

University Admit Eligibility Predictor for College Admission

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Introduction:

The students pursuing their 12th grade in schools after completing them will be looking to enter to the colleges to pursue their higher career in any of the streams of those that are available (for example – Medical or Engineering or Arts or Agriculture and many more). To pursue these courses the Universities and the Colleges will be having criteria based on marks and other details of the students. The marks will be categorized based on the overall cutoff of the state's board exam or CBSE exam. Along with these marks the students might also appear for other exams such as GATE, NEET and many more. These marks will also be taken into consideration by the colleges and be given the priority to enroll in the course wished by the candidate whomsoever applies.

This procedure in a normal way is now being taking a lot of time for the students to wait after finishing their 12th and getting the results. Sometimes it also happens to be a fear among the students and their parents of losing a better a college on the basis of the mark his / her students secured. To avoid this pressure and create a comfort zone for the students, our project UAEP, will be focusing on the various ways in which the students can check their eligibility of each and every of the removed institutes of the states. The marks will be analyzed based on the number of exams wrote by the student, for instance one student takes additional exams like NEET and it will be visualized based on the other scores that the candidate is aiming it. The candidate having only the 12th Board Exam marks will be shown a different way of checking the availability. This makes them plan according to the colleges that are available for each of them and start to apply to them based on the infrastructure and courses provided by the college.

Literature Review:

There are lots of papers and a few projects done on the University Admission Eligibility Predictor and what and all the problems are tried to find the problem and those of the different papers are as follows:

1. Graduate Admission Analysis and Prediction

- Author: Suneel Patel

The project presents an expert system, called PAAS, in which logistic Regression is used to predict the potential of Junior college students to pass the national exam for entering the higher education institutes. They had used a predictive modelling to assess admission policies and standards based on features like GPA score, ACT score, residency race, etc. The major setback of the project is that they that project was not taking into consideration the other exams apart from the ACT score, some candidates must be having some other entry level exams and they also need to include in the system.

The techniques used are Data Mining and ML Learning for the admission by predicting the enrollment behavior of the students. They have also used different algorithms for different aspects such as Apriori Algorithm to analyze the student's behavior of entering the college and Naïve Bayes Algorithm for predicting the college for the students based on the scores they secured in the exams. This way the overall probability is not to the level of the highest efficiency of predicting the better and the suitable college for the students. This also needs to have an overall different view as if the candidate has some different exam scores, rather than the regular candidates with just the high school grade, then they need to show a different way to show the colleges for those candidates.

The future of this set is to include the following as follows So, basically this set is about the Graduate Admissions data i.e. Given a set of standardized scores like GRE, TOEFL, SOP standard scores, LOR standard scores, what is probability (basically i have done a YES/NO scenario) of gaining admission into a particular school. All those folks who are preparing for MS, might point out this question, from where did you get SOP & LOR scores. These aren't public figures. I mean yes, it might not be public, but the universities might be grading these applications on some scale of rating so that the scores can be standardized. Hence the SOP, LOR scores. [1].

2. College Admission Prediction using Ensemble Machine Learning Models

- Author's: Vandit Manish Jain, Rihaan Satia.

This paper aims to build a model that can help students to pick the right universities based on their profiles. We can judge across a wide variety of domains that include MS (international), MTech (India) and MBA (India and International). For the accurate predictions we plan on training a machine learning model in order to provide results. The dataset contains information on the student profile and the university details with a field detailing if the admission was positive or not.

Various algorithms have been used i.e., Ensemble Machine Learning and the predictions have been compared using key performance indicators (KPIs). The model performing the best is then used to evaluate the dependent variable i.e. The chances of admit to a university. The chances of admit variable is a variable ranging from 0 to 1 which equates to the predicted probability of successful acceptance to a university. We also aim to create a portal which filters and then provides a list of universities that fall into the profile's acceptance range.

Every year millions of students apply to universities to begin their educational life. Most of them don't have proper resources, prior knowledge and are not cautious, which in turn creates a lot of problems as applying to the wrong university/college, which further wastes their time, money and energy. With the help of our project, we have tried to help out such students who are finding difficulty in finding the right university for them. It is very important that a candidate should apply to colleges that he/she has a good chance of getting into, instead of applying to colleges that they may never get into. This will help in reduction of cost as students will be applying to only those universities that they are highly likely to get into. The prepared models work to a satisfactory level of accuracy and may be of great assistance to such people. This is a project with good future scope, especially for students of our age group who want to pursue their higher education in their dream college [2].

