

Implementation of Intelligent Tutoring System

**Ms. Akansha Chaudhary¹, Ms. Preeti Mali², Ms. Pooja Chaudhari³, Ms. Sulekha Shardul⁴,
Prof. M. R. Tiwari⁵**

Student, Department of Computer Engineering, Gangamai College of Engg, Dhule, Maharashtra, India^{1,2,3,4}

Assistant Professor, Department of Computer Engineering, Gangamai College of Engg, Dhule, Maharashtra, India⁵

Abstract: Educational Data Mining (EDM) is the process of converting raw data from Educational systems to useful information that can be used by educational software Developers, students, teachers, parents, and other educational researchers. Currently there is an increasing interest in data mining and educational systems, making educational data mining as a new growing research community. This work provides the application of data mining to traditional educational systems, particular web-based courses, well-known learning content management systems, and adaptive and intelligent web-based educational systems. Each of these systems has different data source and objectives for knowledge discovering. India's education system is traditional; it has not undergone changes according to the existing technology. The main objective of this model is to predict the actions of new students for improving the tutoring feedback provided by an intelligent tutoring system. This Portal will also help to conduct online exams in class rooms, Teacher can create and upload test, after that teacher need to activate and the test will available for students. It also have features like the Download Notes, View Notes, feedback option and many more. In the implemented intelligent tutoring system student can learn through the active tutor. Student also ask the questions to tutor through the chat window. Student analysis can be done through the online examination. The implemented model has been validated using student logs collected in a Computer laboratory. As a result of this validation, we concluded that the model can provide reasonably good predictions and can support tutoring feedback that is better adapted to each student type.

Keywords: Educational Data Mining, e-learning, Procedural Training, Intelligent Tutoring Systems.

I. INTRODUCTION

E-learning, a new context for education where large amounts of information describing the continuum of the teaching-learning interactions are endlessly generated and ubiquitously available. This could be seen as a blessing: plenty of information readily available just a click away. But it could equally be seen as an exponentially growing nightmare, in which unstructured information chokes the educational system without providing any articulate knowledge to its actors, Data Mining was born to tackle problems like this. As a field of research, it is almost contemporary to e-learning. It is, though, rather difficult to define. Not because of its intrinsic complexity, but because it has most of its roots in the ever-shifting world of business. At its most detailed, it can be understood not just as a collection of data analysis methods, but as a data analysis process that encompasses anything from data understanding, pre-processing and modelling to process evaluation and Implementation. It is nevertheless usual to pay preferential attention to the Data Mining methods themselves. These commonly bridge the fields of traditional statistics, pattern recognition and machine learning to provide analytical solutions to problems in areas as diverse as biomedicine, engineering, and business, to name just a few. An aspect that perhaps makes Data Mining unique is that it pays special attention to the compatibility of the modelling techniques with new Information Technologies (IT) and database technologies, usually focusing on large, heterogeneous and complex databases. E-learning databases often fit this description.

Data mining "is a process that uses statistical, mathematical, artificial intelligence and machine learning techniques to extract and identify useful information and subsequent knowledge from large databases". Data Mining can be used to extract knowledge from E-learning systems through the analysis of the information available in the form of data generated by their users. In this case, the main objective becomes finding the patterns of system usage by teachers and students and, perhaps most importantly, discovering the students' learning behavior patterns.

II. SURVEY REVIEW

In the existing system has lot of flaws, because here they have to work more on manually instead of working on system.

P. R. Pradhan introduces an evaluation of E-learning platform. This platform based on data security and learner flexibility. Data mining methodologies helps learner to learn fluently and flexibly. Now in days each individual expects just-in-time learning, using e-learning platform we can fulfil this requirement of learners. To make this platform more

flexible learner can communicate with respective faculty, advisors, etc. It is platform where learning through discovery can be possible because of interactive media.

Francesco Maiorana, Angelo Mongioj, and Marco Vaccalluzo published a data mining E-learning Tool: Description and case study which has included report on four year teaching experience in an information system course for students in management engineering. In that courses data mining techniques were taught as part of course. This paper introduces tool for learning the analysis of data using data mining techniques. It also included a case study which presented in the field of customer switching prediction.

Dr. P. Nagarajan, Dr.G. Wiselin Jiji proposed technology is implemented for Online Educational System (E- Learning). They introduces educational system which lies within three principal activities: Design, Implementation and proper post- implementation assessment. They had proposed a general formulation of model as well as a framework for finding patterns, which improves the online education system for both learner and teacher or faculty.

