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Engineering College Recommendation and Prediction of Cut-offs

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Abstract: *We are living in a generation in which education plays a key role to one's life. The awareness of education is more than at any other time. There is hardly an industry which does not require education. Education organization are one of the important part of our society and playing a vital role in growth and development of a nation. Considering, Engineering a branch of education. A lot of student from Junior College entering an Engineering college for an important period of their life to make a career have a problem in searching college for a particular branch according to their marks .To solve this issue, we are aiming to develop a website or web-based application where student can enter marks and are give a result of eligible college and branch .The main agenda for developing such web based project:-Use of Information Technology in education system or admission process .Automate the process of admission .To get a perfect and deserved college without any counselling .To get a better education system. After conducting a few surveys with Engineering college students, we concluded that students are unaware or regret where they could have got admission but couldn't due to lack of knowledge and such web-based application*

Keywords: *Machine Learning, Prediction Algorithm, Simple Linear Regression, Database Management System, Recommendation System, Supervised and Unsupervised Learning.*

I. Introduction

Engineering college recommendation system is made to target Students, Parents and educationalist who search and need counseling for getting admission in Engineering college. It helps you get a basic idea about the colleges within the reach of your score, as most of the students after clearing 12th don't have much idea related to colleges which they can get into based on their scores. This system also looks forward to provide the students with an estimate cutoff for the on-going year by means of prediction algorithm based on previous scores. Students who are opting to pursue a particular field in particular college should have a clear vision that he/ she will able to get admission in that college with the marks he/ she obtained. Students also do not need to take extra effort about finding the cut-off of a particular college by themselves. It also helps in providing extra information where he/she will get admission all the colleges available on their marks.

II. Machine Learning

Machine learning is a type of artificial intelligence (AI) that provides computers with the ability to learn without being explicitly programmed. Machine learning focuses on the development of computer programs that can change when exposed to new data. Some of the applications like Pedestrian Detection, Multiple object recognition with visual attention, Neural networks behind Google voice & Google web search using AI concepts, Deep neural networks have been successful in solving parallel processors and math expression compilers, and many more. Using the concept of machine learning, a number of algorithms are explored in order to predict the result of class students. In Machine Learning, this problem is of classification type.

Hence, there various supervised learning algorithms such as Support Vector Machine, Naïve Bayes Classifier, Random Forest Classifier, and Gradient Boosting Algorithm are used. The accuracy obtained by each of the algorithms are then compared in order to identify the algorithm that is most suitable for the problem. As the accuracy differs due to different approach of the algorithm and variety of problems.

III. Related Work

The database used in recommendation phase is stored with data from the prediction algorithm and data from user also college data is stored .The recommendation of data is done in reference with [3].The recommendation of data based on various factors such as caste ,location, marks and fees is shown in reference [7].Based on various factors the colleges are recommended using various data mining operations or operations such as join ,grouping and aggregation which is mentioned in reference [8] and [9].

IV. Literature Review

Authors: Mrunal T V, Amartya Singh, C Suhas [1]

According to the research paper, the Author has mentioned four predictive algorithms. 1)Support vector Machine 2) Naïve Bayes Classifier 3) Random Forest Classifier 4) Gradient Boosting. Out of these four algorithms, Random forest classifier has the highest accuracy based on their testing conditions. It suggests that the current result of the students is reliant on the previous results. The accuracy of the prediction was dependent on the number of decision trees. Highest accuracy attained by Random Forest was 89%. Authors: Ashish S.

Authors: Andy Liaw and Matthew Wiener [2]

In this paper we learnt that the Random Forest package optionally produces two additional pieces of information: a measure of the importance of the predictor variables, and a measure of the internal structure of the data. Also observed that SVM algorithm is used to evaluate the result.

Authors: Michael J. Pazzani and Daniel Billsus [3]

A final usage of content in recommendations is worth noting. Simple content-based rules may be used to filter the results of other methods such as collaborative filtering. For example, even if it is the case that people who buy dolls also buy video, it might be important not to recommend video items in a particular application.

Authors: Anand Shanker Tewari , Kumari Priyanka[4]

This research paper discusses various approaches of recommendation such as 1) Content based approach 2) Collaborative based approach 3) Hybrid approach. Collaborative approach filters the information with the help of available information. Content based approach compares between users profile and content of the item. Hybrid approach is the combination of above mentioned algorithms..

