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Institute Recommendation System Based on Online Review Comments and Machine Learning

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Abstract: ***Recommendation system has become a necessity in real world. In recommendation system, we are searching any product based on the reviews, if any product shows the best ratings, then we can select that product. Recommendation system has been used in wide range of application like, amazon, Netflix, Flipkart, Facebook etc. Now institution also become a part of recommendation system. In institution recommendation system, we select those colleges which is having a best reviews, which meets our eligibility criteria and our branch also. Recommendation system helps the user to discover the information and settle on a right choices where they do not have the required learning to judge a specific item. Only Naves Bayes algorithm is best algorithm in this system that we can easily check, and recommends them. This system has been used in education.***
Keywords: Artificial Intelligence, Machine Learning, Artificial Immune System, Naives Bayes, Decision Tree, Collaborative Filtering, Content Filtering, Hybrid Filtering.

I. INTRODUCTION

A. Institution Recommendation System

In this technical world, many techniques are used by humans for some purpose. There are many softwares, many applications are developed for human being. In this way students get confused about the colleges which we have to select, depending on this eligibility criteria, students get confused for selecting those colleges.

Because of inappropriate information understudy are unable to get the branch or college of their choice. Some students get the colleges and some not. So, this recommendation system is used to fill the choice based on the reviews. So, this system is designed for school, college, university because, we will get more clear based on which branch or school is appropriate for admission and therefore for their further studies.

In Institution Recommendation System, the challenging task is to collect the database of all colleges. Generating the list of colleges from all colleges requires to eliminate those colleges in which the candidate is not eligible.

Recommendation System is a system that user selects those items based on this review. For example, Flipkart, Amazon, Netflix, Facebook, LinkedIn etc. In recommendation system, user will select the items based on the reviews and administrator will check the items based on this review and many users will recommend to other user with same items who has used the same items which they like. E-learning platforms also works the Recommendation System.

So, in this system, one student has selected many choices in this websites according to the reviews and that college administrator will receive this list of colleges which has been selected by the user, and they will check the eligibility criteria if it meets, if it is met then they will allotted for admission, otherwise, it will not. Many users gives the same college to other users and college administrator will check only reviews who have used this same college name according to our branches and generating the list of those colleges in this websites based on the recommendations.

B. Types of Recommendation System

There are 3 types of Recommendation System

1) *Collaborative Filtering:* Collaborative Filtering focuses on collecting and analyzing data on user behavior, activities, and preferences, to predict what a person will like, based on their similarity to other users. To plot and calculate these similarities, collaborative filtering uses a matrix style formula. An advantage of collaborative filtering is that it does not need to analyze or understand the con content. It simply picks items to recommend based on what they know about the user. Same way we can use in College Recommendation System. In this, one student have selected one college and he/she have described about the colleges and given a ratings. So he/she will recommend the same colleges to the other user. The Collaborative Filtering strategy works by creating a matrix of user-item of user preferences for objects. For example, a user is watching a movie which has one author from Netflix, and he likes it. So he/she can recommend a movie to the other user who wants to watch this movie.

2) *Content Filtering:* It is another type of recommendation system which works on the principle of similar content. If a user is watching a movie, then the system will check about other movies of similar content or the same genre of the movie the user is watching. Institute Recommendation System is also used for this content based recommendation system. In this system, only same college with different locations will recommend to the users. Content Based works only contents and in collaborative only users behavior will work.
3) *Hybrid Filtering:* Hybrid recommender system combines two or more recommendation strategies in different ways to benefit from their complementary advantages. It works as a combination of content and collaborative filtering. So Institution Recommendation System is also used in this system.

C. Importance of Recommendation System For Education

Recommendation System is useful for education and it helps to reduce the stress of choosing the list of choices having multiple reviews. Naves Bayes Algorithm is the best algorithm for College Recommendation System as it divides into two parts, that is positive and negative. This algorithm works on the conditional probability. This system achieves competitive advantages by understanding what a user wants. This system will figure out about the reviews at a time of giving a feedback. All of these performs the same actions, they are system that predicts what user wants by analyzing their behavior which contains information on past references. It increases user satisfaction, increases loyalty and share of mind, reduces churn and increased sales or conversion.