3. Predicting Undergraduate Admission: A Case Study in Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Bangladesh

- Author's: Md. Protikuzzaman, Mrinal Kanti Baowaly, Maloy Kumar Devnath, Bikash Chandra Singh.

The university admission tests find the applicant's ability to admit to the desired university. Nowadays, there is a huge competition in the university admission tests. The failure in the admission tests makes an examinee depressed. This paper proposes a method that predicts undergraduate admission in universities. It can help students to improve their preparation to get a chance at their desired university. Many factors are responsible for the failure or success in an admission test. Educational data mining helps us to analyze and extract information from these factors.

Here, the authors apply three machine learning algorithms XGBoost, LightGBM, and GBM on a collected dataset to estimate the probability of getting admission to the university after attending or before attending the admission test. They also evaluate and compare the

performance levels of these three algorithms based on two different evaluation metrics – accuracy and F1 score. Furthermore, the authors explore the important factors which influence predicting undergraduate admission.

In this research, the authors used three boosting techniques to estimate the probability of getting an undergraduate admission in the engineering faculty at BSMRSTU, Bangladesh. The root of the dataset is the students of BSMRSTU who are currently studying in the engineering departments and who are not in the engineering departments. Using some machine learning techniques, the authors developed two models separately – the admission predictive model before the admission test and the admission predictive model after the admission test.

The authors extensively investigate and analyzed these models. The evaluation results show that the proposed model can able to assist the students in predicting admission opportunities. This study performed the prediction only for the engineering unit at BSMRSTU. This method can be applied to predict admission in any other faculties or universities too. [3].

4. A Machine Learning Approach for Graduate Admission Prediction

- Author's: Amal AlGhamdi, Amal Barsheed, Hanadi AlMshjary, Hanan AlGhamdi.

This paper outlines the possibilities of creating an algorithm that can apply to Student Graduate Admission. It appears there that relationship in between all attributes and one attribute during learning. To verify this, we implemented the algorithm using a Linear Regression Model, Decision Tree Model and Logistic Regression Model to see how to use all requirements for studying the postgraduate to predict the chance of admission in different values.

To classify different machine learning algorithms, the logistic regression model was the algorithm that achieved the best classification prediction and the most accurate to predict the best of admission. As it contains the smallest number of errors (7.2% RSME) than other algorithms. So the goal of this paper is to create a software by using machine learning, especially using Logistic Regression in the future to help students can know how the possibility of postgraduate admission in universities to help graduates in recognizing and targeting universities that have suited their requirements.

In this work, we split the original dataset into training (80 %) and test (20 %) and then train three machine learning models, Logistic Regression, Linear Regression and Decision Tree model to fit the training data. Then we use the trained models to predicts the Chance of Admit. The performance of the models was measured through the MSE. All models were run on Anaconda specific (Jupyter) to run code and train the three models.

After finish training data and used to predict the chance of admission, then evaluation to choose the perfect model that has less error rate, so to do this evaluation, we used RMSE to

choose the best. Logistic regression model mostly does not match MSE because the main reason not to use the MSE as the cost function for logistic regression is that we don't want cost function to be non-convex. If the cost function is not convex, then it isn't straightforward for the function to converge optimally [10]. After evaluation, we compare the three models Logistic Regression, Decision Tree Model and Linear Regression based on the results of RMSE. Finally, we find that the best model when use RMSE is Logistic Regression that has (0.072) is minimal rates of error than other models. [4].

