

# University Admit Eligibility Predictor

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## **Problem Statement:**

To develop an application used for university admit eligibility prediction.

## **Need For Application:**

In the modern world, many students choose to complete their higher education in nations other than their own. Due to this, it's possible that students are unaware of the guidelines, standards, information, and processes for admission to various universities. Students seek assistance from consulting companies to help them learn all this information in order to help them acquire admission to colleges that are most suited to their profiles. However, this will cost students money in the form of consulting fees. Thus, this project aims at developing an application that uses machine learning-based algorithms to determine the feasibility of a particular student's profile being eligible for university admission. The main objective is to save the time and money spent by the students at education consultancy firms. Moreover, if the students apply only to those universities where he/she has a genuine chance of admission would reduce the application process.

## **Literature Survey**

### **Hybrid Recommender System for Predicting College Admission:**

This study suggests a hybrid recommender system for forecasting college admissions based on a variety of variables, including historical college admissions data, student backgrounds, records, and academic qualifications, as well as college requirements. It gives information about a hybrid model that uses data mining and knowledge discovery methods to forecast a student's chances of admission. The system was designed to have a web site where prospective students could register and be given a special ID number and password. The students are required to enter their personal details, academic history, and desired programs for enrolling in the web portal. These details are used as input to the trained model to make predictions about the student's admission. Additionally, the system incorporates a sorter and filter known as the Track Recommender, which arranges students according to backlogs and sorts them among the different university study tracks. The HRSPCA groups students based on knowledge discovery standards and suggests universities that are within each student's financial reach.

## **CAPSLG:**

In their article "College Admission Predictor and Smart List Generator," the authors present a programme that aids students in selecting the right universities. Two key parts

make up this application. The calculator that estimates college eligibility and a clever list maker.

- The college eligibility predictor takes in input as the history of cut-off records of the colleges and trains on this data to determine which college the student is likely to get admission to. Not just the cut-off data, the system also examines a student's academic achievements, history, and requirements for college admission. Based on it, it forecasts the likelihood that a student will enroll in a university college.
- Further, the student might create the list of colleges that might be required to be filled out as choices throughout the admissions process using the smart list generator. Additionally, the system would receive user feedback, which would be beneficial
- for evaluating predictions and enhancing the performance factor.

On the whole, The program predicts the best-suited college based on the users' preferences, courses, areas, and cut-off of colleges once they enter their academic scores. The application also provides a list of institutions based on the aforementioned factors, which will assist students in narrowing down their options and more accurately completing their admissions applications.

In the work, the authors have analysed different machine learning (ML) algorithms, including Random Forest, AdaBoost, and Decision Tree, by evaluating the accuracy of their categorization on datasets for breast cancer, iris, and wine. The Ensemble AdaBoost Classifier from the Python scikit-learn module is used to classify the data once it was determined that the Adaboost model performed the best.

Two classes are created from the input by the AdaBoost algorithm (binary classifier). It classifies the incoming data based on the categorization from several decision trees. Most of the classification generated from the selected number of decision trees is produced by the algorithm. As a result, the AdaBoost algorithm is more accurate. Additionally, it extracts the features that are more important for predicting the outcomes. The model is actually pre-trained and pickled. The model is then loaded from the stored pickle and used for prediction tasks, which improves efficiency in terms of time.

The Python-based Django web page rendering framework serves as the foundation for the web application. The Django framework enables the user interface and Python variables to be integrated. HTML and CSS were used to create and style the user interface, which controlled the flow of the application based on user interaction.

## **College Admission Prediction using Ensemble Machine Learning**

### **Models:**

This paper suggests an education-based prediction system that would let students choose which universities to apply to based on their test results. The University name, GRE, TOEFL, AWA, letters of reference, statement of purpose, and CGPA scores are all included in the dataset. By applying to the right colleges depending on the likelihood of admission, it seeks to save time. They proposed a novel method by utilizing machine learning models such as Neural Networks, Linear Regression, Decision Trees, and Random Forest. In order to select the optimum mode, the algorithms are tested and the main performance indicators are compared. The programme uses the university's admission requirements and the student's scores as inputs to calculate the likelihood that the student will be admitted to the school.

### **Linear Regression:**

Regression models are employed to describe a relationship between many

variables by fitting observed data into a straight line. It is used to determine the connection between two numerical variables. Regression models differ in terms of the type of relationship between independent and dependent variables, the number of variables employed, and the variables considered. A linear function that predicts continuous values as a function of independent variables, admission intake, and preferences of students.

### **Neural Network:**

Neural networks use a method akin to the method the human brain uses to look for patterns in the underlying data. It is made up of neurons arranged in a number of layers, all of which together make up the artificial neural network. To achieve the best results, the number of layers, the number of neurons in each layer, and the activation function are all empirically determined. The input layer is fed in with the scores of the individual student along with the required university identifier. The data is processed in a series of layers and the output layer uses a softmax layer to restrict the probability of admission in the range of 0 to 1.

### **Decision Trees:**

The decision tree algorithm can be used for solving classification and regression problems. It splits the dataset based on the output class label and attributes' values for the records. It assigns class labels for each leaf node and internal nodes contain test conditions on particular attributes.

### **Random Forest:**

Decision trees are constructed from a variety of samples, with the average being chosen by the majority. It is effective for classification issues because any large number of somewhat uncorrelated trees working together will outperform any of the constituent models individually.

It was found that linear regression outperformed other models and hence has the highest accuracy. The decision tree had the least accuracy of all the models and is spread with a lot of outliers, thus the model was inaccurate.

### **References:**

- [1] Ragab, A.H.M., Hybrid recommender system for predicting college admission, Intelligent Systems Design and Applications (ISDA), 29 Nov. 2012, 107-113. [2] CAPSLG: College Admission Predictor and Smart List Generator By Kiran Kumari, Meet Kataria, Viral Limbani, Rahul Soni
- [3] College Admission Prediction using Ensemble Machine Learning Models By Vandit Manish Jain, Rihaan Satia