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Prediction Probability of Getting An Admission Into A University Using ML

D.LOKA SATYA SAI MANASA[1], RAJA RAJESWARI KALIDINDI [2]

[1]MCA Student, B V Raju College, Kovvada, Andhra Pradesh, India.

[2]Assistant Professor, B V Raju College, Kovvada, Andhra Pradesh, India.

ABSTRACT:

One of the many aspirations of undergraduate students in India is going for further graduate studies. Unfortunately, many students spend months and years of preparation focusing on things that unfortunately won't improve their chances of getting into a good graduate school. This paper evaluates the chances of applicants to get into a particular graduate program using various classification and regression approaches of Machine Learning. Various algorithms have been pitted against each other and also the most important features have been extracted which are useful to get into a graduate school program. Using an unsupervised approach, this paper finds various categories of students and pools them together to find if they are perfect fit for admission or not. A novel approach of predicting the chances for admission in graduate school is introduced in this paper.

Keywords: Machine learning, classification, admissions.

1. INTRODUCTION:

The complicated procedure of applying to a graduate school in the USA results in a very hectic undergraduate schedule for Indian students. The parallel approach of keeping a high Cumulative Grade Point Average, with good GRE, TOEFL scores and publishing research papers, getting good Letters of Recommendation and making a good Statement of Purpose certainly makes every Indian student busy who wants to further excel in academia. We understand that all the things cumulatively are very important for graduate school admissions. But what are the most important factors? If we can find those most important factors, we can emphasize more on them to increase our chances to get an admit. Given a labeled dataset of 500 students who applied to a graduate program, we will find the machine learning algorithm which will very closely predict the chances of admission. And from

these techniques, we will also extract some of the redundant and very important features. This paper also takes an approach to find the relation of the features for evaluating the chances of admission from a graduate school. We will also convert it into a classification problem and similarly evaluate a confusion matrix with the aid of classification algorithms and the dataset. Several Machine Learning techniques have been used here and comparative analysis on results of every approach has been done to formulate a novel approach to predict the probability of admission. Also, many powerful techniques such as Support Vector Machines and Artificial Neural Networks have also been used to predict the same.

OBJECTIVE:

Cloud computing has become increasingly popular among users and businesses around the world. Although cryptographic techniques can provide data protection for users in public cloud, several issues also remain problematic, such as secure data group dissemination and fine-grained access control of time-sensitive data. In this paper, we propose an identity based data group sharing and dissemination scheme in public cloud, in which data owner could broadcast encrypted data to a group of receivers at one time by specifying these receivers' identities in a convenient and secure way. In order to achieve secure and flexible data group dissemination, we adopt attribute-based and timed-release conditional proxy re-encryption to guarantee that only data disseminators whose attributes satisfy the access policy of encrypted data can disseminate it to other groups after the releasing time by delegating a re-encryption key to cloud server. The re-encryption conditions are associated with attributes and releasing time, which allows data owner to enforce fine-grained and timed-release access control over disseminated ciphertexts. The theoretical analysis and experimental results show our proposed scheme makes a trade off between computational overhead and expressive dissemination conditions.

2. LITERATURE SURVEY:

Will I Get in? Modeling the Graduate Admission Process for American Universities. AUTHORS: Nuno Carneiro, G. Figueira, M. Costa.

We study the graduate admission process in American universities from students' perspectives. Our goal is to build a decision support model that provides candidates with pertinent information as well as the ability to

assess their choices during the application process. This model is driven by extensive machine learning based analysis of large amounts of historic data available on the web. Our analysis considers factors such as standardized test scores and GPA as well as world knowledge such as university reputation. The learning problem is modeled as a binary classification problem with latent variables that account for hidden information, such as multiple graduate programs within the same institution. An additional contribution of this paper is the collection of a new dataset of more than 25,000 students, with 6 applications per student on average and, hence, amounting to more than 150,000 applications spanning across more than 3000 source institutions. The dataset covers hundreds of target universities over several years, and allows us to develop models that provide insight into student application behavior and university decision patterns. Our experimental study reveals some key factors in the decision process of programs that provide applicants the ability to make an informed decision during application, with high confidence of being accepted.

An empirical comparison of supervised learning algorithms

AUTHORS: RJ Bolton, DJ Hand.

A number of supervised learning methods have been introduced in the last decade. Unfortunately, the last comprehensive empirical evaluation of supervised learning was the Statlog Project in the early 90's. We present a large-scale empirical comparison between ten supervised learning methods: SVMs, neural nets, logistic regression, naive bayes, memory-based learning, random forests, decision trees, bagged trees, boosted trees, and boosted stumps. We also examine the effect that calibrating the models via Platt Scaling and Isotonic Regression has on their performance. An important aspect of our study is the use of a variety of performance criteria to evaluate the learning methods.