III. IMPLEMENTED SYSTEM STRUCTURE

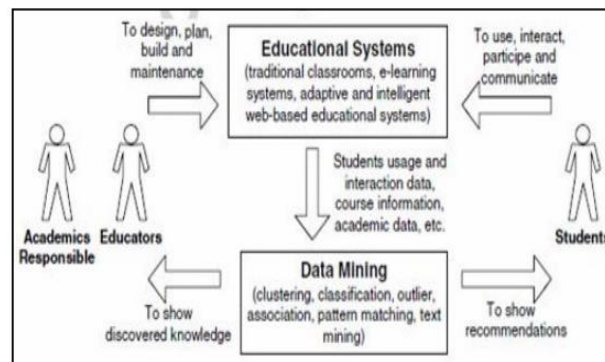
The main objective of this Educational Portal is to efficiently evaluate the student thoroughly through a fully automated system that not only saves lot of time but also gives fast and accurate results. For students they give papers according to their convenience from any location by using internet and time and there is no need of using extra thing like paper, pen etc. Students can get Educational material in single place.

Our Educational Portal will help students to offer a quick and easy way to appear for the test. It also provides the results immediately after the examination with 100% accuracy and security. Student can enter to perform exam only with their valid username and password.

This model is created from activity records or logs collected from students with a similar background that previously completed the same practical assignment. As we will see later, an ITS equipped with this collective student model can use hints to stop students from making certain errors or from floundering with the practical assignment.

Intelligent Tutoring System

Department of Computer Engineering, Gangamai college of Engg, Dhule, MH



Student Panel

Tutor / Admin

Figure 1: Home page and the cycle of Applying Data Mining in Educational systems

3.1 Different Modules

• Admin Panel

1. Manage Users: Admin will manage registered Users.
2. Manage Online Test - upload questions and answer
3. Manage Results: Admin will manage Results of registered Users.
4. Upload Notes: Admin will upload notes of registered Users.

3.2 The aim of proposed e-learning platform were:

1. Course data materials must be secure.
2. Allowing learner to register and enter into the courses.
3. Learning should be easier, fluent and learner friendly.
4. Effective communication between learner and e-learn platform.
5. Offering help and feedback.

IV. HARDWARE AND SOFTWARE REQUIRMENTS

Client Requirement:

- Processor- 1.2quad core processor.
- Memory (RAM) -512mb.
- Storage memory-1GB.

Server Requirement:

- Processor- intel ® core (TM) 2 Duo CPU @2.93GHz.
- Memory (RAM)-2GB
- Storage memory-250GB

Software Requirement for Development of Project:

- Software: Notepad ++, Xamp
- Operating System: windows 7, Windows server 2008
- Coding Language: PHP, HTML
- Database: SQL

V. ADVANTAGES OF INTELLIGENT TUTORING SYSTEM

Following are the advantages of the Intelligent Tutoring System

1. Student can give examination from anywhere of the world by 24X7.
2. The user has to get registered if they would like to enjoy the complete facilities offered by the Portal.
3. The administrator administers the Portal; he edits, add or delete the required details.
4. Self-Analysis is must in any Progress of Study and that will be useful to gain Quality and performance of student by this system.

VI. RESULT ANALYSIS

Following table shows the subject wise student analysis whether students are studying that particular subject regularly or not. Table shows the score of the students. Result details are shown with date and time. So student can differentiate last exam score and current exam score. So it will helpful to student to get the progress report and also for self-assessment.

Table No. 1 Subject wise and level wise score analysis

Sr No.	Subject	Level	Score	Date
1	ATOMS MOLECULES AND NUCLEI	Practice	4	2018-01-02 11:55:26
2	ATOMS MOLECULES AND NUCLEI	Regular	5	2018-01-02 11:55:01
3	ATOMS MOLECULES AND NUCLEI	Practice	2	2018-01-02 11:52:26
4	ATOMS MOLECULES AND NUCLEI	Regular	1	2018-01-02 11:51:01

Following figure shows the analysis graph of the regular and practical subject study ratio of the students. Practical study is very important for the student to improve the technical concepts of the specific subject.

