



# A Review of Different Admission Prediction Systems.

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**Abstract:** Every year, several students apply to various universities for graduate admission. For the purpose of selecting applicants, each institution has its own set of selection criteria, which may include GRE scores, CGPAs, research experience, personal statements, letters of recommendation, and university rankings. The finest university can be suggested using web applications and consulting services based on a student's portfolio. These offer details on the colleges that applicants have to take into account. They are limited, nonetheless, by the reality that humans are unable to account for every institution and circumstance. Accuracy concerns might arise with web applications. We proposed a deep neural network (DNN) in this study to predict a student's chance of admission to a university based on their portfolio. Additionally, we offer a stacked ensemble model that projects

**Index Terms - Admission Prediction, Machine Learning, Hybrid Model, Accuracy in Admission Predictions, cut-off**

## I. INTRODUCTION

Every year, a sizable number of international students apply for graduate admission, which is becoming a more challenging and time-consuming process due to the increase in applicants. It's essential for undergraduate students to be admitted into a university for further study if they want to increase their expertise. To be admitted, a student must fulfill a number of prerequisites, take exams, and achieve excellent results, all of which are difficult tasks. People must submit an application for admission after passing the test. Inexperienced students frequently find themselves in a predicament when choosing the best universities for their profiles. They fight valiantly to obtain diverse information on the application process for this.

Neural networks are the best method for pattern recognition and classification [1]. The weights of a neural network can be utilized to simulate the profile traits of a learner. As a training dataset, his prior performance is used. Additionally, the criteria that students use to select a university can change, such as their financial situation or their academic interests.

In order to narrow down their alternatives and estimate their chances of attending the institution of their choice, students can use a university prediction method. This also encourages students to choose their own colleges rather than asking counselors for recommendations, or at the very least, it keeps them better informed about their options.

By considering a student's data and previous admissions, it is feasible to anticipate admission to a university. Using these data, the prediction can be made. To train a model using basic machine learning algorithms is the simple solution. A higher level of precision can be attained using deep learning techniques. We provide a stacked ensemble classifier [2] in this article that predicts an applicant's chances of admission to a certain university.

## II. LITERATURE SURVEY

### 2.1 CAPSLG (College Admission Predictor and Smart List Generator)

[3] In order to achieve good performance, this system consists of two cascade hybrid recommenders that collaborate with a college predictor. Students are assigned tracks for the preparation year by the initial recommender. While pupils who successfully complete the tests for the preparatory year are assigned to the specialized college by the second recommender. This predictor system determines the most likely institutions by using GPA data from prior student admissions. It examines the academic standing of the applicant, their history, their records, and the college admission requirements. then makes predictions about the likelihood that a pupil will enroll in a university or institution. Flexibility is a benefit in addition to the system's high prediction accuracy rate since it can identify appropriate universities that fit a student's profile and the appropriate track channels that students should pursue. The degree of trustworthiness is attained since students' answers are becoming more positive as long as they are assigned to the best college that meets their needs. Only universities in Saudi Arabia have proposed this concept.

Additionally, the system would receive user feedback, which would be beneficial for evaluating predictions and enhancing the performance factor. AdaBoost and other machine learning algorithms can produce data-driven predictions that are potentially more accurate than those made by hand. Students that do this may be able to make better selections.

The accuracy of the system's predictions depends on the quality of the data it uses. If historical college admission data is incomplete, outdated, or inaccurate, it could lead to suboptimal recommendations. The system appears to focus on college admissions in a specific region, which may not be useful for students outside that region or applying to colleges with different admission criteria.

The conclusion of this system suggests that the AdaBoost algorithm is much more efficient and reliable than Random forests while dealing with admission prediction process using machine learning.

### 2.2 RSAU (Recommender System of Admission to University)

[4] In order to predict secondary school students' admission to universities and categorize them into various groups based on which the schools send them to universities, we designed and developed a hybrid predictive system known as the Recommender System of Admission to University (RSAU). Secondary school administrators, instructors, course organizers, and policy makers who are involved in the admissions process are the end users of our RSAU system.

#### RSAU's workflow

The workflow of our system consists of the following three steps: First step: Training and building a learning model by applying the back-propagation technique. This model evaluates each input's relevance in relation to the output (such as a recommendation or acceptance to a university) and ranks the inputs into a list based on the feature significance.

Step 2: To evaluate the effectiveness of the C4.5 decision tree algorithm and record the error rate performance, a feature selection model adds one significant input variable at a time, moving up the ranked list the neural network generates. The loop ends when the input error rate at iteration  $i+1$  is greater than that of iteration  $i$ . Up to the size of the ranked list, the procedure is repeated. Step 3: Performance evaluation is used to confirm the decision rules of C4.5. If the classifier satisfies the user-established criterion, it is prepared to be used with new data for classification and prediction of secondary school students' prospects of getting admitted to universities.

