Multimedia Intelligent System for Online Learning

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ABSTRACT

More recently appears the notion of intelligent systems, agents or tutoring systems in online education. These technologies have been adopted by many educational institutions to explore better interaction and dynamics changing on teaching-learning environment. The intelligent systems, agents or tutoring systems act as virtual tutors and learning companions that help learners in learning. This paper considers the integration of intelligent system into multimedia web-based learning environment to enhance the learning experience of the learner. Our intelligent system comprises five components: learner interface, web server, intelligent engine, learner records and learning resources. We also discuss the various functions of each component. The purpose of developing the intelligent multimedia education system is to improve the learning effectiveness of multimedia online education and the learner’s satisfaction.

1. INTRODUCTION

The rapid growth of the Internet has made successful multimedia online learning. Online learning is becoming increasingly common in schools, colleges and training realm. Online learning was initially used to supplement and complement classroom teaching but over time it has become the primary form of interaction and information. Online learning has numerous advantages, some of which include self-paced learning, independent of time and place. Learning takes place in the learner’s mind, not in classrooms and the minds can perform this work in many different locations whether it be alongside a stream, in a museum, or online [1]. Given the richness of offerings made possible with online learning, each learner can build an experience to match preferences and appetites.

Despite the numerous advantages of online learning, it is associated with problems. Poor tracking progress records, poor assessment and evaluation, feedback, etc are some of the problems facing online learning today. Introducing intelligent system into online learning help to address some of the online learning issues stated above. The intelligent system can monitor the activities of the learner, provide feedback, and find regularities. In this paper we discuss the design objectives, system architecture, and features of Intelligent Multimedia Education System.

2. DESIGN OBJECTIVES

According to [2] there are two camps considering the use of intelligent systems for education: (i) those who use the system as a cognitive tool to stimulate the student to monitor and diagnose performance and (ii) those who use the system as an intelligent tutor. For example, [3] use agents in a tutoring role to teach new concepts using certain software tool. The intelligent multimedia education system (IMMES) has been designed to enhance the quality of multimedia online learning such as improving performance, monitoring and feedback. In this respect, IMMES will be serving as a pedagogical expert where it would monitor the student’s performance and provide feedback to students. From cognitive tool perspective, [4] describes this relationship of the intelligent agent to student as cognitive apprenticeship, where the student’s performance is improved while working with the intelligent agent/system. To improve learners’ performance, and satisfaction as well as achieving learning goals, intelligent systems should be able to provide learning mechanism to learners in multimedia online learning environment. Therefore IMMES is being developed to act as a facilitator to automate learning tasks to assist learners effectively. By incorporating IMMES into online learning, we aim at improving the quality of learning experience of the learners.
3. SYSTEM ARCHITECTURE

IMMES consists of five components: learner interface, web server, intelligent engine, learner records and learning resources as shown in figure 1 below. The learner interface provides interaction among the web server, learner records and learning resources. The web server is used to store and process information and the information is delivered to the intelligent engine. The intelligent engine consists of student-tracker and navigation engines.

The tracker engine keeps track of the learner’s access time. Upon completion, the record is saved to the server for further analysis.

The navigation engine provides navigation support based on the learner’s responses and performance records. Adaptive navigation support makes use of direct guidance where the system can suggest the next part of the learning materials and also aims to help the learner find the best path through a complex learning hypermedia environment [5].

The learner records component provides information on the learner’s progress scores or overall rating performance, and transfers the learner’s record to the core intelligent engine for processing.

Finally, the Learning resources component contains learning materials, quizzes, tests and other resources for learning experiences.

![Diagram](http://edweb.sdsu.edu/People/Abaylor/IA%20as%20cognitive%20tools%20WEB.html)

**Fig1: Architecture of IMMES**

4. FEATURES

The Intelligent Multimedia Education System offers various features for learners as well as for teachers. The most important are handling of multimedia documents, easy to use Graphic User Interface, On-line Help, easy to integrate multimedia documents, easy to manage course material, online discussion. The online discussions and email provide opportunities for all the learners to participate in the discussion of key issues as well as contributing to flexible learning approach. The other features are online quiz template which, helps putting quizzes online, learners and teachers registration interface.

5. CONCLUSION

We have described in this paper the design objectives, the system architecture and the features of the intelligent multimedia education system, which is being developed to enhance the teaching and learning experience of students in Multimedia University. The various roles that the system components take on have been described in an e-learning context. We believe that when the system is fully developed and use by students, it will provide a means of dealing with monitoring and other issues that go with e-learning.

6. REFERENCES: