IDEATION PHASE

LITERATUE SURVEY

This study's primary goal is to pinpoint the issues and shortcomings with the current system. Apart from that this study is carried out to analyze the problems that occurred from the current system to come out with the solutions to overcome the regarding drawbacks. Then, it is important to study and analyze the management process and activities in order to identify the requirements of the future system. Next is to conclude the future system and to classify the main modules for the system.

In any country, an undergraduate admission test is one of the most important tests for the students. Students remain conscious about taking admission to their desired universities. In Bangladesh, students who passed the Higher Secondary Certificate (HSC) examination contest the undergraduate admission test. According to the year 2017, 8.01 lakh examinees passed the HSC exam [1] and competed to get admission in different public universities. Universities have their admission requirements for this purpose which are generally based on the students' grade point average (GPA) of the Secondary School Certificate (SSC) and HSC examination, GPA of various courses, etc. However, the total seats in public universities are not sufficient. According to the Ministry of Education of Bangladesh [1], the number of seats in the country's 37 public universities is around 60,000. As a result, about 7 lakhs 40 thousand students did not get the opportunity to study in public universities last year. Even those students who can apply and sit for the admission test do not have the guarantee of admission opportunities in the university because of the limited number of seats. Students have to overcome the barrier of admission test and qualify in the examination to secure their seats. Such students have to go through a long time of mental stress or illness before or after the admission test. The authors realize that this issue cannot be completely removed. But with the aid of modern technologies and strategies e.g. educational data mining, this study can reduce the problem and make students aware of it early in the admission test. If any student can know the pre-examination and post examination status of a particular university for undergraduate admission, it will be a great benefit for him/her to take the necessary steps to improve the admission test's performance so that he/she can get a chance at the desired university. The authors want to help the students to judge and improve themselves before or after the admission test using this system. In this study, the authors use the concepts and techniques of data mining which is discovered useful and meaningful information from large-scale data collections. Because of the growing data volume of educational knowledge, educational data mining has a rich area of application. This research

is conducted to measure the admission opportunity of a student in Bangabandhu Sheikh Mujibur Rahman Science and Technology University (BSMRSTU), Bangladesh. It is more authentically based on a real dataset collected from the engineering and science faculty students of BSMRSTU. Discovering knowledge from real data gives us a solution that helps students to improve their performance to get admission to BSMRSTU. The authors apply different data mining techniques for a fruitful solution. Here, a total of 500 students' data is collected for this investigation. Though this research focuses on admission chance as the case study, the proposed approach is not restricted to it only. Moreover, this study extensively investigates all possible features or factors of an undergrad candidate and evaluates their impact for predicting admission. The main contributions of this thesis are: • Developing an admission prediction system for the undergrad students in the engineering faculty at BSMRSTU, Bangladesh. • Predicting the admission opportunity both before and after the admission test. • Analyzing and evaluating the possible factors of an admission candidate that affect the admission chance.

(Bibodi et al. (n.d.)) used multiple machine learning models to create a system that would help the students to shortlist the universities suitable for them also a second model was created to help the colleges to decide on enrolment of the student. Nave Bayes algorithm was used to predict the likelihood of success of an application, and multiple classification algorithms like Decision Tree, Random Forest, Nave Bayes and SVM were compared and evaluated based on their accuracy to select the best candidates for the college. Limitation of this research as that it did only rely on the GRE, TOEFL and Undergraduate Scoreof the student and missed on taking into consideration other important factors like SOP and LOR documents quality, past work experience, technical papers ofthe students etc.

Bayesian Networks were used by (Thi et al. (2007)) to create a decision support system for evaluating the application submitted by international students in the university. This model was designed to predict the performance of the aspiring students by comparing them with the performance of students currently studying in the university and had similar profile during their application. In this way based on the current students profile the model predicted whether the aspiring student should be granted admission to the university. Since the comparisons were made only with the students who were already admitted in the university and the data of the students who were denied admission were not included in the research this model proved to be less efficient due to the problem of class imbalance

In research conducted by (Jamison (2017)) the yield of college admission was predicted using machine learning techniques. Yield rate can be defined as the rate at which the students who have been granted admission by the university actually enroll for the course. Multiple machine learning algorithms like Random Forest, Logistic Regression and SVM were used to create the model; the models were compared based on their performance and accuracy, Random Forest outperformed the other models with 86% accuracy and was thus used to create the system. The factors that proved to be significant in predicting successful application were also highlighted.

GRADE system was developed by (Waters and Miikkulainen (2013)) to support the admission process for the graduate students in the University of Texas Austin Department of Computer Science. The main objective of the project was to develop a system that can help the admission committee of the university to take better and faster decisions. Logistic regression and SVM were used to create the model, both models performed equally well and the final system was developed using Logistic regression due to its simplicity. The time required by the admission committee to review the applications was reduced by 74% but human intervention was required to make the final decision on status if the application. (Nandeshwar et al. (2014)) created a similar model to predict theenrolment of the student in the university based on the factors like SAT score, GPA score, residency race etc. The Model was created using the Multiple Logistic regression algorithm, it was able to achieve accuracy rate of 67% only.

Existing Systems:

- **CollegeAI**

  The university name for which eligibility needs to be anticipated is requested and it inquires about a student's high school GPA, SAT, and ACT scores before displaying the results in a boring graphical format. The student departs without having a thorough understanding of his or her eligibility for the university of choice.

- **CollegeVine**

  CollegeVine is the only free college guidance company that offers data-driven chancing, then works with students to help optimize their profiles, it uses thousands of real acceptance results to fine-tune our algorithm and also explain your chancing results and teach you how to strengthen your profile.

- **Niche**

  This tool allows you to see where you fall among the entire pool of applicants. This helps you understand if it's your test scores or your GPA that's holding you back from being a top applicant. While no college chances calculator can truly predict whether or not you will be admitted into your dream school, our chances calculator can help you build a balanced list of safety, target, and reach schools to ace your college search.