**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, the goal of this project is to create an application that employs machine learning-based algorithms to assess whether a given student's profile is likely to be accepted into a particular university. The major goal is to reduce the time and money students spend working with education consulting companies. Further, if the students apply just to those colleges where he/she has a certified opportunity of confirmation would diminish the application cycle.

**1**

**Literature Survey:**

**Hybrid Recommender System for Predicting College Admission:** This paper proposes a mixture recommender framework for anticipating school confirmations in light of different factors, for example, verifiable school confirmations information, understudies' scholarly benefits, foundation, understudy records, and school rules. It gives understanding into a cross breed model in view of information disclosure rules and information mining procedures to foresee the confirmation chances of some random understudy. The framework proposed to hold a web-based interface for hopeful understudies to enrol themselves, which thusly relegates an interesting ID number and secret key to every understudy. The understudies are expected to enter their own subtleties, scholarly history, and wanted programs for signing up for the online interface. These subtleties are utilized as contribution to the prepared model to make expectations about the student’s confirmation.

The framework likewise inserts a sorter and a channel, combinedly known as the Track Recommender, which sorts the students to a few college concentrate on tracks accessible and revises them in light of exceptional overabundances. The HRSPCA utilizes information revelation rules to bunch students and suggests universities under go after every student.

**CAPSLG:**

In the paper “College Admission Predictor and Smart List Generator”, the authors have discussed an application that helps students to make correct preferences of colleges. This application has two main components. The college eligibility predictor and a smart list generator.

● 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.

**2**

● 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.

Overall, the program predicts the most ideal school in view of the clients' inclinations, courses, regions, and cut-off of universities once they enter their scholastic scores. The application likewise gives a rundown of establishments in light of the previously mentioned factors, which will help understudies in reducing their choices and all the more precisely finishing their confirmations applications.

Primarily, in the paper, the authors have performed an analytical study of various ML Algorithms such as Random Forest, AdaBoost, and Decision Tree by checking their classification accuracies on Breast Cancer, Iris, and Wine Datasets. They concluded that the Adaboost model performed the best and thus, the Ensemble AdaBoost Classifier from the scikit-learn library of Python is used for the classification of the data. The AdaBoost algorithm divides the input into two classes (binary classifier). Based on the classification from numerous decision trees, it categorizes the incoming data. The algorithm's classification makes up the majority of the classification produced from the chosen number of decision trees. 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.

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**College Admission Prediction using Ensemble Machine Learning Models:**

This paper proposes an Education based Prediction System that allows the students to decide on which colleges to apply to with their scores being fed into the application. The dataset consists of the University name, GRE score, TOEFL score, AWA scores, letters of recommendation, statement of purpose, and CGPA scores. It aims at saving time by applying to appropriate colleges based on the predicted admission feasibility. They proposed a novel method by utilizing machine learning models such as Neural Networks, Linear Regression, Decision Trees, and Random Forest. The algorithms are experimented and the key performance indicators are compared in order to choose the best mode. The application takes in the scores of a particular student and the university as input and generates a probability score as to how likely the student is to get into the university based on the scores.

**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 try to recognize patterns in the underlying data through a process similar to that employed by the human brain. It consists of neurons organized in a series of layers which altogether constitute the entire artificial neural network. The number of layers, the number of neurons in each layer, and the activation function to be used are experimentally determined so as to get the best possible result. 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.

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**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 based on various examples and the larger part votes in favour of normal. It turns out effectively for grouping issues because of the way that any colossal amount of tolerably uncorrelated trees functioning as a body will beat any of the singular constituent models.

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

**5**