Training and Placement Portal with Student Performance Analysis

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Abstract - *Training and the placement is the crucial part of the any educational institute. It guides student to choose right career and to give knowledge, skills and meet the manpower requirement of an industry. In current system, TPOs have to collect the information and CVs of students and manages them manually. Also the task of placing maximum number of students becomes more difficult, when there are no concrete tools available to the TPO for getting insights of student's performance in the placement session. The aim of the proposed system is to simplify the process of the training and placement cell and provide students performance analysis. This system can be accessed by throughout the organization and outside of the organization with proper login provided. Proposed system is easy to maintain student record and student profile, centralized storage, better communication, involvement of faculty member, easy to sort, search and filter records and generate list of eligible students. It is aimed to analyze the student performance and suggest them improvement accordingly.*

Key Words: **Data Mining, K-means Algorithm, Placement Preparation Test, Clustering, Student Performance Analysis.**

1. INTRODUCTION

The main purpose to build this system was to help the students to progress in their performances so that students can analyze where they need to improve to secure a good placement in the near future because placement holds the most important part in a student's life. This system will have major impact upon the performance of the students, resulting in good academic results, placements and increased quality intake in the institutes. Also a system was needed for the teachers and the institute so that they can analyze what are the most important sectors they need to teach more often and which can play a major part in the placements of students. The idea of project is to develop a training and placement portal with analyzing the performance of student based on aptitude score. This can be done using K-means Algorithm. System is divided in 4 modules:

1.Student- Students are able to create and maintain their profile and give various tests.

2.Admin(Training and placement coordinator, Training and placement officer)- are able to set test, analyze the performance of students and approve or reject newly registered students.

3.Analysis- Student performance is analyzed based on the result of clustering. Clusters are created by considering the passing criteria of the each tests separately suggestions are given to the students in the form of remarks, like whether they are good in test or required some improvement.

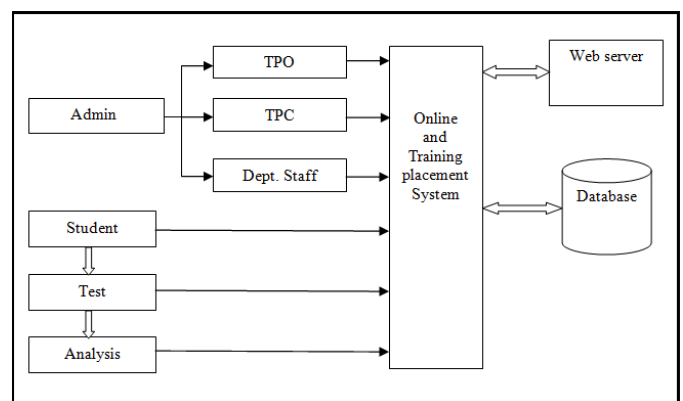4.Test- Tests are conducted through the test module.

Fig -1: Block diagram

2. RELATED WORK

Data mining has extended its successful techniques in the field of education to a great extent. A background study is done to review similar existing systems used to perform student performance analysis. Three existing system are chosen because these systems are similar to the proposed system.

2.1 Naive Bayes

A Naive Bayes classifier is a simple probabilistic classifier based on applying Bayes theorem with strong independence assumptions. Naive Bayes model identifies the characteristics of the students. The Naive Bayes Classifier technique is particularly suited when the dimensions of the inputs is high. Naive Bayes can often outperform more complex classification methods. It shows the probability of each input attribute for the predictable state.

2.2 Faculty Support System (FSS)

Shana and Venkatacalam has proposed a framework named Faculty Support System which uses cost effective open source analysis software, WEKA to analyze the students' performance in a course offered by Coimbatore Institute of Technology of Anna University [7]. Faculty Support System is able to analyze the students' data dynamically as it is able to

update of students' data dynamically with the flow of time to create or add a new rule. The update of new rule is possible with the help from domain expert and the rule is determined by data mining technique such as classification technique. Classification technique is used to predict the students' performance. Besides, FSS focus on the identification of factors that contribute to performance of students in a particular course.