Authors: [5]

Random forest are a combination of tree predictors such that each tree depends on the value. A random forest is classifier consisting of a collection of tree-structured classifier {h(x,),k = 1,…..} where the {} are independent identically distributed. It gives some theoretical background for random forest and introduces forest using the random selection of features at each node to determine the split. For guidance, internal estimates of the generalization error, classifier strength and dependence are computed. These are called out of bag estimated and reviewed.

Authors: Nathalie Kuhn and Navaneeth Jamadagni [6]

Due to growth in aviation industry has resulted in air traffic congestion causing flight delays which have caused an economical impact as well as environmental losses. This paper consist of input to algorithm like departure date ,departure delay ,distance between two airports ,scheduled arrival time etc. The fraction of the total flight delays at arrival grouped by airlines is mentioned. Decision tree, Logistic Regression and Neural Networks are the following three models used to predict if the flight will be delayed or not in this paper.

Authors: Ms. Nishigandha Karbhari Prof. Asmita Deshmukh Dr. Vinayak D. Shinde [7]

This research paper is based on college recommendation system which consist of four modules. The first module is where name of college and location are given by the user as search input. In second module user is given a choice to select colleges he wants to compare from which he would get clearer idea for the distinguished college. In module three colleges are shortlisted based on the merit and locality .The last module or fourth module is where the student will be recommended college most likely to get according to the merit in that college.

Authors: Kai-Uwe Sattler, Oliver Dunemann [8]

In this research paper they have made an attempt of integrating data mining operations to database systems .The major drawback of this integration is poor performance due to operations such as join, grouping and aggregation which were not sufficient for data mining, hence data mining operations were implemented.

Authors: [9]

In this research paper they have made an attempt of integrating data mining operations to database systems . Data mining helps address the problem: "Too much data and not enough information" Enables data exploration, pattern discovery, and pattern prediction —which lead to knowledge discovery Forms a key part of a Business Intelligence solution SQL Server 2012 Analysis Services hides the complexity of an advanced technology Includes nine algorithms to discover patterns in data Allows direct integration with other Microsoft BI products Delivers a framework for developing intelligent applications.

4.1 Report on present investigation

The existing system:

- In present case scenario different websites are needed to be browsed to collect articulate information regarding college and lot of time is consumed to search for the best fit college or the most deserving college.

The limitations of the existing system are:

- Very limited data available in the database.
- There was an application made about 1-2 years ago, it used to suggest college but only out of 5-10 colleges.
- Existing application does not predict the cutoff for the current year or any kind of such service.

V. Proposed System

A user interface for students to search for the perfect college on the basis of marks, fees and location. A predicted cutoff of current year for the students to get more specified result of colleges on the basis of the marks obtained. The details entered by the student will be retrieved and accordingly after the calculations, colleges will be provided with particular branch. If the student is not eligible for engineering example if PCM score is less than eligible score, then a not eligible message will be shown. This site helps students as it reduces the work of finding the cutoff and they also get clear idea whether they will get admission in particular college or not based on their marks.

5.1 Problem Statement

We know most of the students are constantly worried about the college they might get based on their marks and the cut-off of the college. Going through our everyday life as a student, the content we need the most in situations such as admission time after result isn't available to us at that very moment. This is the issue a student face when they are going through with the finalizing period. To solve this issue, we will create a Website which will provide you a general estimate of colleges you can get admission, and also provide with an estimate cutoff for that current year to give a better idea. Also, to avoid spending money and time on Counselor and stressful research finding cutoff of each college.

5.2 Solution

The system consist of two modules, first module is for prediction and the second module consist of the recommendation phase. The aim and objective of the system is to provide an approximate idea to the user of colleges in the range of their respective scores and show predicted cut-off of current year. The design details or flow of the system is given in fig 1.

