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Foreign University Ranking Based On Educational Criteria Using Artificial Intelligence

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ABSTRACT: From the medieval age university quality has been widely known by writings of students, Great names of professors and academic reputation of universities. But since the last quarter of the twentieth century, university ranking systems have widely observed international universities and updated world's universities ranking annually. During recent years, university rankings have gained a considerable importance not only among the academia but also amongst students, parents, industry and businesses. Common stakeholders, the students and their parents, may not be aware of the intricacies of ranking processes and elements / criteria of rankings but they are definitely keen to know the position of the University of their Interest in the ranking lists. This paper will review the trend and existing approaches of the most common and popular university ranking systems and evaluations and describe various Quantitative / Qualitative criteria used to determine the rankings. The process involves various surveys besides using statistics and rankings are conducted on national, regional and global levels for institutions, departments, schools or specific academic programs. It is opined that although university rankings are considered inherently controversial for Not being absolutely objective.

KEYWORDS: Data Analytics, Statistics Bi-dimensional Ranking, Performance Indicators Naive Bayes' Classifier, Webometrics, Probability Factor (pf).

I. INTRODUCTION

A qualitative evaluation shall be utilized for this research project leveraging subjective methods such as interviews and observations to collect substantive and relevant data. These interviews shall be conducted with practicing diplomats from any University as well as visiting diplomats to other universities conferences. Such a qualitative approach is valuable here due to the varying experiences of the diplomats in any country.

As per our own research efforts, we will have the opportunity to implement by intercultural education expertise and develop a ground-breaking and full pledged university ranking system. Our software will rank the universities according to the prescribed qualification of any student for choosing the best university for him/her. Since in today's generation, it's not only important to decide what to study. What degree to pursue but also where to study. A minor degree from a reputed outstanding university can be more rewarding than a major degree from an average university. Hence choosing where to pursue your education also plays an important role in your future career as it exposes you to the competitive world to expand your horizons.



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II. RELATED WORK

In [1] Author describe about during recent years, university rankings have gained a considerable importance not only among the academia but also amongst students, parents, industry and businesses. Common stakeholders, the students and their parents, may not be aware of the intricacies of ranking processes and elements / criteria of rankings but they are definitely keen to know the position of the University of their Interest in the ranking lists. The paper will review the trend and existing approaches of the most common and popular university ranking systems and evaluations and describe various quantitative / qualitative criteria used to determine the rankings. The process involves various surveys besides using statistics and rankings are conducted on national, regional and global levels for institutions, departments, schools or specific academic programs.

In[3] Author describes Web based systems have become the common medium of delivering software applications. Thus, developing web based systems has become a major concern for developers due to the large number of technologies, tools and techniques available today. Developers are often faced with the dilemma of choosing the best technology for their projects especially when developing a high quality system that must comply with certain standards. Enterprise developers often use development frameworks to simplify development job, and to insure that their code follows proven development methodologies. In this paper we describe our approach for developing an intelligent university program ranking system, using a JEE web application framework that has been developed utilizing industry standards and best practices. The development has been done using a well-designed JEE web application framework and Representational State Transfer (REST) web services to minimize the development time and effort. The system which uses the powerful Adaptive Neuro-Fuzzy Inference System (ANFIS) algorithm for its AI engine is developed using the SEAM framework and Resteasy web services framework.

In [4] Author describe about Globalization has made a remarkable impact on the university education system, and the Internet has become the core resource for universities to make their facilities and opportunities available globally. University Web sites are increasingly used for a wide variety of purposes. The evaluation of universities based on their Web performance was introduced by Cyber metrics Lab as the "Webometric Ranking of World Universities" (WRWU), and this ranking system has become a popular way of measuring university excellence.

III. PRESENTATION OF THE MAIN CONTRIBUTION OF THE PAPER/SCOPE OF THE RESEARCH

Our scope of the project is to provide software which will not only rank universities but also enlist all the possible universities a student can get admitted to with respect to his educational qualification and overall profile. We are serving students the outlook of how foreign universities differ from Indian universities and how not only the educational marks but also the overall profile which matters. We are providing a full pledged functional application that will integrate itself with realtime structured database of past students data who have got admission in foreign universities which will be useful to compare with the current scenario and predict accordingly whether a student having corresponding marks and profile will be able to get admission in that university or not.

