Mining and its applications in Data Educational Management System

N. Siraj Nisha

Department of Computer Science, Jawaharlal Nehru College for Women, Pali, Ulundurpet.

Abstract

Data mining plays a vital role in day to day life. There are several methods of "ubiquitous and invisible" data mining that influence everyday functioning from the products stocked at our local supermarket to the advertisements we see while surfing the Internet, and also in solving crime problems. Data mining can offer the individuals many benefits by improving customer service and satisfaction as well as lifestyle, in general. However, it also has serious implications regarding one's right to privacy and data security. Educational Data Mining (EDM) is an emerging discipline, concerned with developing methods for exploring the unique and increasingly large-scale data that come from educational settings and by using these methods better understanding of students, and the learning process and outcome could be accessed. The aim of International Educational Data Mining Society is to support collaboration and scientific development in this new discipline through organization of series of EDM conferences, publication of journal and creation of mailing lists, as well as the development of community resources to support the sharing of data and techniques. A large volume of complex, multi-dimensional scientific data are collected and stored daily. Data mining and predictive modelling offer means of analysis of that data. Data mining and predictive modelling are capable of automatic extraction of knowledge deeply hidden in data, enabling discovery of knowledge not otherwise attainable. The Fundamentals of Data Mining have been customized for the world of science. They provide overview of the methods, techniques, and processes of data mining, with an emphasis on scientific applications. Explore a variety of scientific case studies learn how data mining can be applied to make meaningful conclusions, predictions, and classification of data.

INTRODUCTION

Today, as in other areas of society, information technology and communications have entered the field of education. It is possible to capture and compile very simply and at low cost all kinds of information such as administrative data enrollment in schools/colleges/universities, computerized academic records of students, logging in educational portals (e-learning platforms), collaborative learning systems guided by the computer (computer-supported collaborative learning systems, etc.).

EDM Applications

A list of the primary applications of EDM is provided by (Barab *et al.,* 2000). In their taxonomy, the areas of EDM application are:

• Analysis and visualization of data
• Providing feedback for supporting instructors

• Recommendations for students
• Predicting student performance
• Student modeling
• Detecting undesirable student behaviors
• Grouping students
• Social network analysis
• Developing concept maps

Educational Data and Process Mining

process mining
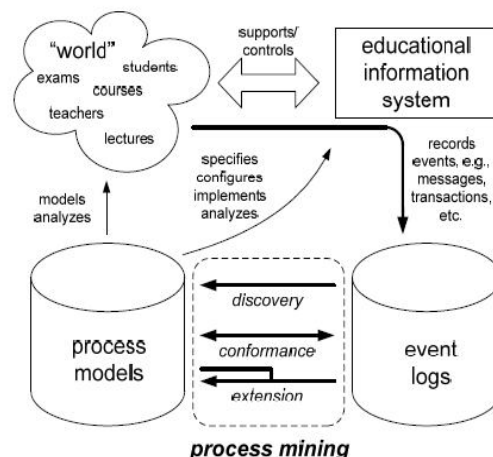
*Corresponding Author :
 email: sirajsherin786@gmail.com

In modern education various information systems are used to support educational processes. In the majority of cases these systems have logging capabilities to audit and monitor the processes they support (Aggarwal, 2015). At the level of a university, administrative information systems collect information about students, their enrolment in particular programs and courses, and performance like examination grades. In addition, the information about the lectures, instructors, study programs, courses and prerequisites are typically available as well. These data can be analyzed from various levels and perspectives, showing different aspects of organization, and giving us more insight in the overall educational system. From the level of an individual course we can consider participation in lectures, accomplishing assignments, enrolling in midterm and final examinations. However, with the development and increasing popularity of blended learning and e-learning, information systems enable us to capture activities also at different levels of granularity. Besides more traditional tasks like overall student performance or drop out prediction, it becomes possible to track how different learning resources (video lectures, handouts, wikis, hypermedia, quizzes) are being used, and also to track as to how students progress with (software) project assignments (e.g. by analyzing svn commits), self-assessment test and questionnaires.