In the first phase or module of the system that is the prediction phase Simple Linear Regression algorithm is used for prediction of cut-off for current year based on the previous year cut-offs as shown in fig 2. The second module of the system is the Recommendation of college phase where the student is recommend with a list of college based on various factors like the student marks, location, fees and caste. The student marks are compared with the predicted cut-offs to get eligibility of student and recommend college based on marks and merit

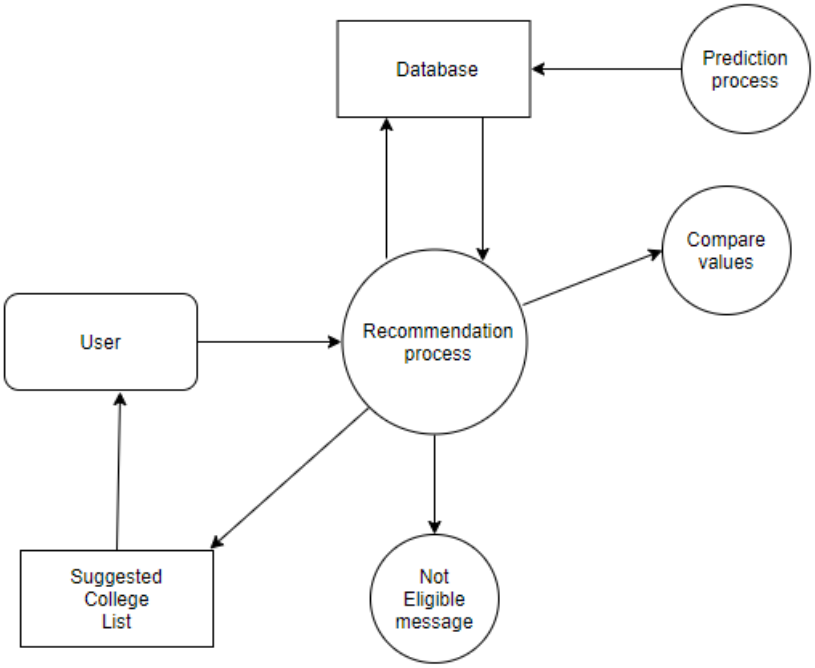
Database
Prediction process
Compare values
User
Recommendation process
Suggested College List
Not Eligible message

Fig 1

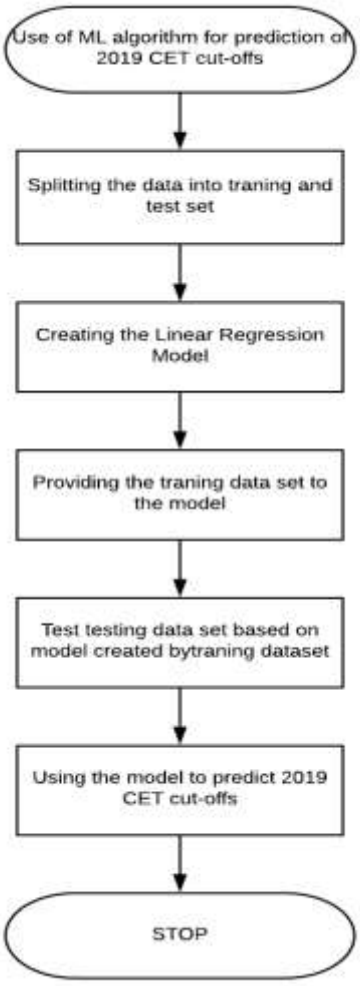
Use of ML algorithm for prediction of 2019 CET cut-offs
Splitting the data into traning and test set
Creating the Linear Regression Model
Providing the traning data set to the model
Test testing data set based on model created bytraning dataset
Using the model to predict 2019 CET cut-offs
STOP

Fig 2

5.3 Need

Students who are opting to pursue a particular field in particular college should have a clear vision that he/ she will able to get admission in that college with the marks he/ she obtained.

Students also do not need to take extra effort about finding the cut-off of a particular college by themselves. It also helps in providing extra information where he/she will get admission all the colleges available on their marks.

VI. Conclusion

Educational organizations are one of the important parts of our society and playing a vital role for growth and development of any nation. For that getting appropriate college is of foremost importance. Hence proposing a system which involves machine learning, data analysis and data mining techniques. Machine learning is used for prediction of cutoff. Recommendation system is a part of data mining techniques which we have used to find result from the predicted cutoff. It includes machine learning and data mining techniques for filtering data and presenting the required information. This project aims at presenting a framework of system which can recommend best engineering colleges on merit of students.

6.1 Future Scope

- Future scope of the project is bright if carried out with a bigger team and received sponsorships from organizations with tie-ups to the government.
- Real time data can be obtained and more information about colleges can be provided.

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