A Study on Predictive Analysis on Concept Maps using Data Mining Techniques

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ABSTRACT: This is survey of concept mapping as a tool to characterize the concepts, the positive impacts of concept mapping on student's meaningful learning. A concept map is a simple visualization of information in a matrix space with a small number of variables. This concept map uses methods like clustering, classification, decision tree, association rule mining. One of the methods used for visualizing textual data is the concept map. This map can be considered to group related concepts. Including majors are Apriori direct hashing and pruning, FP-Growth, ECLAT etc., Using principle component analysis(PCA) is to reduce of dimensionality of the dataset and consisting of the large number of data, Some several criterion like Decision Making/Analysis (MCDM/A) will be addressed in to well-ordered concept, emphasized on the affiliation between the acquaintance and methods are studied.

KEY WORDS: Concept Map, Data Mining, Data Visualization

I.   INTRODUCTION

This paper mainly deals with the description of concept map in educational settings to maintain student learning. The concept map is graphical representations of knowledge structure, where nodes donate concepts and link represent the association between them. Educational data mining is very significant area of the research and pertinent to the large educational data representations. For example will the student complete his degree or not? The process of erudition has been declared to the individual effort. Data mining techniques have been used to give new insight for his problems. Analysis of student performance can help in the decision making process or other words targeting the right students. The data stored as information in different techniques such as the knowledge detection in databases (KDD), Data Mining (DM) and process Mining (PM).

Multiple Criteria Decision Making/Analysis (MCDM/A) method is obtainable information processing and more helpful in decision – making by using concept maps. From educational data finding out the motivating patterns and the educational organization, providing the quality of their own implementation techniques improves quality of education mining. The data mining is helpful to pull out the knowledge from the accessible data set.

II.   LITERATURE REVIEW

Amirah Mohamed shahiri, Wahidah Husain, Nur aini Abdul Rashid [1], The proposed system for educational data mining technical method mostly to predictive concept modelling. Usually used to acquaintance level of predicting student performance. It is used for classification, regression, categorization and applications. The algorithms used from data mining are Decision tree, Artificial Neural Network (ANN), Naïve Byes, K-nearest Neighbour and Support Vector Machine (SVM).

Cleiton Ferraro Dos Santos, Flavio Piechnicki, Eduardo de Freitas Rocha Loures, Eduardo Alves Portela Santos [2], Have worked on Multi-Criteria Decision-making (MCDM), Multiple Attribute Decision-making (MADM), Multiple Objective Decision-Making (MODM). The AHP method is most powerful for the qualitative technique to allow the decision maker process. The advantage of this process mining method is analyzing the plant procedures from the information system.

Amjad Abu Saa [3] Studies Educational Data Mining (EDM) a new trend in the data mining and KDD these fields focuses on mining useful patterns discovering the useful knowledge from the educational information system. This method contains the different level of student educational systems such as admission system, classification of registration system, course management system, data analysis. The student data is classified and then creates the decision tree followed by discovery of association rules. It uses multiple algorithms and patterns of applications to find the qualitative methods and it predicts the student performance based on the personal, social factors.

Ali Dauad, Naif Radi Alijohani, Rabeeh Ayaz Abbasi, Miltiadis D. Lytras, Farhat abbas, Jalal S. Alowibdi [4] Their proposed system used learning analytic methods. The methods are Support Vector, Discriminate, Classification and Regression, Bayes Network, Naïve Bayes. This method involves two types of categories: first one is discriminate and the second one is generative. The discriminate models are used for unsure analysis based on the basic frequency. It uses for multiple concepts and application to find the prediction components.

Ankit Soni, NeesJan van Eck, Uzay Kaymak [5] One of the classification methods Data Visualization used for visualize textual data is the concept map. Data mining techniques using concept maps are often used in acquaintance domain apparition to elaborate the debate including analysis of the relationship between the another commonly used methods with the visualization method. This method is mostly referred to multidimensional scaling (MDS). The SVM applications can be wholesale to nonlinear classifiers by applying kernel mapping. It classifies high - dimensional space to match to the non-linear classifiers in the original feature space.

R.Sumitha, E.S.Vinothkumar [6] apply WEKA tool for computational and emotional research approaches in perceptive of how students learn. These methods are scheme to progress the students records using k-means clustering algorithm and grouping cluster to no future routine prediction. Then WEKA explorer application is used in this stage as open source software that apparatus a large collection of machine learning algorithm.