II. SYSTEM ARCHITECTURE

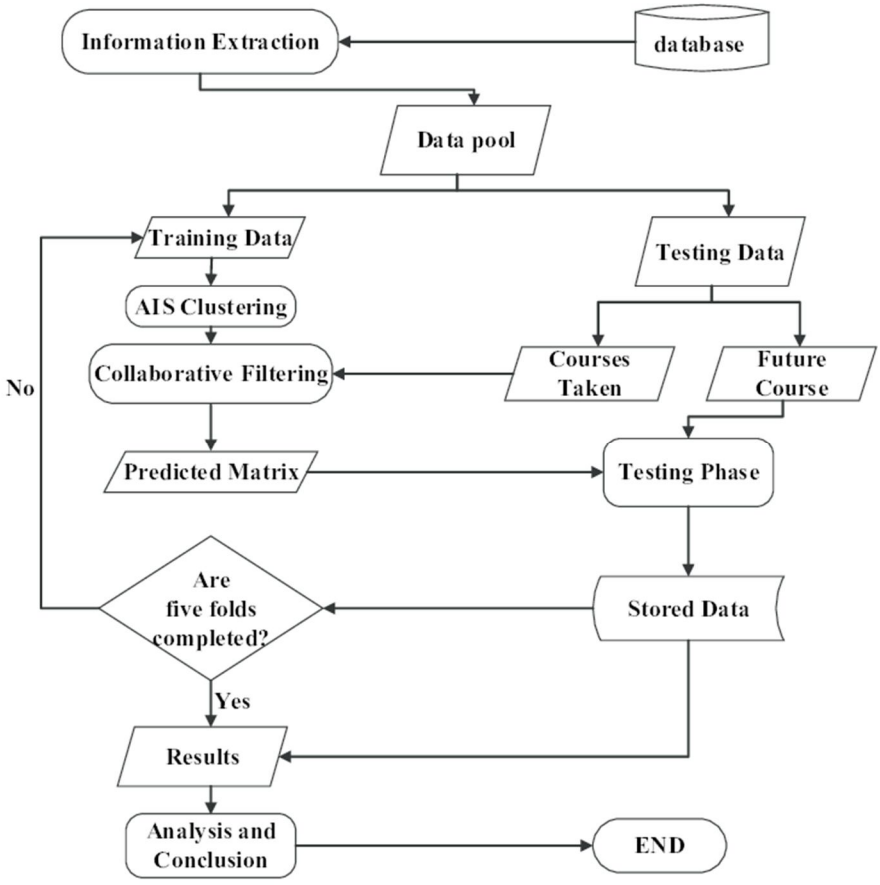

Fig: System Architecture of Institution Recommendation System

In this diagram, we use training and testing data. So first, we have a data in csv format. We have extracted all the data into the database and we have divided these data into training and testing the data. So in training phase, we have processed training data and goes into AIS Clustering, that is Artificial Immune System Clustering.

So, in Artificial Immune System, the members of data pool to be clustered are plotted and the distance between them is measured by the inverse of their affinity. It is a class of computationally intelligent, rule based machine learning system inspired by the principles and processes of the vertebrate immune system. The field of Artificial Immune System (AIS) is concerned with abstracting the structure and function of the immune system to computation system, and investigating the application of these systems towards solving computational problems for mathematics, engineering, and information technology. After that it is processed as Collaborative Filtering part, this system will check the ratings and the reviews of user and it will go to the predicted matrix, and then we will test all these training phase to the testing phase and check whether all these five holds are completed, If it is completed, then our result will come and conclusion will be outcome, and if it is not, then we will go to the training phase again. Now come to the Testing data, it has divided into courses taken and Future Course, when the students have chosen the course which he likes it, and after that user will recommend and giving a ratings for this course, then course taken will come towards the collaborative filtering or in simple words, collaborative filtering will work for course taken and we will test this course in future course and after that it will store to the Testing phase. Then we will check that whether the testing phase is matched for these five holds. If it is matched as per students choice, then it will come to the result and it will analyze the data with the help of predicted matrix.

III. ALGORITHM USED

We are using Naives Bayesian's and Decision Trees which are useful to solve the problem. Because this is the most popular algorithm which is used for College recommendation System. So in Naives Bayesian Classification, we use conditional approach to have a two probabilities, one is positive and other is negative. So, the system has divided into two parts regarding for reviews. One is highest review and other is lowest review. and this will help to identify the ratings which have high and thus we can filtered out those colleges which are having a lowest accuracy. While in Decision Tree, it is a specific type of probability tree that enables users to make a decision about some kind of process. This algorithm deals with the College Recommendation System and it is a Supervised Machine Learning. This Machine Learning is used in this system so that we can easily predict the data of those colleges, we can train and test the data, and some classification has been used in this system.

IV. ADVANTAGES OF COLLEGE RECOMMENDATION SYSTEM:

A. The accuracy of Recommendation System is good.
B. This system is designed that will help the students to improve the choices of courses.
C. Naives Bayes and Decision Tree is used in this system to predict the data.
D. Colleges are ranked based on this platforms review and rating
E. We can easily choose the list of colleges.
F. The type of Recommendation System will help to improve the user's choice from the list of colleges (Collaborative Filtering, Content Filtering, Hybrid Filtering).