A Comparison of Regression Models for Prediction of Graduate Admissions.

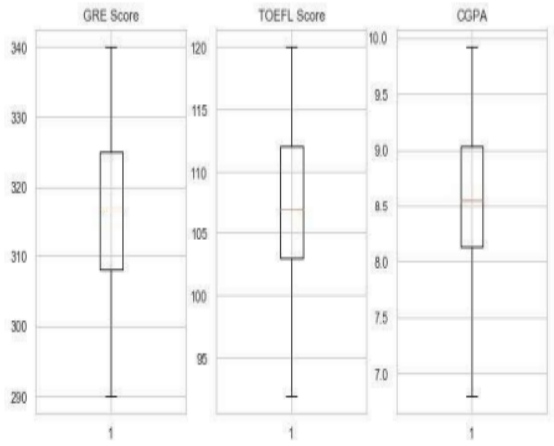
AUTHORS: Zhang, Xinwei; abHan, Yaocia, WeiXu, WangQilia

In this paper, the gradient boosting regressor-based machine learning model is developed in which parameters necessary for the admission purpose like GRE Score, TOEFL Score, University Rating, Statement of Purpose and Letter of Recommendation

Strength, Undergraduate GPA and Research Experience are taken into consideration. The trained model, when tested on unknown test instances, fetches appreciable statistical results for the chance (probability) value prediction of admission and hence gives an impartial notion of the selection criteria. Previously, there have been several experimental attempts involving analytical techniques for developing a statistically successful and reliable graduate admission prediction system. A few of them include: - Acharya et al. Proposed a comparative approach by developing four machine learning regression models: linear regression, support vector machine, decision tree and random forest for predictive analytics of graduate admission chances. - Gupta et al. [2] constructed a decision support system powered by machine learning for prediction of graduate admissions in USA via classification by taking certain parameters like standardized test scores, GPA and Institute Reputation into consideration.

3. PROPOSED SYSTEM:

In The Proposed system we have implemented both regression and classification algorithms in this method. Given a labeled dataset of 500 students who applied to a graduate program, we will find the machine learning algorithm which will very closely predict the chances of admission. And from these techniques, we will also extract some of the redundant and very important features. This paper also takes an approach to find the relation of the features for evaluating the chances of admission from a graduate school. We will also convert it into a classification problem and similarly evaluate a confusion matrix with the aid of classification algorithms and the dataset. Several Machine Learning techniques have been used here and comparative analysis on results of every approach has been done to formulate a novel approach to predict the probability of admission. Also, many powerful techniques such as Support Vector Machines and Artificial Neural Networks have also been used to predict the same.



ADVANTAGES OF PROPOSED SYSTEM:

- ❖ We have implemented both regression and classification algorithms in this method to perform better accuracy.
- ❖ Support vector machine gives good accuracy, power of flexibility from kernels.
- ❖ Neural network are slow to converge and hard to set parameters but if done with care it work wells
- ❖ Bayesian classifiers are easy to understand.

4. IMPLEMENTATION WITH RESULTS EXPLANATION

Student:

The student can register the first. While registering he required a valid student email and mobile for further communications. Once the student registers, then the admin can activate the student. Once the admin activates the student then the student can login into our system. After login students will write the exams. Based on students exams score we can predict chance of admission in particular university.

Admin:

Admin can login with his credentials. Once he logs in he can activate the students. The activated student only login in our applications. The admin will perform machine learning models to predict the chance of the admin in graduate schools. Admin implement support vector machine learning and logistic regression and random forest models, k-nearest neighbour, artificial neural network.

Machine learning:

Machine learning refers to the computer's acquisition of a kind of ability to make predictive judgments and make the best decisions by analyzing and learning a large number of existing data. The representation algorithms include deep learning, artificial neural networks, decision trees, enhancement algorithms and so on. The key way for computers to acquire artificial intelligence is machine learning. Nowadays, machine learning plays an important role in various fields of artificial intelligence. Whether in aspects of internet search, biometric identification, auto driving, Mars robot, or in American presidential election, military decision assistants and so on, basically, as long as

there is a need for data analysis, machine learning can be used to play a role**.**

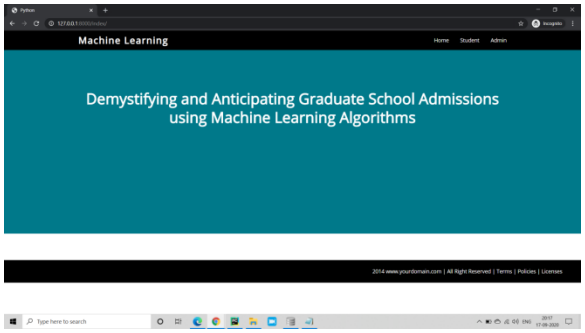


Fig.4.1. Home page.