IV. PROPOSED METHODOLOGY & DISCUSSION

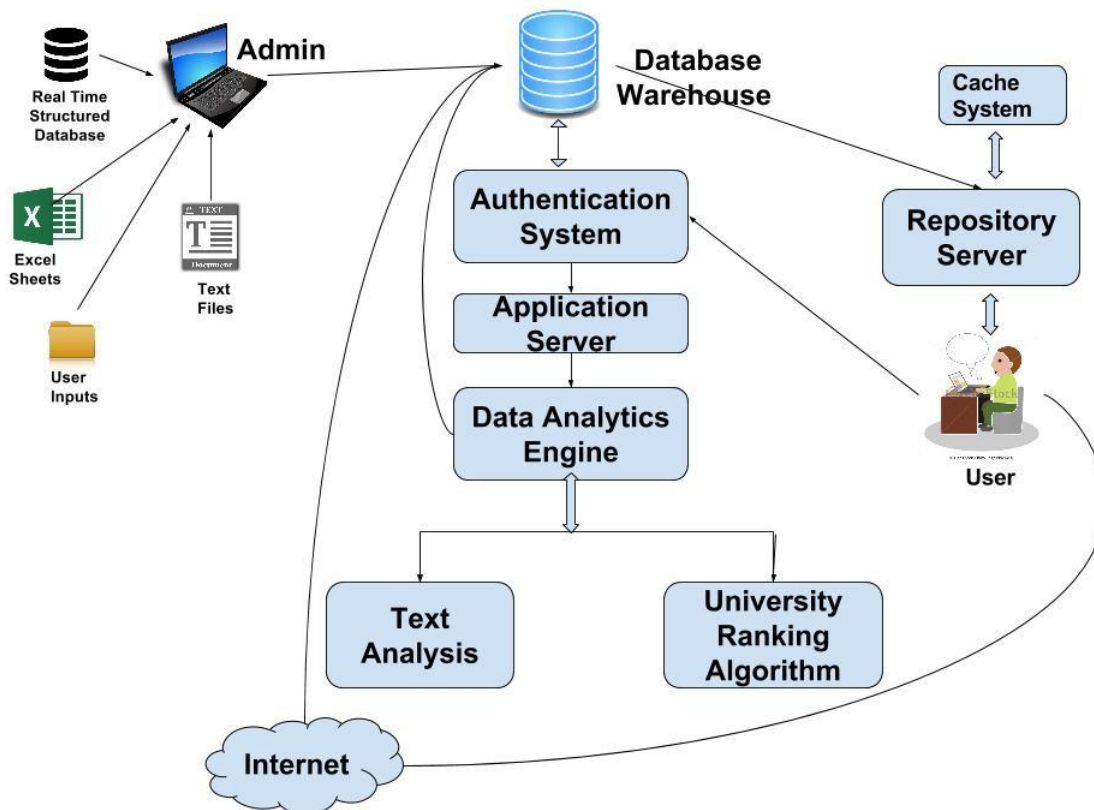
Our Project is divided into three main functional Categories:

1) Data Acquisition: Administrator of our system will first gather all the relevant data from real time structured database, Excel Sheets, User Inputs (Comments and research surveys) and Text files which will be uploaded in our main database warehouse which will be directly connected to cloud technology.

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2) Cloud Data Storage:

For implementing this Integrated DBMS Software we will be using Cloud technology to keep the system Online, accessible to all potential customers. Our Database Warehouse will be connected to every module of the system using Cloud data Storage, databases will be accessed Online making the system dynamic as well as ready to serve anytime, anywhere and at any place.

3) Data Analytics:

Using statistics and data science tools, we will analyze data which will be feeded to our system. With the help of trained data, we will compute the probability factor which will be used for ranking of the universities as well as predicting whether a student will be able to get admission in his interested university or not with respect to his/her educational qualification and overall profile.

V. IMPLEMENTATION OF METHODOLOGY

The proposed system will be implemented as a Cloud based Application Software. Our application will be built using Open Source Programming Languages Like Python v2.7 or Java 2 SDK, Standard Edition, Version 1.6.0 or later. It will be basically an Integrated DBMS application which will be using MySQL server or Oracle Version 10 or higher, along with Cloud Storage and Domain (hosting)+Apache Server Latest. The primary aim of the Ranking the System is to help students make informed comparisons of leading universities around the world. In order to provide such information we will calculate Probability factor (pf) based upon below six performance indicators, using this rankings are designed to assess universities in four major areas: research, teaching, employability and internationalization.



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1. Academic reputation

Academic reputation is measured using a global survey, in which academics are asked to identify the institutions where they believe the best work is currently taking place within their own field of expertise. The aim is to give prospective students a sense of the consensus of opinion within the international academic community. Only participants' most recent responses are used, and they cannot vote for their own institution. Regional weightings are applied to counter any discrepancies in response rates.

2. Employer reputation

The employer reputation indicator is also based on a global survey, The survey asks employers to identify the universities they perceive to be producing the best graduates. This indicator is unique among international university rankings. The purpose of the employer survey is to give students a better sense of how universities are viewed in the Graduate jobs market. A higher weighting is given to votes for universities that come from outside of their own country, so this indicator is especially useful for prospective. Students seeking to identify universities with a reputation that extends beyond their national borders.

3. Quality of Education

This is a simple measure of the number of academic staff employed relative to the number of students enrolled. In the absence of an international standard by which to measure teaching quality, this indicator aims to identify the universities that are best equipped to provide small class sizes and a good level of individual supervision.

4. Citations per faculty

This indicator aims to assess universities' research impact. A 'citation' means a piece of research being cited (referred to) within another piece of research. Generally, the more often a piece of research is cited, the more influential it is. So the more highly cited research papers a university publishes, the stronger its research output is considered. The latest five complete years of data are used, and the total citation count is assessed in relation to the number of academic faculty members at the university, so that larger institutions do not have an unfair advantage.

