ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 4, Issue 10, October 2015

Knowledge Discovery from Student Database using Association Rule Mining

Mahendra Sahu[1], Smita Bagde[2], Rubina Sheikh[3], Narendra Dhawade[4]

Nagpur Institute of Technology, Katol, Nagpur, Maharashtra, India[1, 2, 3, 4]

Abstract: Discovering the hidden knowledge from large volume of student database and applying it properly for decision making is essential for ensuring high quality education in any academic institution. This knowledge is extractable through data mining techniques. Association Rule mining technique aims at discovering implicative tendencies that can provide valuable information for the decision maker. In this project, we are going to present an applied research on mining Association Rule using academic data of a university and use it for syllabus design. We are going to discover knowledge regarding the academic performance and personal statistics of students. And we will develop a technique to transform the existing relational database for student's academic performance into a universal database format using academic and personal data of a student. After that we will transform the universal format into a modified format for suitability of using Association Rule mining algorithm. We will use FP Growth algorithm for finding interested association rules from the transformed database which can be useful to extract knowledge of student's academic progress, decay in their potentiality, abandonment as well as retention of students. The impact of courses and curriculum and teaching methodologies are also found from the extracted knowledge which is beneficial for any institution of higher education.

Keywords: Data Mining, Reason Find out, Fp-growth Algorithm.

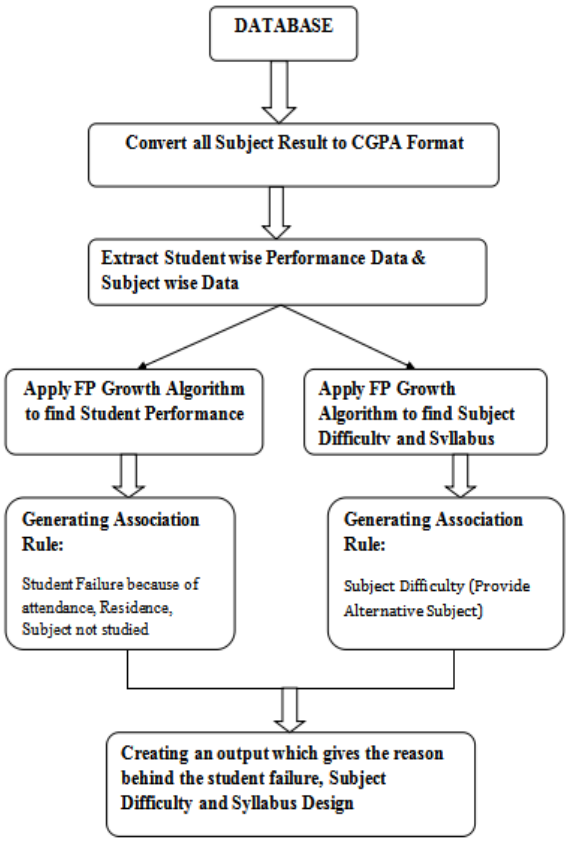
I. INTRODUCTION

Students are one of the fundamental elements of any academic institution. For a large educational institute like public university which generates large volume of data, it requires an efficient way to apply data mining techniques for obtaining knowledge on the development and performance improvement of academic activities.

The knowledge acquired from the institutional database will be sufficient to look for answers to such questions as: Which factors determine better or worse academic performance of students? What are the causes behind the students retention in the university? Why do students abandon from an educational institute? Concepts and techniques of data mining are essential to discover the hidden knowledge from large datasets. Many topmost technological universities enroll the top most brilliant students selected by a competitive examination among many students competing higher secondary education. Among these topmost students, top ranked students can get admission into the different departments of respective universities.

We will present a guideline to apply the extracted knowledge to improve the academic performance, design effective syllabus and to make an optimization between abandonment and retention.

II. FLOW DIAGRAM



ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
Vol. 4, Issue 10, October 2015

III. LITERATURE REVIEW

[1] C. Romero and S. Ventura (2010) survey the relevant studies carried out in the field of education.
They have described the types of users, types of educational environments and the data provide. Also they have explained in their work the common tasks in the educational environment that have been resolved through data mining techniques.

[2] Hua-long Zhao (2008) has done Multidimensional cube Analysis by taking use of OLAP technology.
OLAP technology and has shown that the curriculum chosen by the students can depend upon many angles like teacher, semester and student Star model of data warehouse to the analysis of curriculum which can provide certain policy making support for different education policy- maker in the school.

[3] Hongjie Sun (2010) conducts a research on student learning result based on data mining.
It is aimed at putting forward a rule-discovery approach suitable for the student learning result evaluation and applying it into practice so as to improve
Learning evaluation skills and finally better serve learning Practicing.

[4] Fadzilah Siraj and Mansour Ali Abdoulha (2009) have used data mining techniques for understanding student enrolment data.
They have done comparative study of three predictive data mining techniques namely Neural Network, Logistic regression and Decision tree. The results obtained can be used by the planners to formulate proper plan for the university.

[5] Shaeela Ayesha et al. (2010) discusses data mining technique named k-means clustering is applied to analyze student's learning behavior.
In this K-means clustering method is used to discover knowledge that come from educational environment.

[6] W.M.R. Tissera et al. (2006) present a real-world experiment conducted in an ICT educational institute in Sri Lanka.
A series of data mining tasks are applied to find relationships between subjects in the undergraduate syllabi. This knowledge provides many insights into the syllabi of different educational programmes and results in knowledge critical in decision making that directly affects the quality of the educational programmes.

IV. CONCLUSION

Knowledge Discovery from academic database is very useful to improve the academic performance of any higher education Institution. In our research we have studied the academic system, the existing problem and the reason behind the student performance in an Institution.
The Project executed successfully and hence, we will be able to find the relation between Student Interest. This project can also conclude the reason behind student failure in an examination and in order to improve the performance which subject will be replaced.

ACKNOWLEDGMENT

The heading of the Acknowledgment section and the References section must not be numbered.

Causal Productions wishes to acknowledge Michael Shell and other contributors for developing and maintaining the IEEE LaTeX style files which have been used in the preparation of this template.

REFERENCES

[1] J. Han, M. Kamber, and J. Pei, "Data Mining: Concepts and Techniques", 3rd ed. San Francisco: Morgan Kaufmann Publishers, 2011.
[2] (2014, Jun.) The Department of Computer Science and Engineering, Bangladesh University of Engineering and Technology: General Information. [Online]. Available: http://www.buet.ac.bd/cse/geninfo/index.php
[3]A.S.M. L. Hoque, R. Paul, S. Ahmed, "Preprocessing of Academic Data for Mining Association Rule," In Proceedings of the Workshop on Advances in Data Management: Applications and Algorithms (WADM), 2013.
[4] B.K. Baradwaj, and S. Pal, "Mining Educational Data to Analyze Students‟ Performance." International Journal of Advanced Computer Science and Applications (IJACSA), 2(6), pp. 63-69, 2011.
[5] V. Kumar, and V. Sharma, "Students-Examination-Result-Mining-A-Predictive-Approach." International Journal of Advanced Computer Science and Applications (IJSER), 3(11), Nov. 2012

BIOGRAPHY

Name: **Mahendra Sahu**
Qualification: B.E. (Branch: C.S.E.)
Interest: Artificial Intellegency Embedded System, Data Mining.