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Guest Editor's Introduction

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Adaptive Educational Multimedia

The use of multimedia in educational systems is not new, but recently there has been a great interest in the use of multimedia to individualise the learning process. This interest has roots in the recognition of the fact that the success of the learning process in an educational system depends on how the system presents the domain knowledge to the learner and changes its presentation in terms of complexity and granularity according to learner's progress. This special issue presents some pioneering work in this direction. The articles in this collection range from looking into wider perspective on adaptivity in the learning process to specific multimedia based implementation.

In the first article in this issue "Creating cost-effective adaptive educational hypermedia based on markup technologies and e-learning standards", Fernandez-Manjon and Sancho discuss the issue of content adaptation in their project <e-Aula>. Using learning object metadata approach, the system allows reuse of educational material and adapts the content presentation to suit individual student's requirements.

Interactive Virtual Tutor in the paper by Gupta, "Content Development for eLearning in Engineering Education", is another attempt in multimedia -based instruction where students learn Engineering Mechanics through user-friendly adaptive environment. The system enables students to explore the educational content at their own pace. Students are also able to follow their own path while learning from the system.

Sampson et al.'s paper "Personalised Learning: Educational, Technological and Standardisation Perspective" looks into more fundamental issues and provides a discussion into the concept of adaptivity in educational multimedia systems. They discuss various stateof- the-art techniques used to provide individualised learning along with various examples.

The paper "Supporting personalization in a web-based course through the definition of role - based access policies" discusses the different roles users play in the educational environment. Aedo et al. explain how role -based access policies can be implemented in educational applications to adapt same

educational content for different users. They also discuss the Courba system that generates individualised courses based on the role -based access policies. The paper "Animated Pedagogical Agent in the Intelligent Virtual Teaching Environment" by Nunes et al. looks into an example of adaptive educational multimedia system for learning. The Intelligent Virtual Teaching Environment (IVTE) employs an animated pedagogical agent to facilitate adaptive learning for children about preserving the environment.

Chen and Huang describe another example of multimedia based instruction in there paper "Applying Evolutionary Prototyping Model in Developing Stream-based Lecturing". The system provides a user-friendly technique to capture the teachers' synchronous lecturing activities to be used by students asynchronously. The system enables teachers to provide input of their expertise anytime and anywhere, hence authors named it "mobile classroom".

Papasalouros and Retalis describe adaptivity on hypermedia educational systems along with the description of an adaptive web-based testing system in their paper "Ob-AHEM: A UMLenabled model for Adaptive Educational Hypermedia Applications". The focus of the paper is again on the tailor ing of educational content to individualise the learning experience.

The final paper in this special issue gives another dimension of adaptive educational multimedia. Amon describes several examples of virtual reality in demonstrating various concepts in biology in his paper "Teaching biology in primary and secondary schools with the help of the dynamic HTML and web virtual reality (web3D) projects". He emphasises that such representations make learning easier, even for topics that seem very complicated from learners' point of view.

This special issue does not pretend to give a complete scenario of adaptive multimedia based education. It is intended to provide a sense of direction to the reader to understand where the research in adaptive educational multimedia is heading. More so, the hope is that this issue will provoke some thoughts on the potential and practicality of this research, so that the work in this area does not remain just in research laboratories but is actually used in academic environment.