5. International faculty/Student ratio

This indicator's aim is to assess how successfully a university has been in attracting student and academics from other nations. This is based on number of international faculty employed to the university and number of student taking admission per year.

VI. SIMULATION RESULTS

Our main focus in this project is to use a smart efficient algorithm based on Naïve Bayes Classification Algorithm. A Naive Bayes classifier is a simple classifier. However, although it is simple, Naive Bayes can outperform more sophisticated classification methods. Besides that it has also exhibited high accuracy and speed when applied to large database which we have in store of our server. We also found that it is very fast for both learning and predicting. Its learning time is linear in the number of examples and its prediction time is independent of the number of examples. With respect to the experiments carried out, we found that Naïve Bayes classifier is also fast, consistent, easy to maintain and accurate in the classification of attribute data. And from computation point of view, Naïve Bayes is more efficient both in the learning and in the classification task than Decision Tree.

Our experiments show that Naïve Bayes has the fastest classification time followed by Decision Tree and k-Nearest Neighbor. In fig 2, the differences between classification time of Decision Tree and Naïve Bayes also between Naïve Bayes and k-NN are about an order of magnitude. Based on Precision, Recall, F-measure, Accuracy, and AUC, the performance of Naïve Bayes is the best as shown in the figures below. It outperforms Decision Tree and k-Nearest Neighbor on all parameters.

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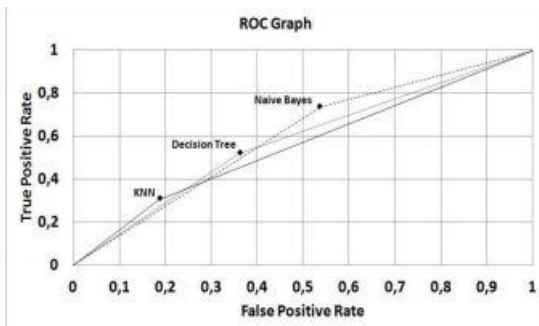


Fig 1. Area under the curve (AUC) of k-NN, Naïve Bayes, and Decision Tree

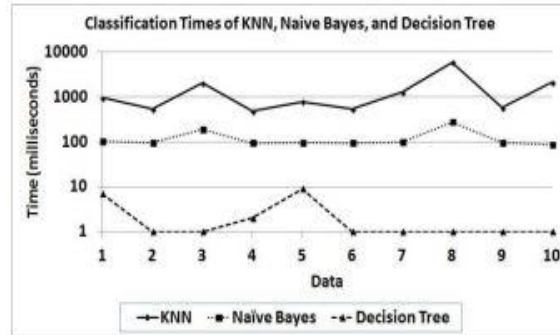


Fig 2. Classification Times of KNN, Naïve Bayes and Decision Tree

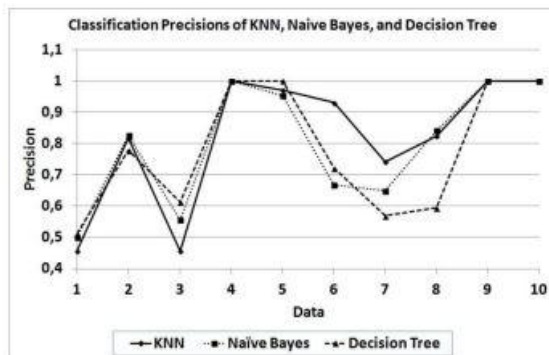


Fig 3. Classification Precisions of KNN, Naïve Bayes and Decision Tree

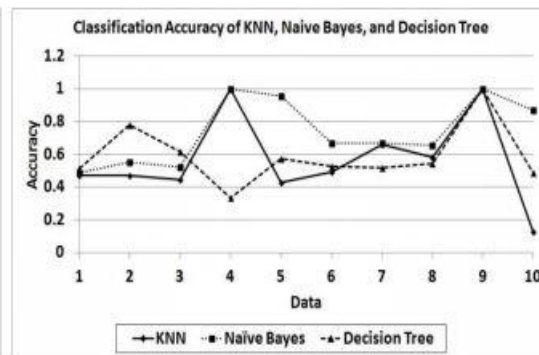


Fig 4. Classification Accuracy of KNN, Naïve Bayes and Decision Tree

VII. CONCLUSION

In this project, we are trying to solve every student's problem who wish to pursue higher education in foreign universities but don't have any idea regarding which options he/she have with respect to his/her overall profile and also haven't quite exposed to the procedure how students get admitted at foreign universities. Unlike Indian Universities, Marks isn't the only criteria on which basis admission takes place, it's all about what have you done in your college life except for attending lectures and sitting exams i.e. extracurricular activities and Internships etc. we are mainly focusing on providing the masses a software application which gives a total comprehensive solution for selecting the best universities according to their preferences & their own parameters for their further education.

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BIOGRAPHY

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