Weka, an open source Java application programme with a library of machine learning techniques, was used to create our prototype RSAU system. Both user and admin modes of the application software's user interface are available. The predictor, which operates on a MySQL database, is the essential part.

This study expanded on popular methods for predicting matches between secondary pupils and university classes that just use a neural network or decision tree classifier. In order to forecast secondary school pupils' prospects of being admitted to universities, it analyzes data from multiple sources. It offers guidance to universities regarding recommendations for senior secondary students, instructors, and administrators of secondary schools. Real student data has been used to validate the RSAU system. The trials demonstrated that

a hybrid decision tree and neural network strategy outperforms either one decision tree or neural network alone and significantly increases accuracy in the university categorization challenge.

Recommender System of Admission to University (RSAU) is a promising technique for streamlining the admissions process to universities. Combining a decision tree classifier with a neural network increases prediction accuracy and provides insightful information about the colleges that students are most likely to be accepted to. Administrators, instructors, and students in secondary schools can find it to be a useful answer due to its flexibility in meeting evolving standards and its capacity for explanation.

### 2.3 (APMCA) An Automated Prediction Model for College Admission

[5] It is intended to assist students in making well-informed decisions regarding the universities they want to attend prior to the college admissions process by generating a preference list based on a variety of inputs, including rank, category, desired branches, and more, utilising data mining and data analysis techniques. The purpose of this approach is to help students choose the best universities for their profiles while also relieving their tension. It can be modified by altering the cut-off values to suit other common entrance exams.

#### Advantages of APMCA

Students from rural backgrounds find it difficult to do the required analysis and compile a preference list. This idea will be advantageous to them. For students who fit into multiple categories, figuring out which colleges would be the best matches for them based on a breakdown of the cut-offs in each category might be difficult.

Example: A student in the SC category will choose SC-R (Scheduled Caste-Rural) or SC-G (Scheduled Caste-General) based on whether or not they are from a rural background. However, SC-R students are more likely to be admitted into a better institution than SC-G students. This tool will assist students in finding the best college and branch for their rank, regardless of rank.

It is challenging for students from rural backgrounds to perform the necessary analysis and create a preference list. They will benefit from this concept. Determining which universities would be the greatest fits for students who fall into numerous categories based on a breakdown of the cut-offs in each area may be challenging.

Example: Depending on whether they are from a rural background or not, a student in the SC category will select SC-R (Scheduled Caste-Rural) or SC-G (Scheduled Caste-General). On the other hand, SC-R students have a higher chance than SC-G students of being accepted into a better college. This tool will help students choose the right branch and college for them, regardless of rank.

#### Disadvantages of APMCA

- The quality and correctness of the input data, especially the historical cut-off data, have a significant impact on the prediction model's accuracy and dependability. Predictions that are inaccurate could be caused by obsolete or inaccurate data.
- Even though the model was created using K-CET data, it might not work the same way on all national entrance examinations or Common Entrance Tests without some adjustments. It might not be adaptable enough to work in many situations.

The web application's conclusion assists the user in selecting universities carefully for their option entry. Additionally, the user receives a general overview of the entries available to them in the examination authority's option-entry process. By simply altering the exam's cut-off database, the same programme may be used for additional state-level Common Entrance examinations as well as other national entrance examinations. The suggested application supports the student admission community by meeting the demand of students to select the best college and by assisting universities in identifying where they stand in the recruitment process. More accurate forecasting also translates into better outcomes for students.

### III. CONCLUSION

A university admission prediction system that can benefit students, universities, and others can be created using machine learning and deep neural networks. In order to help students make more informed judgments regarding their applications, the system can assess their prospects of admission to a specific university. The approach can assist institutions in locating qualified applicants and lighten the load on their admissions departments. Overall, the university admissions process has the potential to be completely transformed by machine learning and deep neural networks. These tools can improve the process for everyone involved by giving students an idea of their prospects of admission and assisting universities in identifying qualified applications.

### REFERENCES

- [1] Freeman, J. A. & Skapura, D. M. 1991, "Neural Networks: Algorithms. Applications. and Programming", Addison-Wesley Pub (Sd), June 1991
- [2] K. Zaamout and J. Z. Zhang, "Improving classification through ensemble neural networks", 2012 8th International Conference on Natural Computation, Chongqing, pp. 256-260, 2012
- [3] Abdul Hamid M. Ragab, Abdul Fatah S. Mashat, Ahmed M. Khedra, "Hybrid Recommender System for Predicting College Admission", 12th International Conference on Intelligent Systems Design and Applications (ISDA), 2012, pp. 107-113.
- [4] Simon Fong, Yain-Whar Si, Robert P. Biuk-Aghai Faculty of Science and Technology University of Macau Macau SAR on "Applying a Hybrid Model of Neural Network and Decision Tree Classifier for Predicting University Admission"
- [5] Dr. Arunakumari B. N, Vishnu Sastry H K, Sheetal Neeraj, Shashidhar R, "An Automated Prediction Model For College Admission System "