5. Student Admission Predictor

- Author: **Himanshu Sonawane**

This section provides the literature review of the work that has previously done on predicting the chances of student's enrolment in universities. There have been several project and studies performed on topics related to students' admission into universities. (Bibodi et al. (n.d.)) used multiple machine learning models to create a system that would help the students to shortlist the universities suitable for them also a second model was created to help the colleges to decide on enrolment of the student. Nave Bayes algorithm was used to predict the likelihood of success of an application, and multiple classification algorithms like Decision Tree, Random Forest, Nave Bayes and SVM were compared and evaluated based on their accuracy to select the best candidates for the college. Limitation of this research as that it did only rely on the GRE, TOEFL and Undergraduate Score of the student and missed on taking into consideration other important factors like SOP and LOR documents quality, past work experience, technical papers of the students etc.,

The main objective of this research was to develop a prototype of the system that can be used by the students aspiring to pursue their education in the USA. Multiple machine learning algorithms were developed and used for this research. KNN proved to best-fit for development of the system when compared with the Logistic regression model. The model can be used by the students for evaluating their chances of getting shortlisted in a particular university with an average accuracy of 75%. Decision Tree algorithm was used to predict the universities which were best suitable for a student based on their profile. The decision tree algorithm proved to be 80% accurate.

A simple user interface was developed to make the application interactive and easy to use for the users from the non-technical background. Shiny library from R was used to create the user interface. The overall objective of the research was achieved successfully as the system allow the students to save the extra amount of time and money that they would spend on education consultants and application fees for the universities where they have fewer chances of securing admission. Also, it will help the students to make better and faster decision regarding application to the universities.

As discussed earlier in the limitation of the research we have created the models based only on the data of Indian Students studying Masters in Computer Science in the USA, we have considered only ten universities with different rankings. In future, more data related to

additional universities and courses can be added to the system. Also, the system can be enhanced to a web-based application by making changes to the Shiny code. Other classification algorithms can be evaluated to resolve the problem if they perform better than the current algorithm the system can be easily updated to support the new algorithm by changing the server code in the Shiny app. [5].

6. Graduate Admit Prediction Using Machine Learning

- *Author's: Sara Aljasmi, Sara Aljasmi, Ismail Shahin, Ashraf Elnagar.*

Student admission problem is 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 multiple linear regression, k-nearest neighbor, random forest, and Multilayer Perceptron. Experiments show that the Multilayer Perceptron model surpasses other models.

The machine learning models were performed to predict the opportunity of a student to get admitted to a master's program. The machine learning models included are multiple linear regression, k-nearest neighbor, random forest, and Multilayer Perceptron. Experiments show that the Multilayer Perceptron model surpasses other models. As for the future work, more models can be conducted on more datasets to learn the model that gives the best performance.

In order to perform feature selection, `ols_step_best_subset()` function has been applied; which will display all possible subsets. Then according to certain criteria, the best subset will be selected. Since there are 7 independent variables, the number of subsets to be tested is 27, which equals 128 subsets. To apply feature selection, linear regression equation should be applied. Note that linear regression can be performed only with numeric independent variables. It is observed that all variables are numeric. It is good to mention that in case of having categorical variable, `as.numeric()` function can be used to convert data variables to numeric. Next, regression model is created, and feature selection is performed. The best model in feature selection is presented by the model with either highest R-square or smallest MSE, which belongs to model 6 which includes all columns except column 4 that presents SOP.

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7. An Automated Prediction Model for College Admission System

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- *Author's: Dr. Arunakumari B. N, Vishnu Shasthri H K, Shashidhar R, Sheetal Neeraj.*

After intermediate, students desiring to pursue engineering face lot of problem in choosing a good college and branch of their choice. Admission into engineering colleges across states in India happens generally through Common Entrance Tests (CET). The examination authority of every state carries out the admission, through a centralized admission process. This admission process happens through many rounds, depending on availability of seats.

First, the students must get their documents verified by the authority. Later, the authority releases the cut-offs of every college, branch-wise and category- wise. Students will be allowed to give their preference list of colleges and branches, which is also known as the option-entry process. Then, based on rank, category and preference list given by the students, college and branch will be allotted to them by the authority.

In the proposed prediction method, we have used python machine learning libraries viz., pandas and numpy. And to develop the user interface (UI) and web application we have used streamlit package. Further to deploy the web application on the internet so that it is accessible worldwide we have used Heroku. In addition, the database consists of the average of previous five years' rank cut off data. The cut-off database will consist of the ranks with respect to branch, college, and category. A candidate will obtain a rough idea regarding the seat he or she is likely to get depending on his or her rank and category. Cut-off will be different for each college, course, and category. The row headings consist of college names along with branches.

