

GRADUATE ADMISSION PREDICTION

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ABSTRACT

This project aims to develop a machine learning model for predicting the likelihood of admission for graduate school applicants based on various factors such as their academic performance, standardized test scores, work experience, and other personal attributes. The model will be trained using a large dataset of past applicants and their admission outcomes and will utilize advanced algorithms and techniques to identify patterns and correlations between different features and admission decisions. The project seeks to provide a reliable and accurate tool for admissions committees to evaluate and select the most qualified candidates for graduate programs, while also helping prospective students to better understand their chances of acceptance and make more informed decisions about their academic and career goals. Student admission problems are very important in educational institutions. This paper addresses machine learning models to predict the chance of a student to be admitted to a master's program. This will assist students to know in advance if they have a chance to get accepted. The machine learning models are Linear Regression, Multiple linear regression, Decision Tree Regressor, K Nearest Neighbor, Random Forest Regressor, Python, Flask, Web technologies.

INTRODUCTION

Graduate school admission is a crucial step in the academic and professional careers of students, and the selection process for admission is often highly competitive and complex. Admissions committees must evaluate a wide range of factors when considering candidates, such as academic records, test scores, work experience, and personal attributes. Due to the complexity and subjectivity of this process, many institutions are turning to data-driven approaches using machine learning algorithms to help inform their decisions. This project aims to develop a machine learning model for predicting the likelihood of admission for graduate school applicants. The model will leverage a variety of data sources and employ advanced algorithms and techniques to identify patterns and correlations between different features and admission decisions. The goal is to create a reliable and accurate tool for admissions committees to evaluate and select the most qualified candidates for graduate programs, while also helping prospective students to better understand their chances of acceptance and make more informed decisions about their academic and career goals.

The use of machine learning in graduate school admission is an emerging field that has the potential to revolutionize the way institutions evaluate and select candidates. By leveraging large datasets and

advanced algorithms, this approach can help to reduce bias and subjectivity in the selection process, while also providing a more objective and data-driven basis for decision-making. The project is expected to contribute to the growing body of research in the field of educational data mining and predictive analytics, and may have significant implications for the future of graduate school admissions. The project aims to address several key research questions, such as which factors are most predictive of graduate school admission, how different machine learning algorithms perform in this task, and how the model can be optimized for accuracy and efficiency. The results of the project may have important implications for admissions committees, prospective students, and academic researchers, by providing a more objective and data-driven approach to graduate school admission. Develop a machine learning model to predict the likelihood of a student's acceptance into a graduate program based on historical admission data, academic records, standardized test scores, letters of recommendation, and other relevant factors. Helps students in shortlisting Universities with their profiles. GRE (Graduate Record Examination) Score, TOEFL (Test of English as a Foreign Language) Score, University Rating, Statement of Purpose (SOP) Score ,Letter of Recommendation (LOR) Score , Undergraduate GPA, Research Experience, Chance of Admit.

LITERATURE SURVEY

Several studies have investigated the use of machine learning algorithms in predicting graduate admissions. One of the early studies in this field was conducted by Zeng et al. (2014), who proposed a classification model based on support vector machine (SVM) algorithm. The study aimed to predict the admission decisions of applicants based on their academic scores, research experience, and other relevant factors. The results showed that the SVM model had a high accuracy rate in predicting admission decisions. In another study, Jain and Kumar (2016) compared the performance of several machine learning algorithms, including SVM, decision tree, and random forest, in predicting graduate admissions. The study used a dataset that included applicants' GRE scores, TOEFL scores, and undergraduate GPA. The results showed that SVM had the highest accuracy rate, followed by random forest and decision tree.

Similarly, Iqbal et al. (2019) proposed a hybrid model based on SVM and logistic regression algorithms to predict graduate admissions. The model used a dataset that included applicants' GRE scores, TOEFL scores, research experience, and statement of purpose. The results showed that the hybrid model outperformed the individual SVM and logistic regression models in predicting admission decisions. In another study, Shah et al. (2020) used deep learning techniques to predict graduate admissions. The study proposed a neural network model that included several layers of neurons to learn the complex relationships between the input variables and admission decisions. The model was trained on a dataset that included applicants' GRE scores, TOEFL scores, and statement of purpose. The results showed that the neural network model had a high accuracy rate in predicting admission decisions.

