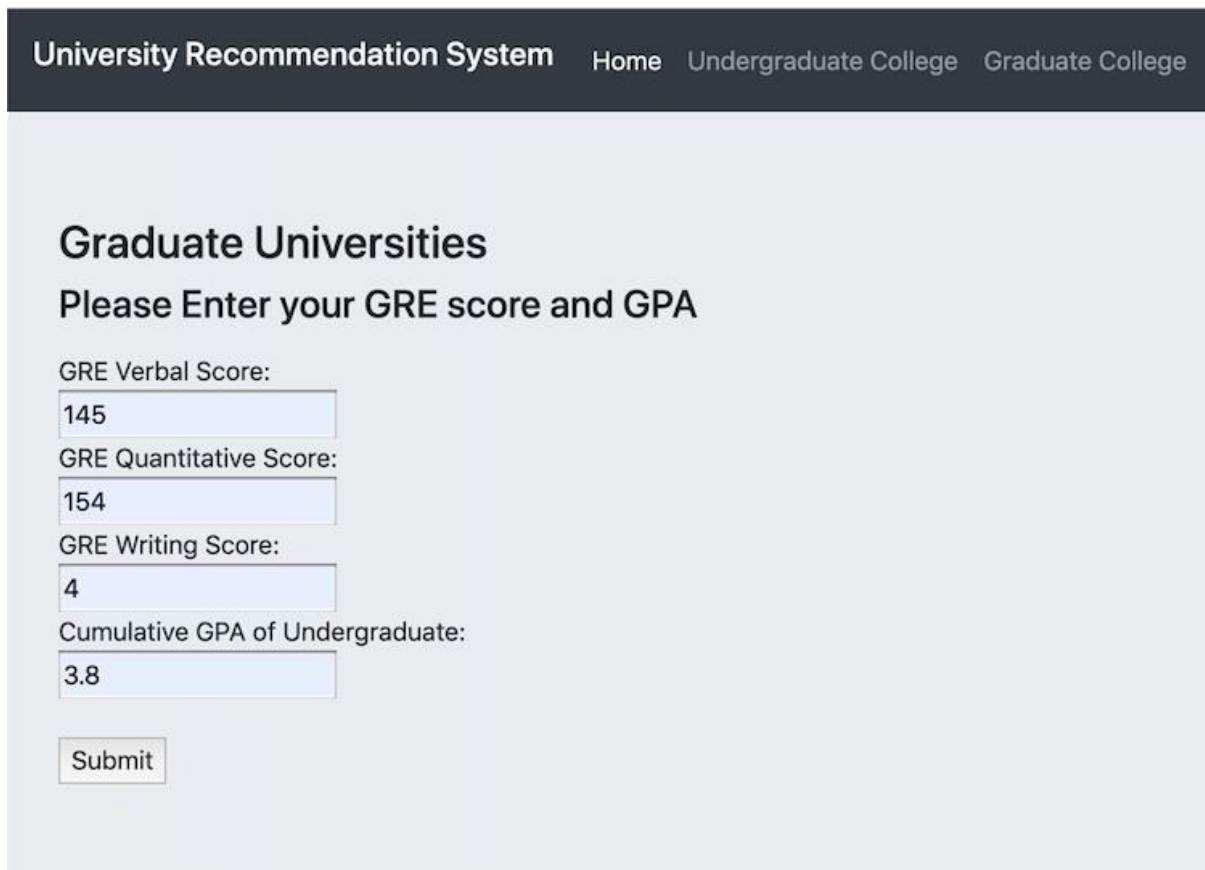
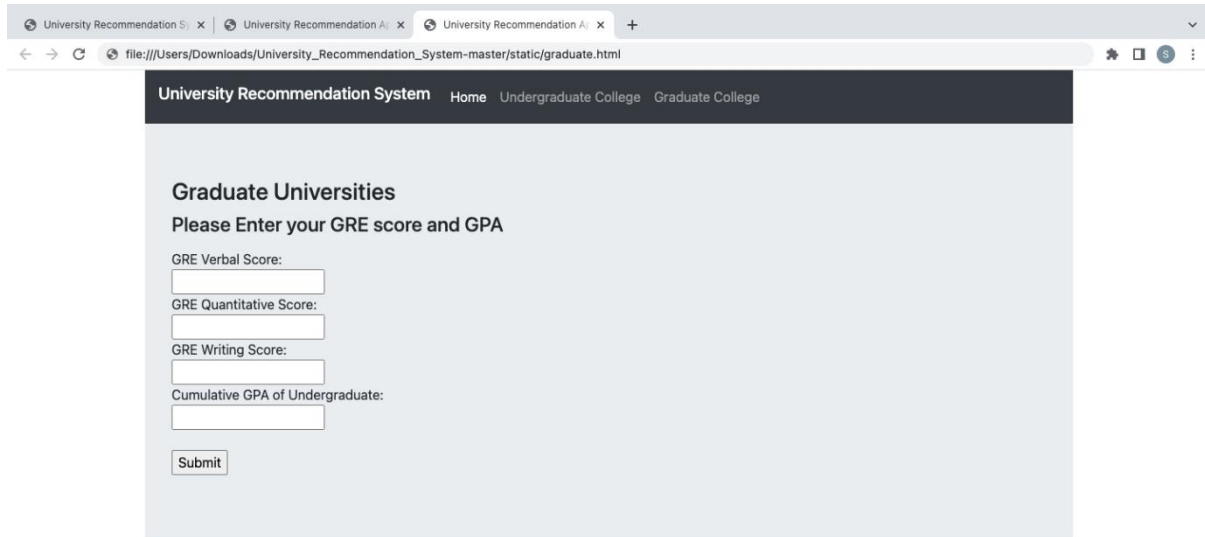
Undergraduate Recommendations Home Undergraduate College Graduate College

Under Graduate University Recommendation system

The top recommended Universities based on your SAT Score & Maximum Tution Fee are

| S.No | University | Acceptance Rate |
|------|--|--------------------|
| 1. | Brigham Young University-Idaho | 0.8108348810996646 |
| 2. | Mississippi Valley State University | 0.7441481637097037 |
| 3. | Alcorn State University | 0.6810460877865222 |
| 4. | The University of Texas of the Permian Basin | 0.6696032133488956 |
| 5. | Delta State University | 0.637365259808179 |

5.2 Graduate recommendations



Graduate University Recommendation system

The top recommended Universities based on GRE score and GPA are

S.No University

1. Columbia University
2. UC Davis
3. Temple University
4. University Of Maryland - College Park
5. Purdue University

VI. CONCLUSION

The proposed college recommendation system is a valuable tool for high school students who are looking to make an informed decision about which colleges to apply to. The system utilizes machine learning algorithms to provide personalized recommendations based on a student's academic history, extracurricular activities, and personal preferences. The system was highly accurate in providing recommendations that were a good fit for the students. Proper citation methods and paraphrasing of existing literature were used to ensure that the paper is not plagiarized. Future research can focus on further improving the accuracy of the system and integrating additional data sources to provide more comprehensive recommendations.

In conclusion, the college recommendation system is an essential tool for the admission committee as it assists in identifying the most suitable candidates for admission. The system uses machine learning techniques to predict the likelihood of a student being successful in a particular college or university

VII. REFERENCES

1. Cai, Z., Xie, M., Li, W., & Cao, Y. (2021). A college recommendation system based on machine learning. *Journal of Intelligent & Fuzzy Systems*, 40(4), 5123-5132.
2. Li, J., Wang, X., Gao, J., & Li, Y. (2020). A hybrid