Current Educational Practice and Learning Materials

Research on educational technology has passed through a number of stages, focusing, in turn, on the content to be learned, the format of instructional messages and interaction between computers and students. The field is now concerned with the study of learning in complete, complex, and interactive learning environments. These environments allow both the simulation of experiences that students might have in the real world and also the creation of compelling experiences that cannot normally be experienced directly. Learning environments also often allow students to communicate their own ideas with the use of a variety of symbol systems. These environments are also frequently inhabited by more than one person, making learning within them a social activity where learning is distributed among both people and artifacts. Finally, these learning environments are complex and contribute to learning processes, hence require research methods other than controlled experiments. (Bell and Slotta, 2001).

Mobile learning features

Learn at Your Convenience

Take part in the learning process from anywhere you like, at a time and place that suits you. Your students now have no excuse not to make progress!

Blended Learning

Combine traditional instructor-led training with m-learning to offer learning paths that really engage with the student and give him or her a certain degree of control over where and when they learn.

Learning Across Various Devices

Content and course can be accessed from almost any device, be it laptop, tablet, smartphone or MP3 player. You don't even have to be online, as data is synced when the device reconnects to the internet.

Collaboration

Easily collaborate across various devices using Paradiso LMS's integrations to harness the power of MS Office 360, OneDrive, Google Apps and Dropbox, among many others.

Increase Student Engagement

Make the whole learning process more engaging and rewarding for students by giving them the freedom to choose where and how they learn. Combine this with Paradiso Learning Management System's gamification support and see student engagement flourish. (Jiawei Han *et al.*, 2013.)

Social Learning

Thanks to Tin Can API compatibility mobile learning goes hand in hand with social learning, allowing instructors to track and assess progress made through social media and on various devices. Watching a relevant video, attending a webinar or reading an important article all count, and help build a more rounded picture of the learner.

More Inclusive Learning

Students that were previously unable to participate in certain programs, due to handicap, disability or geographical location, are now able to access vital training from anywhere they want.

Low Cost Option

e-Learners don't need a laptop or desktop to participate – all they need is a mobile device. This helps reduce costs for both the elearner and the training organization, not to mention increasing the portability of Paradiso LMS!..

J. Sci. Trans. Environ. Technov. 12(2), 2018

Mining and its Applications . . .   81

Future Trends

These mobile learning trends reflect the transformation we are seeing in the way the content is already being consumed by the learners or will be in the near future.

Wider Adoption Of BYOD (Bring Your Own Device) Policy

I see this as the first indicator that organizations worldwide are acknowledging the push from the learners to get the flexibility to learn on the device of their choice. This will continue to be the case and will trigger a wider adoption of mobile learning or mLearning.

Transformation Of Mobile-Friendly (Adaptive) Approach To Mobile First (Responsive)

With the maturing of mobile learning usage as the primary learning format, we are already seeing a clear distinction in the way mLearning training programs are being designed (Zaki and Meria, 2014). The selection of adaptive designs vis-a-vis designs that are optimized for mobile devices is driven by the way the content will be consumed. This trend will continue to see wider adoption in 2018.

Increase In The Usage Of mLearning For Formal Learning

Fueled by microlearning and the concept of learning paths that now enable traditional eLearning courses to be mapped to multiple microlearning nuggets that can be taken on the go, this trend will continue to grow.

Further Acceleration In The Usage Of mLearning For Informal Learning

This trend will continue. The usage of mLearning to support traditional eLearning through the Performance Support Tools, or PSTs, has been there for several years. With multitude options to design them in high-impact formats that are optimized for mobile devices, this trend will continue and see higher adoption.