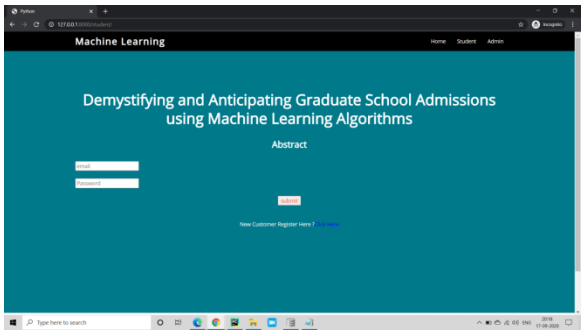


Fig.4.2. Student login page.

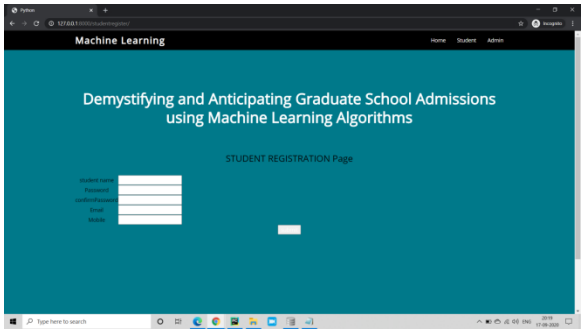


Fig.4.3. Student registers.

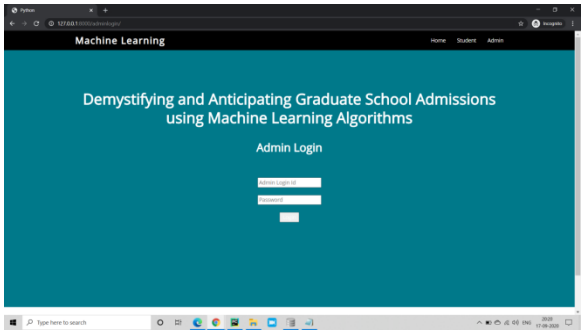


Fig.4.4. Admin login page.

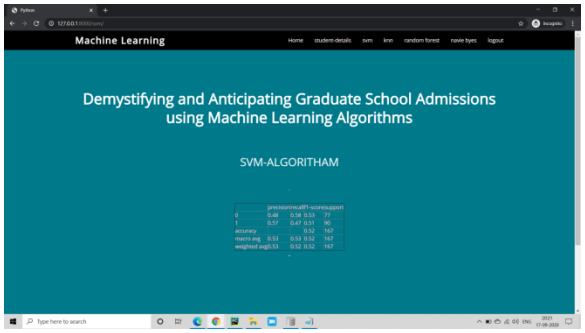


Fig.4.5. svm algorithm.

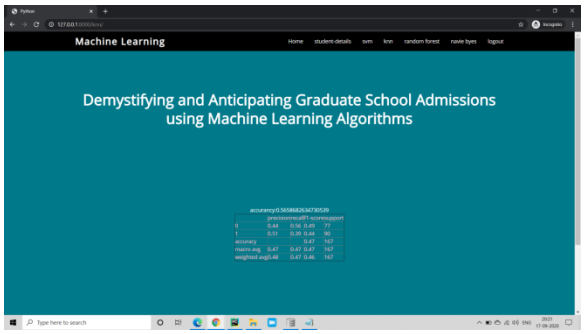


Fig.4.6. KNN algorithm.

5. CONCLUSION:

Among our classification algorithms, Artificial Neural Network again performs best based on Accuracy and FScore (0.95 and 0.91). Even though it does not guarantee to converge to the global minima, it

certainly does find a good optimum based on some random initialization of weights. The work has yielded good results and is in accordance with the approach and performance has been satisfactory.

Further Enhancement:

Now we will apply various machine learning repressors and classifiers to our problem and note the responses. First, we will split our dataset into train set and test set by the ratio of 74:26. Here, MSE stands for Mean Squared Error and R Square for R2score We will take four clusters according to Elbow method. Plotting and labeling the clusters which are essentially the group of similar applicants pooled together based on CGPA and GRE Score. The labels are also shown in the graph.

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