The column headings consist of the various categories. The data contained in the database is of string data type. Each cell (corresponding to a branch and college i.e., row heading and category i.e., column heading) in the database, consists of the rank that a candidate belonging to a particular category has to secure in order to get admission into that particular branch and college. Rank (mandatory), category (mandatory), preferred branches (optional), preferred colleges (optional), preferred districts/location (optional), of the user are taken as input for our method. Category is an alphanumeric value which can be selected from the drop-down list.

Preferred branches, preferred colleges and preferred districts are text inputs which are multiple selection type and can be selected from drop-down list. Rank and category are required fields and it is compulsory for the user to input these fields. Preferred branches, preferred colleges and preferred districts are optional fields, and they can be used as filters for the generated preference list and the process of generating preference entry list

The web application helps the user make wise choice of colleges for his/her option-entry. Also, the user gets an outline/rough idea of the entries they can make in the option-entry process provided by examination authority. The same application can be used for Common Entrance Tests of other states and for other national level entrance exams by only changing the cut-off database of that exam. Proposed application benefits for the student admission community that accommodates the need of students to choose the best college and

helps colleges too to recognize their stand in attracting students and finer prediction implies better results for the students [7].

8. Graduate Admission Chance Prediction Using Deep Neural Network

***- Author's: Md. Omaer Faruq Goni; Abdul
Matin; Tonmoy Hasan; Md. Abu Ismail Siddique; Oishi Jyoti; Fahim
MD Sifnatul Hasnain***

Every year many students apply for graduate admission to different universities. To select an applicant, each university has different selection criteria such as GRE score, CGPA, research background, statement of purpose, letter of recommendation, university rating etc. There are some web applications as well as some consultancy services for suggesting the appropriate university based on students' portfolio. These help to give an idea which universities should be applied for admission. But they have limitations because humans are incapable of considering all the conditions and universities.

Moreover, web applications have accuracy problems. In this study, we have proposed a deep neural network (DNN) to predict the chance of getting admitted to a university according to the students' portfolio. All the selection criteria are considered here to predict the chance of admission. The DNN model has been compared with existing methods in terms of different performance metrics including mean squared error (MSE), root mean squared error (RMSE), mean absolute error (MAE), R-squared score. It has shown the most promising result that includes R-squared score of 0.8538 and MSE of 0.0031. The proposed method has also outperformed all the existing methods in each benchmark [8].

9. Prediction for University Admission using Machine Learning

***- Author's: Chithra Apoorva D A, Malepati
ChanduNath, Peta Rohith, Bindu Shree.S, Swaroop.S.***

. Generally Higher education in abroad universities means we have many options like Canada, USA, UK Germany, Italy, Australia etc. But we are focusing on only the students who want to do their Masters in America. Students who want to do masters in America have to write GRE (Graduate Records Examination) and TOEFL/IELTS (Test of English as a Foreign Language/International English Language Testing System). Once they have attended the exams, they have to prepare their SOP (statement of purpose) and LOR (letter of recommendation) which are one of the crucial factors they have to consider. These LOR and SOP plays a vital role if the student was looking for any scholarship. Then the students have to choose the universities they want to study or apply, we cannot apply to all the universities that will lead to lot of application fees. Here comes the problem that the student doesn't know to which university he might get admission. There are some online blogs which help in this

matter but they are not that much accurate and don't consider all the factors and there are some consultancy offices which will take lot of our money and time and sometimes they will give some false information.

The main goal of this work is to create a Machine Learning model which could be used by students who want to pursue their education in the US. Many machine learning algorithms were utilized for this research. Linear Regression model compared to other ones. Students can use the model to assess their chances of getting admission into a particular university with an average accuracy of 79 percent. A GUI was developed to make the program, from a non-technical perspective, usable and user-friendly. Using node-red the user interface was developed.

The ultimate goal of research will be accomplished successfully, as the system allows students to save the lot of time and money that they would spend on educational mentors and application fees for colleges where they have less chances of getting admissions. The main limitation of this research is we developed models based solely on data from Indian Students studying Masters in Computer Science in the United States, we considered only few universities with different rankings. More information relating to new colleges and courses can be added to the curriculum in the future.

The system may also be modified to a web-based application by making node-red modifications. To solve the problem, it is possible to test other classification algorithms if they have high accuracy score than the current algorithm, the framework can be easily modified to support the new algorithm by changing the server code in the Node Red. Finally, students can have an open-source machine Learning model which will help the students to know their chance of admission into a particular university with high accuracy [9].

