

A Review: Data Mining Technique Used In Education Sector

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ABSTRACT: Data mining is the process of finding of hidden information from a huge amount of data. Data mining analyzing the data from different source and convert it into meaningful information. Data mining is a new powerful technology that helps business to focus on important information like future trends, decision making, customer choice etc. There are a lot of advantages of data mining technique in education sector. Some advantages of data mining in education sectors as follows Data mining techniques helps to predict the grades, final results of the students. It also helps to find the interest area of student. It also helps to find the performance of student in various fields. Data mining is used in education sector to manage the record of students in efficient way. In this paper we are representing the data mining technique like classification and clustering using educational dataset to manage the information of education system.

KEYWORD: Data Mining, Classification, Clustering, Benefits.

I. INTRODUCTION

Data mining is the process of finding of hidden information from a huge amount of data. Data mining analyzing the data from different source and convert it into meaningful information [1]. Data mining is a new powerful technology that helps business to focus on important information like future trends, decision making, customer choice etc. A target dataset is prepared before applying the data mining algorithm. The common source of data is the data warehouse. Pre-processing is needed to analyze the data sets before applying the data mining.

The data mining process as follows shown in figure 1:

- Data is collected from the different source and combined in one data store called the data set or target data.
- Data is then pre-processed and transformed into the required format.
- The data mining technique are applied on the transformed data.
- The output is finally presented in forms of tables and graph called the knowledge or information.

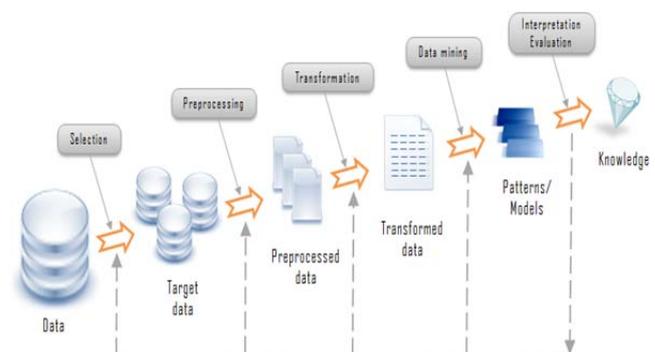


Fig.1 process of data mining [2]

II. DATA MINING IN EDUCATION SECTOR

The data mining technique are applied in a number of fields likes in sales/marketing fields helps to find which product were bought together and in which sequence, in banking and finance sectors helps to retain the credit card of the customer, in transportation helps to analyze the loading patterns, in medical area it helps to identify which therapy is successful for which deceases but now a day's also used in education sectors. There are a lot of advantages of data mining technique in education sector. Some advantages of data mining in education sectors as follows [3]:

- ❖ Data mining techniques helps to predict the grades, final results of the students.
- ❖ It also helps to find the interest area of student.
- ❖ It also helps to find the performance of student in various fields.
- ❖ It also helps managements to pre-planning of the business.
- ❖ Data mining is used in education sector to manage the record of students in efficient way.
- ❖ Data mining used to classifies the institutes.

There is various application of data mining in education sector. Data mining methods like prediction, clustering, classification, association rule, decision tree and relationship mining are hugely used in the field of marketing and finance. In the figure 2 shows how the data mining can be used in education sector.

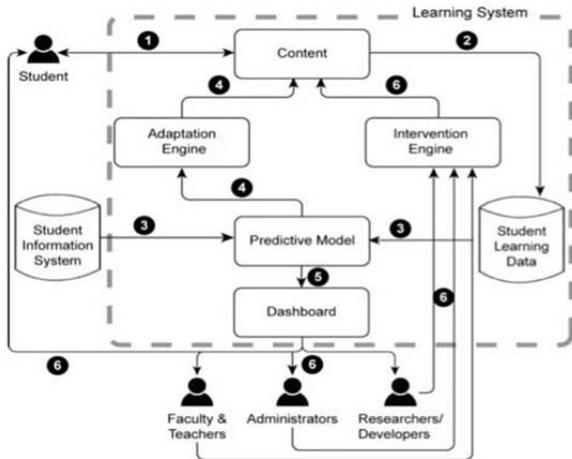


Fig. 2 Data mining applications in the education sector

III. DATA MINING TECHNIQUES

There are various data mining techniques that have been developing and used in data mining projects lately. These include classification, clustering, and association.