Anal ACHARYA, Devadatta SINHA [7] Proposed, EDM method a web based learning system. Data mining concept is used to study synergistic possessions in enhancing learning. It is found that the adapted learning environment uses EDM. The methods are compared to combine learning for concepts of web map environment. The following two applications P-Learning and C-Learning are applied in EDM. The advantage of mobile infrastructure in late of 70's gave birth to device like personal digital assistant (PDA) and smart phones using (M-Learning).

Dr.Sankar Rajagopal [8] Uses clustering segmentation analysis methods as one of the most momentous methods. It is used in students promotion methodology driven studies using statistical methodologies, this statistics neural network genetic algorithm (GA) does demographic clustering of the customer data, cleansed to develop the patterns using choice of parameters and afterwards to phase profiled the data to develop the clusters and notorious the high value of low risk customers. A low - profit high -value and low-risk customer division is also an attractive one to augment the profitability for this segment

Janardan, Shikha Mehta[9] proposed, enhancing drift detection methods. These methods uses algorithm for classification of streaming data, the massive amount of data is being generated on diverse applications across the internet in every 60 seconds. These results shows, there is a data scope for research region as the performance of the possibility based on the machine learning and classifications. The advantage is that notorious tools are currently being used in fields of big data analytic stream.

TB. Ai Munandar, Harsiti, Roy Amrullah Ritonga[10] In their proposed system, C4.5 classification methal is used to learn analyze the statistical data. Decision tree algorithm is used to analyze the different plan testing phase to develop the functionality of the system and the design system of the applications.

Evangelia Gouli, Agoritsa Gogoulou, Kyparisia Papanikolaou & Maria grigoriadou[11] Proposes that, classification and relational methods are imperfect to the hierarchical maps and takes into account valid map apparatus, COMPASS aims to consider the learners perceptive as well as partition the learning method for maintenance process to provide various activities and addressing specific learning outcome. They are using the CDP applications concepts map to the pecialist map calculated by these methods.

Forough Farazzmanesh (Isvand) [12] uses combination of methods and techniques intended to study the client data sets. The first grouping of its kind to focus completely on great data set logical to analyze value networks. The data mining tool is to classify the value of entity of the network and its value flows in the telecommunications using the methods. Particularly in CRM and marketing in recent value networks fields. New methods of value network relate to the data mining quantitative data, multi-dimensional submission are used in this concept.

Victoria Kayser,Knut Blind [13] uses clustering methods for accessible data and the works concentrates on textual data and consider the put together other stakeholders. This method are one of the text mining methods can be seen as disciplined of improving insight methods. This technology diffuses user reception, combines road mapping and text mining to extend internal views.

Said Nawar, Abdul M.Mouazen[14] Proposes Multivariate Adaptive Regression Spine (MARS) methods for the mainstream of categorization of data sets scales with used the attributes of Lowest model performance of SFD. In this method, experimental work is carried out for soil measurement and soil samples, and analyzes the field level and total carbon.

Paresh tenna[15] Apriori method is one of the most frequent pattern mining approach for newer algorithm development. Association rule mining is becomes one of the significant responsibilities for this concept, the aim of the work to analyze the existing work for frequent pattern mining and evaluate the performance by comparing the Apriori and DHP algorithms to find out the candidate generation and tree pruning.

Gessica G.Burke[16] Proposes concept map process is to using traditionally involves six types of steps: preparation, generation, structuring, representation, interpretation and utilization. The majority of the participants from the concept map activities were African American (97%). This method conducted in two stages: the participant-processing stage and the researches-processing stage.

Chaman lal[17] Proposes that method principle component analysis is using synthetic data and real health datasets from UCI repository, the prediction model that have both a better fit and reduce number of attribute then those produced by using standard logistic regression alone. The goal of PCA is a procedure for identifying a smaller number of uncorrelated pattern from a large data set.

III. CONCLUSION

From these types of methods predicting student performance is mostly useful to help the educators and learners improving their learning and teaching process. Neural network and decision tree are the two methods highly used by the researchers for predicting student performance. We have used the location entry permit in the concept map as predicting techniques. This method conducted in two stages: the participant-processing stage and the researches-processing stage. It is imperative to analyze the educational data particularly students performance.

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