10. Predicting Student University Admission Using Logistic Regression

- Author: Sharan Kumar Paratala Rajagopal

Student admission for the Master's degree program consists of different criteria/scores which is taken into consideration before admitting the student to the degree program. This process is elaborative and requires lot of thought processing and analysis by the selection committee before choosing the right applicants to the Master's degree program. The purpose of this analysis is to demonstrate the top contributing scores which helps the student to get the admission into the Master's degree program. What factors contributes to successful admission to a Master's degree program? The analysis might seem straight forward but caution has to be exercised to consider the scores like GRE, TOEFL, university rating, SOP, LOR and CGPA and any outliers should not impact the decision-making process

The subject of this examination was to determine if the below variables contribute to the admission of student to Master's degree program. The results of this examination appear to indicate that it greatly contributes to the response variable 'Chance of Admit'. Higher the GRE, TOEFL score then higher the admit chances. The model predicts 87.5% accuracy and can be used for predicting the admit chances based on the above factors. This model will be

helpful for the universities to predict the admission and ease their process of selection and timelines. As part of the hypothesis, the model proved that admission to Master's degree program is dependent on GRE, TOEFL and other scores. This model would likely be greatly improved by the gathering of additional data of students from different universities which has similar selection criteria to choose the candidates for Master's program. [10].

11. Multiple Machine Learning Classifiers for Student's Admission to University Prediction

- Author's: Anil B, Akram Pasha, Aman, Aman Kumar Singh, Aditya Kumar Singh.

Data is the most important asset for any organization which is further processed to produce useful information. Machine Learning and Big Data techniques are widely used for industrial sectors to generate useful patterns helpful for earning more profits and expand businesses. From the past few years, a lot of research works have been done by using Big Data techniques on educational data for improvement in Education System. Machine Learning and Big Data can be useful for predicting the students' admission, performance of teaching, performance of a student, identifying the group of students of similar behavior. However, the manual process of record checking is time consuming, tedious, and error prone; due to the inherent volume and complexity of data. In this study, the combination of linear and non-linear machine learning algorithms; Logistic Regression, Decision Tree, k-NN, and Naïve Bayes have been chosen to perform prediction of the target class for an unseen observation by polling. As the models built in this work are predicting the likelihood of a student taking up the admission into any university based on the student data collected by any marketing agency, the combined models are collectively called as the Admission Predictor. The administrative officials of any academic institution can use this kind of an application to explore and analyze the patterns that are affecting the student admission and come up with enhanced strategies to improve admission. Such an application not only plays a vital role in administration, but also help the management in reformulating the marketing criteria for overall development of academic institution

Data mining techniques and machine learning techniques have been contributed in various business-related applications, boosting their business strategies with an improved decision making. Educational Institutions are also the owners of enormous of data, and getting the clear insight about the hidden patterns in the data would certainly improvise the overall educational system. Admission Prediction model for accomplishing the number of the student seeking admission to college/university has been presented. The prediction incorporated was purely based on student data, and such an approach towards data analysis would help in reducing congestion and improve quality of education across the nation.

The predictive models built are not only automating the student admission prediction but, it also categorizes a student with respect to their performance to choose the best suitable discipline of study. The work proposed in this paper can be helpful for any Educational System owning data. As the data stored grows exceptionally by any organization periodically,

the educational system is not exceptional. Therefore, incorporation of distributed computing frameworks for such massive data, with enhanced security remains as the future work. [11].

12. Higher Education Prediction System

- Author: Vaishali Dilipkumar Jadav

At the time of admission all the work is done by manually by ink and paper, that is very slow and much time and effort consuming. Students' admission is one of the most important activities in education industry. A poor and slower admission system can mean fewer students being admitted into abroad universities because they don't have proper source to do the process. This project aims for automated system, pre checking the inclusions of all required data and automatically listing each student based on their application. The data used by the system is stored by database that will be center of all information. This enables things to be simplified and considerably quick, making it easier. It supports the current process but centralized it and make it possible for abroad universities

After completion of the project, I would like to conclude that this website can be very much useful to dissemination the information. It will be surely helping the users from the education industry. Though there are lots of system are launched day by day in this field. Using this website student can check how many different courses are the in the world to learn and in which are they truly interested. Also, students can know requirements and work hard according to that. By using this website so many universities can promote their campus. They also can put details about their campus and facilities provided by them. They also can notice how many students are interested globally. And from that information they can make sure there are enough number of intake students per year. In future work it will be to add more features and facilities to enhance the project and also trying to add some security features. In future not only admin can add the country other countries can be registered too. In future to collect information for more details about universities can be take. [12].

