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EDUCATIONAL DATA MINING IN THE FIELD OF HIGHER EDUCATION-A SURVEY

Nupur Bhagoriya*, Priyanka Pande
* Computer science & engineering, acropolis institute of technology & research, Indore (m.p.), India

ABSTRACT
As we know that in today the higher education is important for every human being. The new trends and techniques are playing very crucial and important role to improve the quality of higher education. Now we need some more sophisticated and emerging trends that turns to improve the quality of higher education. Educational Data Mining is one of the emerging trends that concerned with developing methods for exploring the unique types of data that come from educational settings, and using those methods to better understand students, and the settings which they learn in.

KEYWORDS:, Educational Data Mining, higher education, data mining.

INTRODUCTION
There is an increase in the e-learning resources, instrumental educational software, the use of the Internet in education, and the establishment of databases of student information has created large amount of data. The data gathered by this process provides a large resource of educational data that can be explored and understood as to how students learn. In fact, today, one of the biggest challenges that educational institutions face is the dynamic growth of educational data and the use of this data to improve the quality of decisions that are taken for the welfare of the students. Educational data mining (EDM) deals with the developing, researching and applying the computerized methods to detect patterns in large collections of educational data that would be impossible to analyze as because of the very large amount of data that is gathered because of data mining. Educational data mining has been recognized as a research area as they are aimed at analyzing the unique kinds of data that arise in educational systems and help them to resolve the educational research issues like they did in Baker and Yacef, 2009. In fact, EDM, can be defined as the application of data mining (DM) techniques to this specific field that comes from educational environments to address important educational questions. Educational data mining analyzes data generated by any type of information system supporting learning and education (example schools, colleges, universities, and other academic or professional learning). These data are not limited to interactions of individual students with the educational system (example:- navigation behavior, input in quizzes and interactive exercises) but might also include data from students (example:- text chat), administrative data (example:- school, school district, teacher), demographic data (example:- gender, age, school grades), student affectivity (example:- motivation, emotional states), etc. These data have particular characteristics such as multiple levels of chain of command (subject, assignment, question levels), background (a particular student in a particular class encountering a particular question at a particular time on a particular date). EDM is an interdisciplinary area including but not limited to data recovery, recommender systems, visual data analytics, domain-driven DM, social network analysis (SNA), cognitive psychology, psychometrics etc.

GOALS OF EDUCATIONAL DATA MINING IN HIGHER EDUCATION
Predicting student's future learning behavior - With the use of student modeling, this goal can be achieved by creating student models that incorporate the learner"s characteristics, including detailed information such as their knowledge, behaviors and motivation to learn.

Discovering or improving domain models - Through the various methods and applications of EDM, discovery of new and improvements to existing models is possible.

Studying the effects of educational support - It can be achieved through learning systems.

Advancing scientific knowledge about learning and learners - By building and incorporating student models, the field of EDM research and the technology and software used.

EDUCATIONAL DATA MINING METHODS

There are so many promoted methods of educational data mining but all kind of methods lie in one of following specified categories:

1. Prediction: Ryan S. J. d. Baker has given a detail explanation of prediction in his paper. He mentioned that " In prediction, the goal is to develop a model which can infer a single asp ect of data from some combination of other aspects of data. If we study prediction extensively then we get three types of prediction: classification, regression and density estimation. In any category of prediction the input variables will be either categorical or continuous. In case of classification, the categorical or binary variables are used, but in regression continuous input variable s are used. Density estimation can be done with the help of various kernel functions.

2. Clustering: In clustering technique, the data set is divided in various groups, known as clusters. When data set is already specified, then the clustering is more useful. As per clustering phenomenon, the data point of one cluster and should be more similar to other data points of same cluster and more dissimilar to data points of another cluster. There are two ways of initiation of clustering algorithm. Firstly, start the clustering algorithm with no prior assumption and second is to start clustering algorithm with a prior postulate.

3. Relationship Mining: Relationship mining generally refers to contrive new relationships between variables. It can be done on a large data set, having a no of variables. Relationship mining is an attempt to discover the variable which is most closely associated with the specified variable. There are four types of relationship mining: association rule mining, correlation mining, and sequential pattern mining and causal data mining. Association data mining is based on if- then rule that is if some particular set of variable value appears then it generally have a specified value. In correlation mining, the linear correlations are discovered betwee n variables. The aim of sequential pattern mining is to extract temporal relationships between variables.

4. Discovery with Models: it includes the designing of model based on some concepts like prediction, clustering and knowledge engineering etc. This newly created model"s predictions are used to discover a new predicted variable.

5. Distillation of Data for Human Judgment: There are two objectives for human judgment for which distillation of data can be done: Identification and Classification. As per p henomenon of identification, data is represented in a way that human can easily recognize the well specified patterns.

CONCLUSION

Data mining is a tremendously vast area that includes employing different techniques and algorithms for pattern finding. The algorithms discussed in this paper are the ones used in education mining. These algorithms have shown a remarkable improvement in strategies like course outline formation, teacher student understanding and high output and turn out ratio. ICDM conference encourages employment and development of algorithms helpful in data mining. An appreciable research is still being done on various algorithms. I hope this review paper appreciates the current algorithm researchers and inspires the new ones to explore further.

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