

Guest Editorial

Impact of intelligence methodologies on education and training process

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This special issue entitled *Impact of Intelligence Methodologies on Education and Training Process* contains a collection of research articles that focus on the use of intelligence methodologies such as artificial intelligence, machine learning, deep learning, and computer vision for education and training processes. The theme of the issue is the use of advanced technologies for education and training. Specifically, it focuses on the application of data science and machine learning methodologies in all aspects of modern education such as pedagogy management, E-learning, virtual lab management, improving hands-on online teaching methodologies, etc. The key objective is to share and exchange innovative ideas and experiences in modern education with evolving intelligent technologies. Today there are many successful applications of machine learning methodologies for education. A number of papers in this special issue apply machine learning-based models for the semantic annotation of English language educational resources. It creates linear decision-making models with machine learning algorithms such as support vector machine (SVM) and convolutional neural networks (CNN) to effectively address the issues of present-day E-learning platforms, specifically in the context of English language educational resources.

Other papers focus on enhancing teaching and learning methodologies with artificial intelligence techniques. Since E-learning platforms are consid-

ered a new paradigm for most of the users, and they may feel challenged to adapt to virtual learning platforms. A reason is that many users of online forums feel more comfortable with traditional learning forums. They face difficulties when dealing with new and innovative learning platforms. To effectively address these concerns, a number of articles in this special issue apply artificial intelligence and machine learning techniques to enhance online educational forums. The articles apply those techniques in such a way that the use of online education forum is made simple to almost every group of users. In addition, developing standard pedagogy practices and learning curriculums are vital as it plays an essential role in the field of education. Hence, a number of articles in this volume are dedicated to the development of pedagogical techniques, classroom activities using intelligent methodologies. With the efficient use of artificial intelligence techniques, the end-user behavior analysis can be made more efficient. Students' challenges in education can be easily identified and resolved. Patterns can be extracted and analyzed using so that learning strategies and pedagogical structures are built effectively.

Some papers in this issue focus on the concept of federated learning, virtual, and augmented reality to enhance the experience of online learning. These articles specifically focus on building effective user interfaces, virtual labs, teaching agents, advanced teaching, and learning experiences. A few articles converge these techniques with cloud computing infrastructures to offer a more effective way of education and learning experiences. To fulfill actual

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requirements of the learners, a set of articles focus on using cognitive intelligence for higher education.

This work attempts to design and deploy a real-time model for higher education with cognitive intelligence. The data required is collected through educational databases, and it covers a broad view of global education with effective practices. All the enhancement discussed above are made feasible with the application of intelligent methodologies such as artificial intelligence and fuzzy systems. In this context, this special issue explores two major scientific directions, *artificial intelligence* and *fuzzy systems* for higher education. The first half of the special issue comprises effective methods for developing higher education systems. The last half represents the diverse

techniques used; artificial intelligence, big data analytics, fuzzy systems and knowledge management to empower decision making in higher education.

We would like to convey our gratitude to all the authors and reviewers for their support and dedication. It was their cooperation and involvement that has made this special issue successful. We specifically thank the reviewers for the timely completion of the review process and thank the authors for sharing their novel and innovative ideas on higher education using intelligence methodologies.

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