13. University Recommendation and Admission Prediction System

- Author's: Er. Kshitiz Shrestha, Er. Pabin Raj

Luitel, Er. Sabin Silwal.

University and college admission is a complex decision process that goes beyond simply matching test scores and admission requirements. For an aspiring graduate student, choosing which universities to apply to is really a difficult problem. Often, the students wonder if their profile is good enough for a certain university. In this project, this problem has been addressed by modeling a recommender system based on various classification algorithms. The required data was obtained from thegradcafe.com. Based on this data set, various models were trained and one best and some other similar properties carrying universities are

suggested for the students such that it maximizes the chances of a student getting an admit from that university list. Classification algorithms have also been used to predict the acceptance chance of any student on any individual university. To predict the best University for the particular student his/her GPA score, GRE (Verbal and Quant) Score, TOEFL score has been used as attributes for classification. K nearest neighbor has been used to predict best University and K means clustering has been used to find more similar universities. Support Vector Machine and Random Forest has been used to predict the admission chance of particular student on specific University

The purpose of this research project is to compare data mining techniques in analysis of the students GPA, GRE, AWA and TOEFL scores to find out best suited university for the student and to predict the acceptance chance of student. This project research will contribute to the meager research in effectiveness of data mining techniques applied in higher education. It will motivate other researchers to work on data mining techniques and algorithms for solving various issues related to higher education. [13].

14. A Predictive Model for Graduate Application to Enrollment

- Author's: Vahid Lotfi, Bradley Maki.

This study involved an investigation of factors that affect a graduate applicant in accepting an offer of admission and enrolling in a graduate program of study at a mid-sized public university. A predictive model was developed, using Decision Tree methodology to assess the probability that an admitted student would enroll in the program during the semester following acceptance. The study included actual application information such as demographic information, distance from the campus, program of interest, tests scores, financial aid, and other pertinent application items of over 4600 graduate applications over a three-year period.

The Decision Tree model was then compared with a Bayesian Network model to reaffirm its validity and its predictive power. The method with the more promising outcome was used to develop predictive models for applicants interested in a sample of academic majors. The results of the predictive models were used to illustrate development of recruitment strategies for all applicants as well as for those interested in specific majors.

This study involved developing predictive models for assessing the likelihood that a graduate applicant would enroll in a program of study during the semester following admission decision. The models were based upon actual application information of over 4600 graduate applicants at a mid-sized public university. over a three-year period. The applicants' dataset included application information such as demographic characteristics, test scores, financial aid information, and other pertinent data. The first part of the study consisted of developing a predictive model using Decision Tree analysis for all applicants, irrespective of their academic major of interest. We then compared the Decision Tree model's performance with that of a Bayesian Network model to reaffirm its validity and predictive power.

The Decision Tree-based model out-performed the Bayesian model for our dataset. The third part of the study involved using Decision Tree methodology to develop predictive models for a sample of four popular academic majors. The trees were used to illustrate more precise enrollment forecasting and recruitment strategies for overall recruiting efforts as well as possible strategies for the sample majors.

A major contribution of this study to the strategic enrollment management literature pertains to the development of predictive modeling for graduate applicants. Graduate students can be an essential and even a critical component of a university strategic enrollment plan for institutions that offer graduate education. Accordingly, it is vital that such a plan utilizes data-driven and more advanced modeling techniques in forecasting graduate enrollment. Unlike undergraduate applicants who face almost the same admission standards for a given university, graduate applicants must satisfy institutional requirements such as minimum grade point average (GPA) and English language proficiency as well as programmatic requirements such as aptitude tests or professional license.

Another important contribution of this study is the establishment that factors which influence an applicant to enroll in a graduate program of study might vary by academic discipline. Hence, recruitment efforts, targeting potential graduate student populations should incorporate elements designed to appeal to the overall population of students as well as components designed to target specific majors.