V. RESULT

This is the best system for university which will help use to find the list of colleges based on the reviews and Machine Learning and Artificial Intelligence will work in this system. Decision Tree and Naives Bayes is the best algorithm and with the help of this, we can easily predict those data and can decide which college will be the best based on the score. The accuracy of recommendation system is 69%.

VI. FUTURE SCOPE

This system will be helpful for a students. More higher educational student will be able to take advantage of our system for future and thus we can easily use this system to fill the choice for school, colleges and we can update more process to make this system efficiently and accuracy. And we can add more algorithms like KNN, Support Vector Machine etc.

VII. CONCLUSION

Thus we have studied about the concept of Recommendation System and we have studied about how Recommendation System has been used in college and university. Recommendation System is used to recommend those items to the user which is having a high ratings and reviews. Collaborative Filtering, Content Filtering and Hybrid Filtering are the three types of Recommendation System. We have used some popular algorithms like Naives Bayes and Decision Tree which will help us to improve the process and reduces the time for searching it. Artificial Intelligence and Machine Learning has been used for this system.

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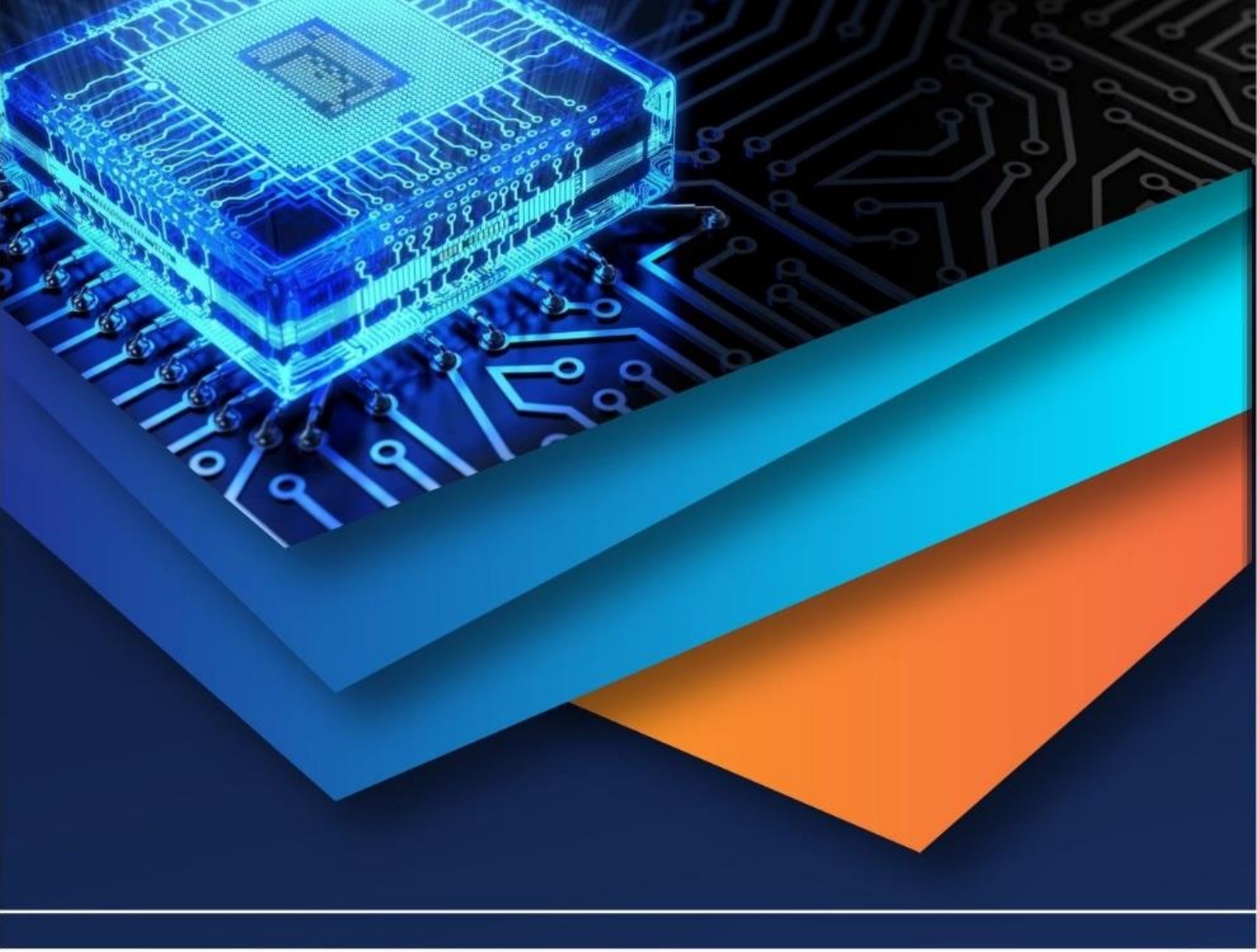

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