Report (Regular vs Practical)

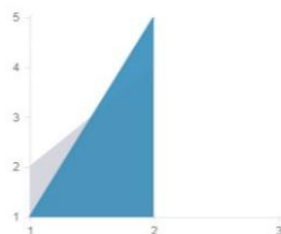


Figure 2: Report of the regular theory and practical subject

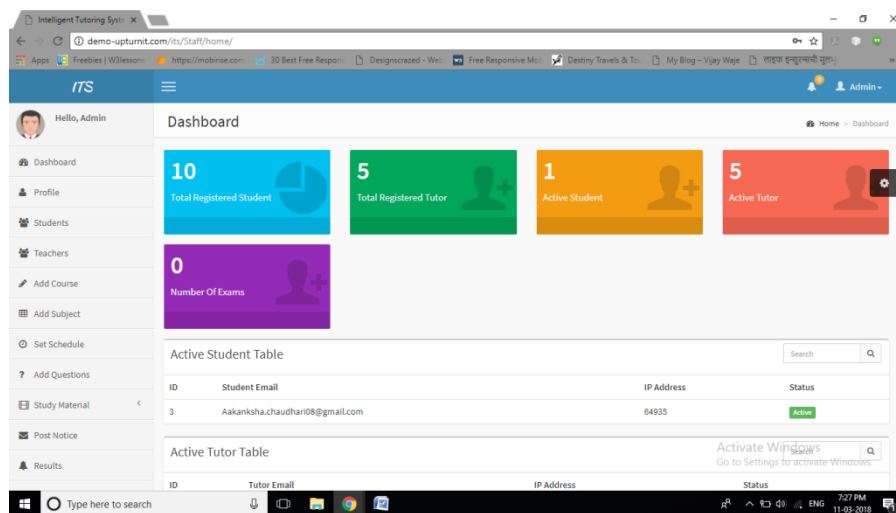


Figure 3: Dashboard of the intelligence tutoring system

The dashboard of the system shows the active student and active tutor. It also shows the total number of registered student and tutor. It shows the count of total number of exams conducted.

VII. CONCLUSION

The implementation of the Intelligent Tutoring System is useful for the students. Student can study any subject through active tutor on the implemented system. Student also able to give the exam. System shows the educational data mining's an upcoming field related to several well-established areas of research including e-learning, adaptive hypermedia, intelligent tutoring systems, web mining, data mining, etc. The application of data mining in educational systems has specific requirements not present in other domains, mainly the need to take into account pedagogical aspects of the learner and the system.

REFERENCES

- [1] Diego Riofrío-Luzcando, Jaime Ramírez and Marta Berrocal-Lobo, "Predicting Student Actions in a Procedural Training Environment", IEEE Transactions on Learning Technologies, Year: 2017, Volume: PP, Issue: 99.
- [2] C. Romero and S. Ventura, "Educational data mining: A survey from 1995 to 2005," Expert Systems with Applications, vol. 33, no. 1, pp. 135–146, 2007.
- [3] C. Romero and S. Ventura, "Educational Data Mining: A Review of the State of the Art," IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), vol. 40, no. 6, pp. 601–618, 2010.
- [4] R. S. Baker, "Educational Data Mining: An Advance for Intelligent Systems in Education," Intelligent Systems, IEEE, vol. 29, no. 3, pp. 78–82, 2014.
- [5] L. S. Vygotsky, Mind in society: The development of higher psychological processes. Harvard university press, 1978.
- [6] A. M. Olney, "Scaffolding Made Visible," in Design Recommendations for Intelligent Tutoring Systems. Orlando: U.S. Army Research Laboratory, 2014, ch. 26, pp. 327–340.
- [7] H. K. Holden and A. M. Sinatra, "A Guide to Scaffolding and Guided Instructional Strategies for ITSs," in Design Recommendations for Intelligent Tutoring Systems. Orlando: U.S. Army Research Laboratory, 2014, ch. 22, pp. 265–281.
- [8] C. Romero, S. Ventura, M. Pechenizkiy, and R. S. Baker, Handbook of Educational Data Mining. CRC Press, 2010.
- [9] D. Perera, J. Kay, I. Koprinska, K. Yacef, "Clustering and Sequential Pattern Mining of Online Collaborative Learning Data," pp. 759–772, 2009.
- [10] T. Y. Tang and G. McCalla, "Smart Recommendation for an Evolving E-Learning System: Architecture and Experiment," International Journal on ELearning, vol. 4, no. 1, pp. 105–129, 2005.
- [11] D. Godoy and A. Amandi, "Link Recommendation in E-Learning Systems Based on Content-Based Student Profiles," in Handbook of Educational Data Mining. CRC Press, 2010, ch. 19, pp. 273–286.
- [12] P. Fournier-Viger, R. Nkambou, E. M. Nguifo, A. Mayers, and U. Faghihi, "A Multiparadigm Intelligent Tutoring System for Robotic Arm Training," Learning Technologies, IEEE Transactions on, vol. 6, no. 4, pp. 364–377, 2013