The study is limited since our predictive model did not include qualitative and subjective factors such as reputation of the university or program rankings. This limitation can be addressed by surveying the applicants before or after they enroll and then try to incorporate their responses into the predictive models. However, such an approach could be susceptible to possible flaws in applicants' recollection if done after enrollment and potential to influence their opinion if done before the admission decision is made.

Another limitation of the study is with respect to its population of applicants associated from a mid-sized public institution. Applicants at much larger universities with numerous academic disciplines might exhibit different dynamics with respect to factors that influence their decision to accept an offer of admission and enroll. Also, applicants at private universities could behave differently than those of public institutions. Nonetheless, we have presented a framework for developing predictive models that can be implemented at other types of institutions using their own historical data. [14].

15. Engineering & Technology Admission Analysis and Prediction

- Author's: Mr. Sachin Bhoite, Prof. Dr. Ajit More.

A Great career without a Great Education is just a DREAM. While we talk about career – a person's degree, specialization, College/University and the knowledge that he possesses – are the key factors. In India the educational pattern is 10+2+3+2 or 10+2+4+2 or 10+2+5.5 & career related decisions are discussed after 10th standard and mostly concluded after 12th. As soon as a student completes his/her Higher Secondary Schooling, the first goal of any student

is to get into an appropriate College/University for appropriate course/program so that he can get a better education, guidance & placement for his future. To build predictive model we used Logistic Regression, K Nearest Neighbors', Decision Tree Classifier, Random Forest Classifier, Naive Bayes & Support Vector Machine classifiers then compare the results of cross-validation with & without feature engineering and also compare the probabilities of getting admission to a college. The performance of various classifiers is described in this paper. It is found that Random Forest & Decision tree classifiers give better accuracy

In this paper, the researchers describe the Architecture for hassle-free College prediction, compare cross-validation techniques for accuracy as performance major before and after feature engineering and finally concluded the prediction of College for career after 12th in the engineering and technology. For this study 8 input features are selected out of 20 features, which are 'Merit Marks', 'Candidate Type', 'Category', 'Home University', 'PH Type', 'Defense Type', 'HSC Eligibility', and 'BRANCH'.

These features are very important according to Univariate Selection, Recursive Features Importance, & Lasso feature selection methods and massive Exploratory Data Analysis used by checking and plotting correlation between each input feature with target feature. In this study target is categorical in nature. So, we used Logistic regression, K-NN, Decision Tree classifier, Random Forest, Naïve Bays, Support Vector Machine 6 supervised machine learning algorithm. We found out of six algorithms Decision Tree classifier & Random Forest gives good & approximately same accuracy which is 93. Also, we realize that feature engineering is very essential part while implementing & building predictive models using machine learning techniques. It has been observed that results have been more improved after feature engineering. In future we would like to consider students choice about the college as an input feature and mix i.e., admitted and rejected student's data to get better accuracy [15].

Based on the Previous Researches the Approach to the Project is:

They have done an exceptional job with their project to manage inventory. But that is not still efficient enough to predict the eligibility for the candidates applying for the colleges / universities. The project will be using the additional support of the tool “IBM Watson” to train the model that is going to analyze the data of the marks entered by the students, which will make a more human prediction for the project. The Data Science method of collecting the details from the user will be made, where the details will be then analyzed by the list of universities that are available for the particular candidate.

The set of universities will be shortlisted and will be displayed in the form of a graph for the candidate on what to choose and the probability of getting any particular colleges. The model is trained with the IBM Watson which will be automatically predict the possibilities. Machine Learning algorithms will be used to train the model which makes it predict the possibilities of the candidate select the list of colleges predicted by the model.

The changes that have made a different and a better approach than the current project, that is:

1. To calculate marks of the students on the number of different exams they have taken for applying for the colleges.
2. To predict the possibility based on the different scores, for example., some colleges / universities might be expecting candidates with the score of GATE exam to give a priority for that score of the students. So, this will be displayed in a different setup where besides the display of the regular college eligibility this will also be shown.
3. To include all the colleges that are present in the state and if necessary for the development of the project, the state enrollment of the colleges will be moved to the national level, to help the students of various states look for the suitable candidates.
4. The project will be easy to use with a more comfortable and efficient user interface to use for everyone visiting the web page, and it will be having a good efficiency in predicting the college for the students.

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