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RESEARCH ON IMPROVEMENTS OF EDUCATIONAL SYSTEM IN EDUCATIONAL DATA MINING

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ABSTRACT: In the research area, the educational data mining is a sub domain of the data mining. Education is the standardize process for providing knowledge, skills, values, beliefs as well as habits. Educational data mining process converts data coming from different educational systems, such as traditional classrooms, e-learning and intelligent tutoring systems into information that may be useful for researchers, professors, institutions and students on understanding and evaluating educational systems, aiming for improving the quality of the educational process. In this paper we are doing research on improvements of education system.

Keywords: Data Mining, Educational Data Mining

I. INTRODUCTION

Educational Data Mining (EDM) is a new trend in the data mining and Knowledge Discovery in Databases (KDD) field which focuses in mining useful patterns and discovering useful knowledge from the educational information systems, such as, admissions systems, registration systems, course management systems (moodle, blackboard, etc...), and any other systems dealing with students at different levels of education, from schools, to colleges and universities. In this educational data mining field, the researchers are focused on discovering useful knowledge either to help the educational institutes manage their students better, or to help students to manage their education and deliverables better and enhance their performance. Analyzing students' information as well as statistics to categories students, or to create selection timber or affiliation policies, to make better choices or to decorate scholar's overall performance is an exciting discipline of research, which specially specializes in reading and knowledge students' instructional information that indicates their instructional performance, and generates unique policies, classifications, and predictions to help college students of their future instructional performance. Classification is the most familiar and simplest records mining technique used to classify and is expecting values. Educational Data Mining (EDM) isn't any exception of this truth, as a result, it became used in this studies paper to analyze accumulated college students' data through a survey, and provide classifications primarily based on the amassed statistics to expect and classify students' overall performance in their upcoming semester. The objective of this have a look at is to perceive relations among college students' personal and social elements, and their academic overall performance. This newly observed understanding can help students in addition to instructors in sporting out better more advantageous educational excellent, via identifying possible underperformers at the start of this mester/year, and follow extra interest to them to be able to assist them of their schooling technique and get better marks. In reality, now not simplest underperformers can benefit from this research, however additionally viable properly performers can benefit from this look at by means of using more efforts to behavior higher tasks and research thro ugh having greater assist and attention from their teachers. There are multiple unique classification strategies and techniques utilized in Knowledge Discovery and statistics mining. Every approach or technique has its advantages and downsides. Thus, this paper uses multiple classification strategies to confirm and verify the consequences with two or more classifiers. In the end, the result can be selected in phrases of accuracy and precision.

II. RELATED WORK

We analyzed several EDM tools and its features in this paper as a survey. It has been introduced as an upcoming research area related to several well-established areas of research, including e-learning, AH, ITSs, WM, DM, etc. Moreover, several tools found in literature, which have been selected based on their suitability for teaching in the field of EDM. Without obvious metrics for evaluating how different approaches/tools affect the knowledge gained by students, it is hard to rank these methods according to a clear outcome. This paper provides a good overview of the outcomes intended with each approach and tool.

P.Geethalakshmi and Dhivya considered the complexity of students' experiences reflected from social media content and emphasize that the growing scale of data demands automatic data analysis techniques developed a workflow to incorporate both qualitative analysis and data mining techniques on large-scale. The paper here focusedon engineering students social media posts to understand issues and problems in theireducational experiences by implementing a multi-label classification algorithm.

M. Esteves, B. Fonseca, L. Morgado and P. Martins conducted an action researchapproach to the analysis of how does the teaching and learning of programming at theuniversity level could be developed within the Secondary Life Virtual world. Resultsappreciate the belief that it is possible to utilize virtual environment with interactivelearning for better efficacy in the cognitive programming.

E. Osmanbegović, M. Suljić, compared Different methods and techniques ofdata mining, during the presage of students' success, applying the data accumulated from the surveys conducted during the summer at the University of Tuzla. Classifierssuch as NB, MLP and J48 upon Chi-square, One R, Info Gain and Gain Ratio test areconducted. The impact

of students' socio-statistical variables, achieved results fromhigh school and from the entrance exam, and postures towardsstudying which canhave an effect on prosperity, were all investigated.

D. A. AlHammadi and M. S. Aksoy reviewed several applications ofdata mining algorithms in education and their benefits, presented some classification techniques, tested some sample data, and then evaluated them against some selectedcriteria by excluding K-Means as it has shown lesser accuracy.