2.3 Student Performance Analyser (SPA)

SPA is existing secure online web-based software that enables educators to view the students' performance and keep track of the school's data. The SPA is a tool designed for analysing, displaying, storing, and getting feedback of student assessment data. It is a powerful analyzer tool used by schools worldwide to perform analysis and displays the analysis results. The analysis is done by tracking the student or class to get the overall performance of student or class. It helps to identify the students' performance which is below the expected level, at expected level or above the expected level. This would allow the educators or staffs to identify the current students' performance easily. Other than that, it enables various kinds of students' performance report such as progress report and achievement report to be generated.

3. METHODOLOGY

In this section, we provide a detailed description about proposed approaches to Training and Placement Portal with Student Performance Analysis.
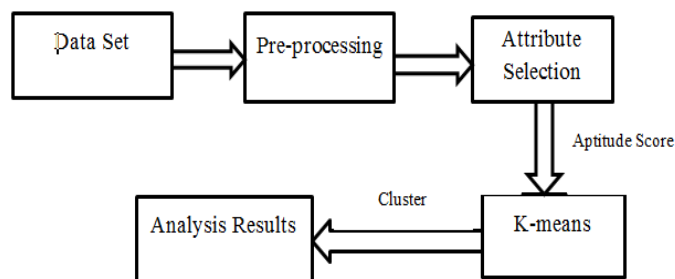
Fig -2: Analysis module in proposed system

Implementation of K-Means

For implementing K-means we have taken three attributes test_id, percentage_in_exam(obtained in test), Number of clusters. Initially cluster centroids are randomly chosen. Then initialize clusters with random points within space boundaries. For each point in a cluster, get the distance with the closest centroid that is already chosen. Choose a new random point using weighted probability distribution to assign all points to the cluster. Find mean of all the points. Move point from one cluster to another cluster depending upon the mean value. Average percentage is nothing but centroid of a cluster which dynamically selected by the Kmeans algorithm. Students having percentage_in_exam closest to the average percentage are placed into respective

clusters. Remark is given to the students on the basis of average value.

Exam Name	Duration	Date	Marks	Criteria	Details
Aptitude	15	16/03/18	20	40 %	Analyisis
Technical Test	15	17/03/18	5	50 %	Analyisis
Verbal	15	19/03/18	10	40 %	Analyisis
Quantitative	15	19/03/18	10	60 %	Analyisis
Technical_C_test	15	22/03/18	5	10 %	Analyisis

Fig -3: Result of Analysis

Figure 3 shows the result of analysis in which after clicking on Analysis button the detailed analysis of every student is shown.

Clustering Of Students On the basis of Marks

Student category 0 [1 Test Id, 24 Avg. Percentage]: **4** Students

Student category 1 [1 Test Id, 68 Avg. Percentage]: **2** Students

Student category 2 [1 Test Id, 100 Avg. Percentage]: **1** Students

Fig -4: Result of clustering

Student Name	Class	Branch	Percentage	Remark
Priyanka Vasudeo Khadse	BE	Computer Engineering	21 %	Need Improvement
Priyanka Pramod Kulkarni	BE	Computer Engineering	33 %	Need Improvement
Pratiksha Sanjay Baviskar	BE	Electronics & Telecommunication	100 %	Good In This
Raj Sunil Patil	BE	Information Technology	80 %	Good In This
Rohan Gulab Singh	BE	Computer Engineering	56 %	Good In This

Fig -5: Remarks based on analysis

Figures 4 and 5 show the detailed analysis which depicts students who has attempted the test is displayed along with their performance in the conducted test. The percentage criterion is used to check the performance of student. Based upon the percentage criteria students are grouped in respective cluster. Student's percentage marks are compared with cluster centroid and remarks are given.

3. CONCLUSION

The aim to reach Educational organizations towards Digitization will be achieved through our system. Generally the Training and Placement Officer has to face lot of problems in management of the student's data. All this data has to be managed manually, so there is a need to develop a

system that can solve the mentioned problem. The System will help the concerned department and the placement coordinator to design the strategies to improve the academic result and soft skills of students. This System will play important role in improving the overall placements of the institute. Students will come to know what subjects they need to concentrate more for the placements. The parameter taken for analysis is aptitude score. A data mining technique, clustering algorithm is applied in this system to ensure the prediction of the student performance.

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