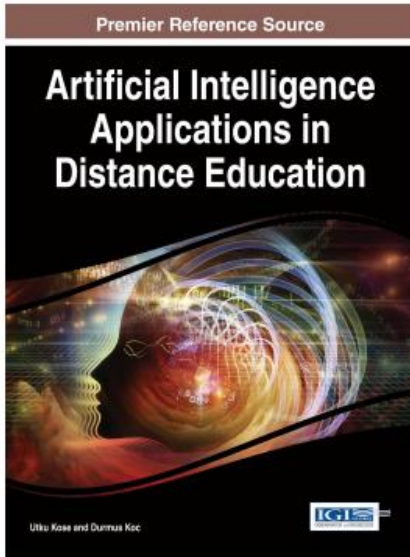# ARTIFICIAL INTELLIGENCE APPLICATIONS IN DISTANCE EDUCATION
Edited by Utku KOSE & Durmus KOC
Release 2014, © 2015, USA: IGI Global Publishing, pp. 329. ISBN13: 9781466662766 ISBN10: 146666276X EISBN13: 9781466662773

Reviewed TOJDE

As a result of the rise of modern knowledge society, it has been highly required to have newer approaches and innovations in the sense of educational processes. Because of this, different methods and technologies have appeared to make the expressed requirements real. At this point, information and communication technologies have had a great role in remarkable improvements. From this perspective, the Distance Education approach and its related techniques like E-Learning, M-Learning...etc. are popular and strong elements for today's world. In addition to the related effectiveness of the E-Learning, researchers also perform more scientific studies to support E-Learning or improve its functions and features to provide better conditions within the learning and teaching process. Today, one of the most remarkable improvement ways is using Artificial Intelligence techniques to support classical Distance Education approaches-techniques or develop newer ones to continue development of the subject area.

Artificial Intelligence Applications in Distance Education is an edited book, which covers research works and findings within the intersection of Artificial Intelligence and Distance Education. Briefly, the book includes different chapters aiming introducing different aspects of the usage of intelligent systems for improving Distance Education techniques or developing new approaches in the sense of the educational processes. As general, the editors aim to provide a popular perspective to the Distance Education field in order to explain developments and the latest situation of the subject area. In this context, it is aimed to introduce Artificial Intelligence based Distance Education applications within an international spectrum.

By explaining and introducing the related applications, approaches and techniques, people who are interested in the related fields (Distance Education, E-Learning, Artificial Intelligence...etc.) can be enabled to improve their knowledge about the current literature and developments in this sense.

Furthermore, the book aims to take readers' (researchers') attention to a new concept named "Intelligent Distance Education".

The theme of the Artificial Intelligence Applications in Distance Education is viable, because it provides a general perspective for an important research field combining Distance Education approaches and also Artificial Intelligence techniques. On the other hand, the theme also allows authors to provide a remarkable, new research reference document for both education and Artificial Intelligence fields. The theme of the book expands both Distance Education and Artificial Intelligence fields and intersects them on a specific area supporting different literatures.

The book includes 16 chapters. In Chapter 1, "On the Intersection of Artificial Intelligence and Distance Education", the editor provides a brief view on the intersection of Artificial Intelligence and Distance Education by discussing about current trends on applications of intelligent distance education solutions and possible future directions.

In Chapter 2, "Global Knowledge Networking (GKN) with Utilizing of Digital Libraries: A Proposed Model", a model for global knowledge networking with utilizing of digital libraries and artificial intelligence is introduced.

In Chapter 3, "Intelligent Educational Support System", an intelligent system for providing support on students' schedule management, academic orientation, choice of profession and career planning is introduced.

In Chapter 4, "Designing a Multi-Agent System for Improving the Accounting E-Learning", the author provides a report on how they have designed and developed a multi-agent system that has been incorporated into an educational soft that was tested and validated within an experiment with the students.

In Chapter 5, "Intelligent Questioning System Based on Fuzzy Logic", a fuzzy logic based software system for determining student knowledge levels, topic difficulty level and question difficulty levels according to instant student answers for the exam is introduced briefly.

In Chapter 6, "Review and Proposal for Intelligent Distance Education", the authors evaluate intelligent distance education studies within the literature and propose a novel artificial neural network based distance education system, which employs a learning management system, a web conferencing system and an artificial neural network agent to form an intelligent mechanism.

In Chapter 7, "A Web-Based Intelligent Educational Laboratory System for Forecasting Chaotic Time Series", a Web-based, intelligent, educational laboratory system for forecasting chaotic time series, is introduced briefly. The laboratory system includes a Single Multiplicative Neuron System trained by Intelligent Water Drops Algorithm in order to forecast time series of chaotic systems.

In Chapter 8, "Expert Systems in Distance Education", the authors provide a view on expert systems and their usage - application in teaching environments and especially over distance education studies.

In Chapter 9, "For an Intelligent E-Learning: A Managerial Model Suggestion for Artificial Intelligence Supported E-Learning Content Flow", it is aimed to introduce a managerial model that can be used for especially Artificial Intelligence supported e-learning content flow, in order to improve the educational process.

In Chapter 10, "Resolving Paradox of Overconfident Students with Intelligent Methods", the authors provides case study on using data mining tool to solve the puzzle of inconsistency between student in-class performance and results obtained via final tests.

In Chapter 11, "Design and Development of an Expert System Shell Program and Evaluation of Its Effectiveness", an expert system shell program, which aims to assist teachers in developing their own courseware by using intelligent approaches, is introduced.

In Chapter 12, "An Example Application of Artificial Intelligence Supported Blended Learning Education Program in Computer Engineering", a blended learning process, which is supported with an intelligent program for teaching C programming language, is explained briefly.

In Chapter 13, "Agent Based Distributed Intelligent Tutoring System Using Case Based Reasoning", the authors are focused on how a Multi Agent Intelligent system can provide effective learning using Case Based Student Modeling.

In Chapter 14, "Evaluation of Clustering Methods for Adaptive Learning Systems", the main clustering methods for adaptive learning systems are evaluated from certain perspectives. In this sense, the authors finally suggest the most promising clustering methods in case of different situations.

In Chapter 15, "An Evolutionary Approach for Automatic and Dynamic Students Learning Styles Modeling in Adaptive Educational Systems through Probabilistic Learning Styles Combinations and Genetic Algorithms", an application of evolutionary algorithms to discover student's learning styles is introduced. The expressed approach is based on the non-deterministic and non-stationary aspects of learning styles that may change during the learning process.

In Chapter 16, "Ideas on the Future of Intelligent Web-based E-learning", the editor provides a finish on the book by focusing on future ways - possibilities on Artificial Intelligence supported Distance Education and E-learning.

One of the most remarkable strengths of the book is that it provides a specific reference for scientists and researchers studying on Artificial Intelligence and its employment within Distance Education. The book is also strong for covering both different fields and making it a great opportunity to include Artificial Intelligence related educational research works and findings.

The book is supported via forewords by Gerhard-Wilhelm Weber (Middle East Technical University, Turkey), Pandian Vasant (Universiti Teknologi Petronas, Malaysia), Gonca Telli Yamamoto (Okan University, Turkey), and Omer Deperlioglu (Afyon Kocatepe University, Turkey).

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