DATA MINING APPLICATIONS IN EDUCATIONAL FIELD

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Abstract— In this paper, we are going to use data mining for effective database techniques. There are three data mining techniques; these are classifications, clustering, and association. In addition, we have discussed about how the data mining helps in education and health sectors. In education, it used to manage the record of students in effective way and in the health sectors, it has, important role in diagnosis and prediction of the diseases plays a significant role in prediction and diagnosis of the diseases.

Keywords: Data mining, clustering, prediction

I. INTRODUCTION

Data mining is the way toward finding of hidden information from a big amount of information. It used to investigate from the data from various source and convert it into important data and another innovation that causes business to concentrate on significant data like future patterns, basic leadership, and client decision and so on. Before analyzing applying the data mining algorithm we must know our target dataset. In addition, to analyze the informational collections before applying the data mining. Data Mining can be used in variety sectors such as education and health sectors.

II. LITERATURE SURVEY

Data mining is defined as a process of extracting exciting knowledge from huge amounts of data stored in several data sources such as databases, file systems, data warehouses and so. Data mining tools forecast future movements and behaviors, allowing dealings to make knowledge-driven verdicts [1].

Data mining techniques can be enormously helpful in many areas such as business, commerce, government, education, healthcare and so on [2]. The goal of data mining is to provide useful data from huge dataset. There are steps to reach this goal, which are:

- Exploration
- Pattern identification

- Deployment

Exploration: Data is cleaned and changed into another form, significant variables and then nature of data established on the problem are determined.

Pattern Identification: Once data is discovered, refined for the particular variables the second step is to do arrangement for pattern identification. Find and select the patterns which make the best prediction.

Deployment: Patterns are deployed for desired outcome [3]. Data mining has three techniques, which are classification, clustering and association. Classification is used to develop a category and allocate each set of data to a specific class. The objective of clustering is to identify the object of same classes.

Cluster analysis can be accomplished by many algorithms [5]. Discovery with a model is a spectacle which is developed via prediction, grouping, or knowledge engineering [6]. A essential goal of educational research is recognizing students present stage of skill mastery [7].

Education Data Mining can current universities with a strong way of specific difficulties to student learning. For example, students may fail in advanced subjects as they did not learn the basic information from the prerequisite subjects [8].

III. DATA MINING IN EDUCATION AREA

The concept of data mining has more relevance because of the volume of data that is available for classification. It helps in sales/marketing fields to identify which product is widely accepted and which is least preferred.

In banking and finance areas, we can find the nature and usage of credit cards and customer preferences. Also, data mining helps to analyze the loading designs. The application in medical field it is huge. It helps to classify diseases based on symptoms and find appropriate therapy. The use of datamining in education helps us to plan the right method and the right intervention tool for the students based on the data available.
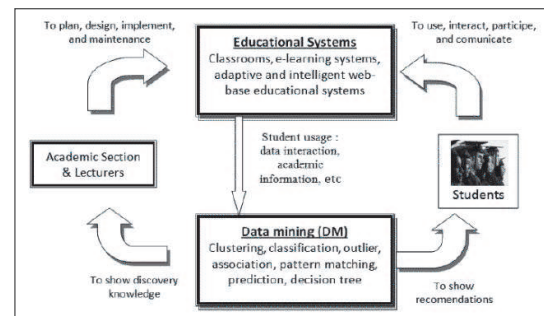

Figure 1. Data mining in educational systems

IV. EDUCATION DATA MINING METHODS

The use of technology in education has helped to impart knowledge in much easier way. The models are developed based on the data from statistics, psychology, machine learning, visualization etc. Work in EDM can be divided into two main categories:

1) Web mining
2) Statistics and visualization. Another point of view, proposed by Baker, classifies the work in EDM as follows:

1) Prediction.

   • Classification.

   • Regression.

   • Density estimation.

2) Clustering.

3) Relationship mining.

   • Association rule mining.

   • Correlation mining.

   • Sequential pattern mining.

4) Distillation of data for human judgment.

5) Discovery with models.

V. CONCLUSION

Data mining is a way to find a hidden and important information from huge data. In addition, there are different data mining techniques, which are classifications, clustering, and association. Data mining helps and can be used in different sectors such as education.

REFERENCES

[1] Ravikumar G K, Manjunath T. N, Ravindra S. Hegadi and Umesh I.M, "Cross Industry Survey on Data mining Applications", Ravikumar G K et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 2 (2) , 2011, 624-628.

[2] Bhoj Raj Sharma, Daljeet Kaura and Manjub, "A Review on Data Mining: Its Challenges, Issues and Applications", International Journal of Current Engineering and Technology ISSN 2277 – 4106.

[3] Mrs. Bharati ,M. Ramageri,"DATA MINING TECHNIQUES AND APPLICATIONS", Bharati M. Ramageri / Indian Journal of Computer Science and Engineering Vol. 1 No. 4 301-305.

[4] Johina ,Vikas Kamra, "A Review: Data Mining Technique Used In Education Sector", Johina et al, / (IJCSIT) International Journal of Computer Science and Information Technologies, Vol. 6 (3) , 2015, 2928-2930.

[5] Amandeep Kaur Mann, Navneet Kaur, "SURVEY PAPER ONCLUSTERING TECHNIQUES", International Journal of Science,Engineering and Technology Research (IJSETR) Volume 2, Issue 4, April 2013.

[6] S. Anupama Kumar and M. N. Vijayalakshmi, "RELEVANCE OF DATA MINING TECHNIQUES IN EDUCATION SECTOR", International Journal of Machine Learning and Computing, Vol. 3,No. 1, February 2013.

[7] Tiffany Barnes,Michel, Desmarais, Cristòbal Romero, and Sebastiùn Ventura, "Educational Data Mining 2009", 2nd International Conference On Educational Data Mining,Cordoba, Spain, July 1-3, 2009.

[8] Abdulmohsen Algarni, "Data Mining in Education", (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 7, No. 6, 2016.

[9] Suhirman, Jasni Mohamad Zain, Haruna Chiroma, and Tutut Herawan, " Data Mining for Education Decision Support: A Review ", i-jet.org, Volume 9, Issue 6, 2014

[10] Andrés Villanueva Manjarres, " Data mining techniques applied in educational environments: Literature review ", Digital Education Review - Number 33, June 2018