Personalization

This is a logical extension to the flexibility afforded by microlearning-based learning paths. You can leverage on the granularity of microlearning nuggets to create custom or personalized learning paths. Personalization can be offered based on the learner profile (job-role based), based on self-assessment of proficiency, or through a pre-test. Having a personalized learning path makes the learning more relevant for the learners. There was an increase in this microlearning trend in 2018.

Curation

Organizations worldwide acknowledge that there is an extensive amount of supporting content that is often available on their intranet but it is ignored. On top of this, there is an ever-increasing supporting collateral available on the internet. The answer is to leverage on all these through curation that uses specialized expertise to put together relevant learning assets and paths for the learners. The curated content can offer primary training or support primary training. This is one of the key mobile learning trends for 2018 that you should watch out for and plan for.

Inclusive Learning (Featuring Contributions From Learners)

Organizations are seeking innovative ways to engage the learners. Providing the learners with an option to contribute and enrich a given program is a significant measure in this direction. The contributions from learners can support the existing training programs at multiple levels, and the most significant value-add is that it aids social or collaborative learning. This mobile learning trend is certainly worth investing on in 2018.

Increase In The Use Of Video And Interactive Video-Based Training

While video-based training has been there for a while (even in traditional eLearning), its usage is increasing exponentially in mLearning. This is not all, the interactive video-based training offers much higher engagement and learning experience, and it will see an increase in both formal and informal training. This is one mobile learning trend you cannot miss. Do plan to use it in 2018.

Higher Adoption Of Formats Optimized For Mobile Devices

To create high impact learning experiences, formats like mobile apps for learning are a great fit as they are optimized for mobile devices. They offer additional flexibility to the learners as they can download the content and peruse it offline. Furthermore, the L&D teams can push updates and notifications with ease. This is another significant mobile learning trend worth investing on.

Wider Adoption Of Gamification

A lot has been said about the usage of gamification for serious learning. With its extension of consumption over mobile devices, you will see variants like bite-sized games, gamified quizzes, gamified learning paths, and so on. Using this approach will increase the engagement quotient of your online training, and it is a mobile learning trend worth investing on in 2019.

CONCLUSION

In conclusion, the use of mLearning in an educational environment would have a very positive effect on the learning experience. It appears that future generations are extremely receptive to utilizing new technology and as a matter of fact, they appear to embrace it. With the emergence of social networking, blogging, and YouTube, students expect to be able to utilize mobile technology on the fly to connect anywhere and anytime of the day.5G is the new name for faster, more stable, and more reliable connection of today. With a 24/7 internet-connection, 5G will be a blessing for individuals and industries.5G will be a game changer as its announcement of supporting mobile device processors and hardware has got a lot of attention. 5G is going to eliminate the problem of slow buffering and will enhance the connection speed to make mobile learning easy and fast. With this speed, we can expect a lot of changes from 5G, such as more multiplayer games with the learning experience and high-quality streaming of video and audio content.

REFERENCES

Aggarwal, C. 2015. *Data Mining* :   In Proc. IBM T.J.Watson Research Center Yorktown Heights, New York.

Barab, S.A., Hay, K.E., Squire, K., Barnett, M., Schmidt, R., Karrigan, K., Yamagata-Lynch, L. and Johnson, C. 2000. The virtual solar system: Learning through a technology-rich, inquiry-based, participatory learning environment. *J. Sci. Educ. Technol.*9(1): 7–25
https://doi.org/10.1023/A:1009416822783

Bell, P. and Slotta, J.J.2001. Technology as controversy teaching partner: Genetically modified foods. Paper presented at the *Annual Meeting of the American Association for the Advancement of Science*, San Francisco.

Jiawei Han, Jian Pei and Micheline Kamber, 2013. Data Mining: concepts and techniques. In : Proc. University of *Ilinoil sat Urhana*.champaign Elseiver.

Zaki and Meria, 2014. *Data Mining and Fundamental Concepts and Algorithms.* In : Proc. Cambridge University.
https://doi.org/10.1017/CBO9780511810114