Editor's Note

THE International Journal of Interactive Multimedia and Artificial Intelligence (IJIMAI) publishes articles discussing the latest current topics in the research literature. The emergence of ChatGPT and other similar models based on deep learning are dramatically changing the way people understand and use artificial intelligence. Despite the significant advances made in these types of techniques, which have been enormous in recent years, new learning methods are still needed. Specifically, we require methods that allow us to handle data correctly in specific environments, as well as provide learning methods with the necessary explainability that allows us to understand how they are reasoning. The latter is essential for creating ethical learning methods that do not make unfair decisions based on biased information. It is also important to identify data that have, in some way, reflected the reprehensible attitudes and reasoning that we as fallible human beings sometimes have. In short, artificial intelligence should reflect, if possible, the best of us rather than the worst. With this goal in mind, it is common to see in this issue of the journal an abundance of articles proposing new learning methods, many of which are based on Deep Learning and Data Mining. There are also articles on large language models, which are extremely important in the current artificial intelligence landscape. Of course, there are also articles on optimization methods and quantum computers, which are also of great importance in the field of artificial intelligence. Although generative artificial intelligence models are perhaps the ones that have people most intrigued, this is not the only current application of artificial intelligence. We are seeing how renewable energies, in particular those that come from the sun and wind, are playing an increasingly important role in global energy generation. As seen in recent events, such as the general blackout in Spain, the electricity system needs new methods that allow adequate regulation to prevent all kinds of possible failures. In this issue, two articles present new applications of artificial intelligence methods to renewable energy generation systems. Also noteworthy within this issue is the application of artificial intelligence in the field of teaching, where the aim is to provide a better learning experience for students and teachers.

This issue of the journal begins by reviewing the advances and challenges in AI-generated text detection. As mentioned, the rapid development of AI in recent times has raised many ethical issues. One such case involves fraud and the use of AI-generated texts as if they were one's own. Solving this problem and developing new effective detectors to identify such cases are vital for the correct and ethical use of artificial intelligence.

Next, we present an article demonstrating the great advantages that the use of new large language models can provide for the augmented reality field. Specifically, the authors proposed a new method of assistance for the understanding and easy documentation of these environments by expert users. Traditionally, the field of augmented reality requires experts to enter information using structured formats, which, for them, are rather tiresome to use. The use of large language models makes it possible to simplify this task and add information to augmented reality environments in a simpler and more convenient way.

The authors of the following article studied the effectiveness of training recommender systems based on Deep Learning using synthetic datasets created from real datasets. Specifically, the authors test the Generative Adversarial Networks for Recommender Systems (GANRS) method on 3 synthetic datasets created from 3 different real datasets. Among other experiments, the authors compare the effectiveness of GANRS against 6 other Deep Learning methods considered state-of-the-art in the field. The results demonstrate how the proposed GANRS method generates consistent results for the datasets used.

The fourth article in this issue describes data management in sensitive environments. Specifically, it deals with the use of artificial intelligence patient diagnosis in emergencies. Although it is, of course, always best to have a doctor examine the patient, there are many situations in which the patient cannot wait for the necessary doctor to be available. It is in these cases that artificial intelligence can provide critical aid. Therefore, an explainable artificial intelligence-based disease diagnosis and blockchain-based decision-making system is proposed to address these challenges and improve patient care. The authors of this article propose solutions for handling unstructured clinical information, which provides high-quality information to the system and allows reliable responses to be generated. In addition, the use of Blockchain technologies prevents erroneous decisions, and the solution must be verified by at least 50% of the experts. For decision-making, the authors have chosen a recommendation system based on ant colony optimization.

Continuing with the processing and analysis of medical and personal data, the authors of the following article propose the use of artificial intelligence for humanitarian purposes. Specifically, the authors used machine learning techniques to detect patterns among homeless people suffering from drug addiction. To do so, they used real data from the National Administrative Department of Statistics (DANE) of Colombia. Specifically, 19375 records and 25 columns. The results obtained in this article will allow municipal administrations to make decisions that will help improve the situation of these people.

The next two articles in this issue use optimized Long Short-Term Memory (LSTM) neural networks for different purposes. The first one addresses the problem of estimating the amount of energy generated in a photovoltaic power plant. For this purpose, this study focused on a photovoltaic installation with 296 panels located in the northwest of Spain. Synthetic data were used to train the neural network for the estimation. In the second article, the authors propose a method for estimating wind power using optimized LSTM neural networks. Estimating the wind power is essential because it helps to estimate the energy generated in a wind power plant. In addition to the neural network, data pre-processing was applied. Concretely, two techniques such as removal of missing values and inputting missing values using Random Forest Regressor (RFR), are used.

