

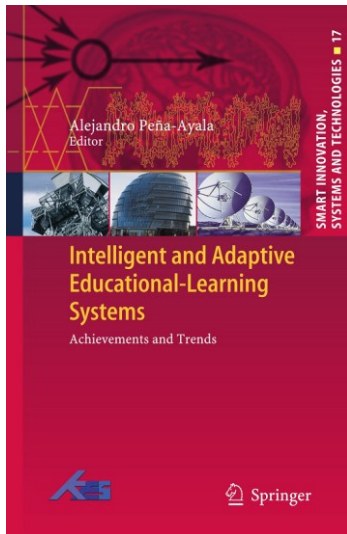
BOOK REVIEW

INTELLIGENT AND ADAPTIVE EDUCATIONAL-LEARNING SYSTEMS: ACHIEVEMENTS AND TRENDS

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INTRODUCTION

Adaptation of technological developments to the education systems has been caused changes in educational environments. One of the influential components in this change is artificial intelligence applications. Educational learning systems (ELS) become intelligent with the use of artificial intelligence techniques. Also, they can include adaptability to meet user needs. Intelligent and Adaptive Educational-Learning Systems (IAELS) defined by book editor as "ELS that include some kind of intelligent and adaptive functionality".

The book, entitled "Intelligent and Adaptive Educational-Learning Systems: Achievements and Trends" and edited by Pena-Ayala, includes studies of researchers from different fields about IAELS. Book comprises of four parts and twenty chapters. In these parts, user modeling, content, virtuality and applications in this field are discussed.

Part 1: Modeling

In the first part of the book, user modeling studies are presented. User modeling is one of the important parts of IAELS. In these studies, different methods and techniques used for modeling learners in order to adapt systems according to learner needs are explained. The modeling part includes chapters one to four. In chapter one, authors introduce an affective behavior model for adaptive and intelligent instruction. This model represents learners'

affect status and adapts the instruction through dynamic Bayesian network and Cognitive Model of Emotions. The second chapter includes an adaptive learning environment model which contains a domain model, a learner model, a course structuring model and an adaptation model. This model contributes to the literature by modeling the adaptive learning curriculum. Chapter three introduces an approach which predicts student's domain knowledge by causal and fuzzy student model and sequences lectures according to domains of student's attributes. Model estimates learning outcomes to select the most yielding lecture for the student. In chapter four data mining is considered for deducting information from event logs. Model is considered in e-learning context.

Part 2: Content

In the second part, it is emphasized that adapting content rapidly is necessary to gain optimal learning outcomes. Studies that aim at composing intelligent and adaptive structures in different learning environments are explained. Part two includes six chapters. In chapter five, learning style index method is used to provide efficient learning to learners. It also guides teachers to use suitable materials for an effective learning. Chapter six provides information about GRAPPLE which is both an adaptive learning environment and a learning management system. It uses a common user model framework. GRAPPLE supports learners by means of adaptive guidance and personalized content. In chapter seven, adaptive content selection in adaptive educational hypermedia systems is considered and a performance evaluation methodology for decision-based approaches is introduced. In chapter eight, a collaborative adaptive tool is presented. The platform which is able to create various learning object instances adapts activities to the characteristics and learning style of the student by using information from student model. Chapter nine includes the study about reusable courses and educational contents. A case study of an adaptive management system and an authoring tool which helps instructors to design adaptive courses are mentioned in this chapter. Chapter ten considers implementing intelligent tutoring systems as learning objects to different educational systems by using Sharable Content Object Reference Model.

Part 3: Virtuality

Virtuality part consists of four chapters, highlights that modern user-system interfaces and technologies provide opportunity to collect data about learners and their movements on learning systems. In this part learning applications in virtual worlds are examined. Chapter eleven describes the use of a three-dimensional virtual world in education. In chapter twelve, a smart home domain used for computer science education is described. Chapter thirteen examines training of prospective tactical air controllers of the U.S. Navy by means of advanced training technology. In chapter fourteen, a cognitive tutoring agent is proposed. The agent has similar learning capabilities with a human such as episodic, emotional and causal learning and uses these capabilities to support optimal learning.

Part 4: Applications

In the last part of the book named Applications addresses approaches in IAELS such as metacognition, educational system architectures, collaborative learning, educational data mining and case studies. This part includes chapters fifteen to twenty. In chapter fifteen, generic and specific prompts which include learning-by-teaching activities are considered to promote reflection. Chapter sixteen focuses on the assessment on higher order knowledge and introduces an educational learning system allows users to learn self-paced. The study takes part in chapter seventeen presents a Web-mediated training system that

aims to encourage non-technical developers to deliver their own adaptive educational-learning systems. Chapter eighteen examines the impact of illusionary sense of control on intrinsic motivation towards better work and on quality of collaboration. Chapter nineteen discourses an educational-learning system that aims at evaluating and refining university curricula to improve learning success by applying an educational data mining technique. Chapter twelve discusses the use of artificial intelligence in e-learning in three areas: technological, business and educational. The study seeks for key areas which artificial intelligence is applied to e-learning effectively.

This book that consists of four parts is beneficial in terms of presenting basics, studies, and applications in the field of artificial intelligence on education to researchers, academicians and learners work in pedagogy, education, computer sciences, artificial intelligence, and graphic design fields.

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