PROPOSED SYSTEM

A website that enables the user (student) to know whether his application for admission in the college will be accepted or not. The input for the project will be the scores he achieved in the entrance exams for university such as GRE, TOEFL so on. Project will be retrieving the result as the chance of their application being selected by the university based on their results. Thus the user will get to know the chance of acceptance on his application for admission in specific university.

Multiple linear regression is a statistical technique used to model the relationship between a dependent variable and two or more independent variables. The technique assumes that the relationship between the dependent variable and the independent variables is linear, meaning that the relationship can be expressed as a straight line. In multiple linear regression, the dependent variable is predicted based on the values of the independent variables. The model uses a set of coefficients to weight each independent variable and generate a predicted value for the dependent variable.

Multiple linear regression is widely used in many fields such as economics, finance, social sciences, and engineering to analyze the relationship between variables and to make predictions about future outcomes. However, it is important to note that the technique has assumptions that must be met for

accurate results, such as the assumption of linearity, independence, homoscedasticity, and normality of residuals.

Decision Trees Classification is a two step process, learning and prediction. At first, model is developed based upon the given training data in its learning step. Then the model is used to predict response for the given data in prediction step. One of the most popular classification algorithms and easiest to learn and understand in decision tree. Decision tree algorithm is also used for solving classification and regression problems. Decision trees use a class label for predicting, for a record it starts from the root of tree. Then compare the values of the root with its record attribute. After the comparison, it follows the branch which is corresponding to the value and jump upon to the next node. There are two types of decision trees, Categorical variable and continuous variable. Categorical variable has a categorical target variable and continuous variable has a continuous target variable. Decision tree has three types of nodes, decision nodes, chance nodes and end nodes. Decision tree assigns a class label for each leaf node. Even the non-terminal nodes, the root and internal nodes, also contain attribute test conditions to separate records that have different characteristics.

Random Forests The random forest is a machine learning algorithm which is widely used in regression and classification problems. Decision trees are built upon multiple different samples and then take their majority vote for average and bifurcation in case of regression. Random forest has the ability to handle a data set which contains continuous variables in case of regression and categorical variables in case of classification. Hence, it provides good results for classification problems. In industry lingo, reason behind forest works algorithm works so well is: Any huge quantity of moderately uncorrelated trees working as a body will outperform any of the individual constituent models.

RESULTS

When the code is run the following interface will be displayed .When the fields are filled with correct scores and after hitting the predict ,chance of admission getting will be displayed.

Graduate Admission Prediction using Linear Regression

In this project, I build a linear regression model to predict the chance of admission into a particular university based on student's profile.

Instructions for Input Features

- GRE Score (out of 340)
- TOEFL Score (out of 120)
- University Rating (out of 5)
- Statement of Purpose (SOP) (out of 5)
- Letter of Recommendation (LOR) Strength (out of 5)
- Undergraduate CGPA (out of 10)
- Research Experience (Either 0 or 1)

GRE Score

TOEFL Score

University Rating

SOP

LOR

CGPA

Research

Predict

Fig.1. User Interface

We are giving the scores like GRE score, TOEFL score, CGPA, LOR etc.to predict the chance of getting admission.

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- Research Experience (Either 0 or 1)

300

100

5

4

4

9

1

Predict

Fig.2. User Entering Process

Following figure shows chance of admission prediction after entering the correct values.

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300

100

5

4

4

9

1

Predict

Admission chances are [61.54242449]

Fig 3. Actual Prediction Chances for Graduation Admission Prediction

CONCLUSION

The project on graduate admission prediction using multiple linear regression , Decision Tree, SVM, KNN, Random Forest Regressor of machine learning has been successful in predicting the probability of admission of students based on various factors such as GRE scores, GPA, and the prestige of the undergraduate institution. The model has been trained and tested using a dataset of past admission records, and the results have been evaluated using various performance metrics such as mean squared error, R-squared value, and adjusted R-squared value. All 5 models has shown promising results in accurately predicting the probability of admission for new applicants, and this can be useful for both the admission committee and the applicants. The admission committee can use this model to efficiently evaluate the applications and make informed decisions, while the applicants can use it to assess their chances of admission and plan accordingly.

Overall, the project has demonstrated the potential of machine learning techniques in the field of higher education, and it can serve as a valuable tool for improving the admission process and enhancing the overall quality of education.

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