V. Ramesh, P. Parkaviand K. Ramar adopted a survey cum experimental methodology was adopted to engender a database and it was formulated from a primary and a secondary origin. Utilized the implementation of Naïve Bayes, SMO, and Multi Layer Perception and J48 algorithms and found MLP as a best performer of these Algorithms. The obtained results from hypothesis testing suggested that nature of school does not have an impact on student performance and parents' vocation plays a major role in presaging grades.

S. Borkar and K. Rajeswari evaluated students' performance by means of association rule mining. A Multi-Layer Perceptron Neural Network is utilized for selection of interesting features using 10–fold cross validation. It is observed that in association rule mining important rules generated using these selected attributes and correctly classifies when apriori is applied to it.

III. EDUCATIONAL DATA MINING

The educational data mining process architecture is given below.

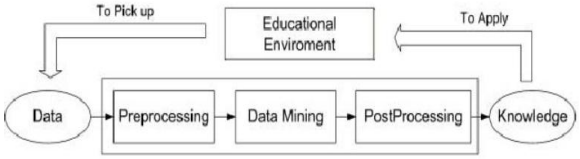

Fig1. Educational Data Mining Process Framework

The major components of the Educational Data Mining (EDM) are;

- Stakeholders of Education
- DM Methods-Tools and Techniques
- Educational data
- Educational task

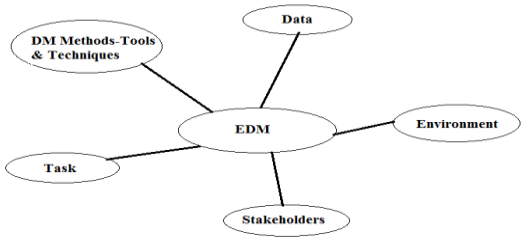

Fig2. Components of EDM

1. Stakeholders of Education

Stakeholders are divided into 3 groups:

Primary group:

This group is directly involved with teaching and learning process. E.g., Students (learners), Faculties (teachers / learners, educators etc)

Secondary group:

This group is indirectly involved in the growth ofthe institution. E.g., Parents and Alumni

Hybrid group:

This group is involved with administrative/decision making process e.g., Employers, Administrator/Educational Planner, and Experts

2. DM Methods

DM methods are one of the main components in EDM. As per the different purpose it can bebroadly divided into two groups:

Verification Oriented

Traditional Statistics- Hypothesis test, Goodness of fit, Analysis of Variance etc

Discovery Oriented

Prediction and Description- Classification, Clustering, Prediction, Relationship Mining, Neural Network, Web mining etc

3. Educational Data

Decision-making in the field of academic planning involves extensive analysis of huge volumes of educational data. Data's are generated from heterogeneous sources like diverse and distributed, structured and unstructured data.

4. Educational Task

Task is a continual process for formation of Vision and Mission of an institution, to nurture the talent of students which addresses issues in a responsive, ethical and innovative manner to meet the academic as well as administrative objectives.

IV. EDUCATIONAL DATA MINING USERS

Various people are involved with educational data mining of which there are four main users and stakeholders. These include:

Learners:

Learners are interested in understanding student needs and methods to improve the learner's experience and performance.

Educators:

Educators attempt to perceive the learning process and the methods they can use to improve their teaching methods. Educators can utilize extensibility of EDM to determine how to organize and structure the curriculum, the best methods to present course information and the tools to use to engage their learners for optimal learning outcomes. In particular, the purification of data used for human judgment technique give an opportunity for educators to get benefit from EDM because it helps educators to quickly identify demean our patterns, which can fortify their teaching methods during the tenure of the course or to improve future courses. Educators can decide on indicators that show student gratification and engagement of course material, and withal monitor learning progress.

Researchers:

Researchers fixate on the development and the evaluation of datamining techniques for efficacy.

Administrators

Administrators are responsible for allocating the resources for implementation in institutions.

V. CONCLUSION

Data mining is a powerful analytical tool to beautify choice making and studying new styles and relationships for agencies. And EDM contains techniques which include information mining, records, machine learning. Data mining wants to analyze statistics coming from teaching as well as mastering, tests gaining knowledge of theories, and coverage decision-making and so forth. There are some of opportunities exist in EDM, from an evaluation at organizational degree to the evaluation at character stage. What's extra, EDM is widely used and applied by learners, researchers and instructors, organizations.

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