Data Mining in Career Counselling for Efficient and Effective Education System (EDM)

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Abstract— This is a review paper on using Data mining techniques for students in their career path and their prediction of performance .Many Techniques of data mining like Classification, Clustering, and Association Rules are used for Educational Data Mining System. Educational Data Mining is knowledge extraction from many datasets, databases and data repository in different perspective. This Paper studies many papers which surveys data mining applications and techniques that can help students for their career counseling. Weka is the powerful tool used for Data Mining Techniques. Weka J48 tool is used for decision tree classifier .Supervised Learning is used here for improving efficiency of EDM. The algorithms like classification, clustering, outlier detection, association rule, prediction etc which are used in Educational Data Mining Systems Data Mining Techniques are also here used for improving the Education System Efficiency .There is need for right counseling of student such that proper productivity of Human Resource Can be Utilized.

*Keywords—*Education Data Mining,Weka,Clustering,Classification,Association,Academic Performance (key words)

I. INTRODUCTION

Education is an attempt or effort of the senior people to spread their knowledge to the younger people of society .The data mining technique in Education System instructs the student with a right pathway to give direction to them in their brighter career in an effective way. Many Techniques of data mining like Classification,Clustering,Association Rules are used for Eductional Data Mining System.Educational Data Mining is knowledge extraction from many datasets,databases and data repository in different perspective. This Paper studies many papers which surveys data mining applications and techniques that can help students for their career counselling.Data Mining Techniques are also here used for improving the Education System Efficiency .There is need for right counselling of student such that proper productivity of Human Resource Can be Utilized . Education is an attempt or effort of the senior people to spread their knowledge to the younger people of society. The data mining technique in Education System instructs the student with a right pathway to give direction to them in their brighter career in an effective way .The database used contains records of class students of career counseling. Data Mining is the extraction of good knowledge patters from large databases, Data Repositories. Educational Data Mining System is used for Students Developing Methods

II. LITERATURE REVIEW

In Paper [1], Dorina is analyzing the performance of final year UG Information Technology course students of college & present the result which they have achieved using WEKA tool.
The Weka software is a collection of visualization tools and algorithms for data analysis and predictive modeling, in which very interactive graphical user interfaces are used for accessing its functionality.
The following algorithms like classification, clustering, outlier detection, association rule, prediction etc which are used in Educational Data Mining Systems. Data mining in educational system can be used predicting drop-out student, relationship between the student university entrance examination results & their success, predicting student's academic performance, discovery of strongly related subjects in the undergraduate syllabi, knowledge discovery on academic achievement, classification of students' performance in computer programming course according to learning style, investing the similarity & difference between schools.
Analyzing of Educational data is done by Association rule.By Using Classification Technique in educational data mining, Students can predicate their final grade .The decision tree is used to represent logical rules of student final grade.In educational data mining prediction can be used to detect

student behavior, predicting or understanding student educational outcomes. In educational data mining, Students can be grouped as per their performance by using clustering Techniques.

In Paper[2] Raheela Asif is using pattern finding for helping students to select their career path.Three types of area are used here, these are personality traits,interests and capacity.Personality traits are based on person's psychology and these are individual for person to person.Here C5 Algorithm is used which follows the rules of C4.5.It works on missing values and noisy data.Error Pruning and Overfitting problems are resolved by using C5.In Classification relevant C5 Classifiers are used.After classifier's ,Boosting of classifier's is done by using C5.0 to improve accuracy of the classfier's.Adaboost is very good boosting classifier as it use multiple Iteration to get a single composite strong Learner.In Each round every weak classifier gets strengthen as previous classifier as a weighting vector is added to weak classifier focusing to get a strong Classifier at the end of whole iterations.Conclusion of this study is that not only personality traits but students interest and capacity also improves the Career Counselling System .

This Paper [3] by Sunita B.Amer is all about Data Mining Techniques to improve student's performance and help students in selecting their Courses on basis of their performance. Here random forest, Decision tree is used to evaluate student's performance. This paper review on ID3, K-Means, Naïve Bayes, and Random Forest algorithm.Random Forest is used here for the prediction of best career for 12th pass students.

In This paper[4] Nikita Goard proposed works on finding any pattern from datasets to predict students performance behalf on their personal data and profile helpful for University Performance.Feaures which are important for university performance are only extracted from datasets. For Data Analysis data mining tools like two rule learners, a decision tree classifier, two popular Bayes classifiers and a Nearest Neighbor classifier are used and second software tool is WEKA.WEKA is a Software tool which is available for free and used for research work in Data Mining field.The main project work is to use Classification method of Data mining in Educational Data Mining System where data mining techniques are optimally used to analyze the historical and Pre University Data. Here Supervised Learning is used as target variable is known here. Bayesian Classifiers are used to predicate class Membership by probability that one sample belongs to particular class. Bayesian networks and naive Bayes are basic Bayesian algorithms. Bayesian Algorithms are used as this is simple and good for practical use in real time problems while Naïve Bayes assume that an attribute of a class is independent to other attributes.

Decision Tree Classifiers has tree like structure having roots and Leaf node. Leaf node is representing a class. Weka J48 tool is used for decision tree classifier.K-Nearest Neighbor KNN is classification method where objects are classified on basis of closest training example.KNN is Lazy Learning and simplest machine learning algorithm .An object is classified on basis of its k nearest neighbours.WEKA IBK tool is used for KNN.

Manpreet Shingh Bhullar in his paper [7] studies about the use of data Mining Techniques to predict student's graduation performance in final year at University using only pre-university marks and examination marks of early years at University,no socio-economic or demographic features are use.

III. DATA MINING TOOL

Weka is the powerful tool used for Data Mining Techniques Weka full form is "Waikato Environment for Knowledge Analysis". It is suite of Machine Learning Software which is written in Java and developed at University of Waikato, New Zealand. It is a Mix collection of Machine Learning algorithms for Data Mining Techniques. It Works on tools for data Preparation classification, regression, clustering, association rules mining, and Visualisation.Weka is available as open Source.

IV. CONCLUSION

Educational Data Mining System is very emerging area of Study in Data Mining Field. We can use data Mining Algorithms like Classification, Clustering, Association Rules for new Patterns which is helpful for students performance monitoring and for counseling students for their appropriate career plan. we can also use Data Mining Approaches in Students Counselling and Improvement and we can further optimize the number of steps for this data mining techniques for more improvement in Education System.

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