IV. CLASSIFICATION

Classification commonly used data mining technique, which is used to develop a class and assign each set of data to a particular class in figure 3. The classification based on learning and classification [4]. In the learning the classification algorithm analyzes the data. In classification to check the accuracy of classification rules the classification test data are used and if the accuracy is good then rules are applied on the new data tuples. For example: the bank officer wants to analyze the customer that which are safe and which are risky.

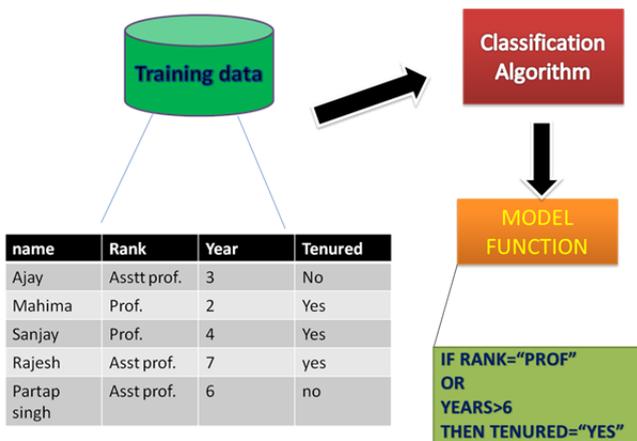


Fig .3 classifications

Types of classification techniques:

- Bayesian Classification
- Classification by decision tree induction
- Support Vector Machines (SVM)
- Neural Networks

V. CLUSTERING

Clustering is a data mining technique which is used to identify the object of similar classes in figure 4. The clustering technique finds the classes and assigns each object to a particular class. It is a main task of data mining and a common technique used in many fields likes to recognize the patterns, to retrieve the information, image analysis and in bioinformatics. Cluster analysis is not specific technique but it can be achieved by several algorithms [5]. Cluster analysis is iterative process of knowledge discovery that involves trial and failure. It will be essential to change the data pre-processing and model parameters to achieve the desire results. Sometimes used to produce a set of cluster where a cluster is broken into several sub-cluster. So that clustering is sometimes also viewed to find the most tightly connected point. Clustering methods try to find out the approximate or local solution of a problem. A good clustering method will produce the high quality clusters which contains the intra-class similarity is high and inter-class similarity is low. The quality of clustering is also depends on its ability to discover the hidden patterns.

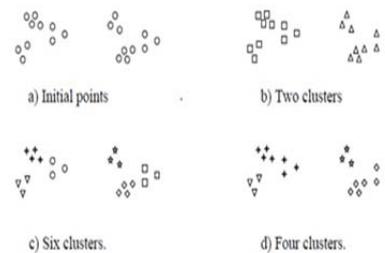


Fig: 4 clustering [6]

Types of clustering technique

- Partitioning Methods
- Hierarchical Agglomerative (divisive) methods
- Density based methods
- Grid-based methods
- Model-based methods

VI. ASSOCIATION

Association rule mining technique is used to find the most frequent item in the large data set. The main goal is to find interesting association and correlation between a large data set. The association rule helps to make decisions such customer shopping behaviour, loss leader analysis and catalogue design. Association rule need to generate rule with value less than one. Now a day's many companies are being interested in association rule to increase the profits. The association rule is easy to use and helps to improve the profits of companies.

Types of association rule

- Multilevel association rule
- Multidimensional association rule
- Quantitative association rule

VII. CONCLUSION

Data mining is decision making process used to find the useful pattern of information. Also we can say that data mining having many importance regarding finding the patterns, forecasting, discovery of knowledge in various business areas. Data mining techniques such as classification, clustering, association also helps to find useful information in education system and managing information in effective way. The data mining algorithms in education field used for the improvement in the performance of student and the institution.

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