One of the most important problems when applying data mining is handling missing values. The authors of the next article propose a methodology for evaluating different estimation techniques for missing values. In this evaluation, they consider the use of quality metrics derived from data mining processes. To do so, they compared the effectiveness of the data mining methods when applied to complete datasets and when applied to the same datasets but with missing values. Specifically, the authors apply this test on 63 different datasets using the median, K-Nearest Neighbors (KNN), K-means, and Hot-Deck imputation methods.

Next, in this issue, we include two articles in which artificial intelligence was applied to solve vehicle traffic-related problems. In the first article, the authors focus on traffic optimization. With the increase in the world's population, the ease with which people can access a motor vehicle, and the growing population of cities, it is necessary to develop new methods to optimize traffic. These methods must allow everyone to reach their destination in the shortest possible

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time and, at the same time, avoid possible traffic jams and accidents. With the aim of optimizing traffic, the authors present a method that, by using evolutionary algorithms and waiting time prediction, attempts to optimize traffic. The proposed method combines the use of two different techniques. On the one hand, the waiting time of vehicles is estimated using a set of techniques, and on the other hand, using the calculated information, evolutionary algorithms are applied to generate the final optimization. The combination of these techniques allows its use in real-time. The proposed method was successfully tested in real situations.

The following article on this issue focuses on the care of children who are victims of road accidents. Road accidents are becoming a problem that requires immediate decisions and care for the injured. In order to improve the health services treatment procedures, the authors of this article propose a new clinical decision-making method based on case-based reasoning and data mining to streamline and improve the care of children injured in road accidents. The aim of the article is to develop an efficient predictive model to determine whether or not a child victim of a traffic accident should be admitted to a pediatric intensive care unit. The proposed method preprocesses data using the KNN method. For its evaluation, real data elaborated by the authors and validated using statistical analysis techniques were used. The results were positive with a hit rate of 91.66%.

The next article focuses on one of the main ethical problems that new artificial intelligence methods generate. Specifically, we refer to the personal data treatment. All types of Internet websites and entities of all kinds usually collect data from their users. Nevertheless, it is often very difficult for an average user to know exactly what they are approving of by providing personal data. All the information that entities provide to users usually consists of long documents that users generally do not have time to read or do not understand. In this article, the authors present a system of icons that aims to make it easier for users to understand what they are accessing when providing personal data. Specifically, this system is designed for an academic environment to retrieve information from a set of students that apply to online courses. In addition, the authors designed a survey system to determine whether students understood the proposed icon system or not. This allows the icon system to be subsequently refined and adapted to the users, in this case, the students of the courses.

Following on from the previous article on the application of artificial intelligence in the field of teaching, the next article in the journal presents a study in which the interactions of a series of students with a series of class exercises are analyzed. Using machine learning techniques, it has been analyzed how a student's grade can vary depending on the time spent on the exercises and the number of attempts to solve them. The results demonstrate that for exercises with an average number of attempts of 2, the model converged in 200 iterations. It was also observed that the probability that the student gets the exercise right randomly is very low.

The next article of this issue discusses image protection. In it, the authors propose a new method for creating reversible watermarks using the Modified Quadratic Difference Expansion and Hybrid Optimization Technique. Thanks to this method, it is possible to protect an image with a watermark; thus, the image can be removed if there is sufficient authority. The proposed method proceeds as follows. First, fractal encryption is applied to watermarks using Tromino's L-shaped theorem to improve security. Next, Cuckoo Search-Gray Wolf Optimization (CSGWO) is applied to the cover image to optimize block allocation in order to insert the watermark image. The proposed method achieved an average Peak Signal-to-Noise Ratio (PSNR) of 60 dB.

The following article on the issue examined the reliability of IBM's public quantum computers. Specifically, the authors monitor the reliability of IBM's public-access QCs network daily. The study machines have different qubit associations. For the testing, the authors employed an ad hoc computationally demanding quaternary search algorithm that they executed every 24 hours for 100 days. The main reason for this is to limit the operational capacity to its limits. The authors then performed a comparative analysis considering similarities and the total number of executions. Moreover, the authors applied 50 days of improvement filtering in order to mitigate the noise in the system. The Yorktown 5-qubit computer achieved noise filtering of up to 33% in one day, that is, a 90% confidence level was reached in the expected results. For long-term tests, the authors concluded that improvement is needed.

In the penultimate article of the issue, authors present a muti-session evaluation of a haptic device in order to compare its performance in normal and critical conditions. The idea is to test a device that will be used by astronauts on future missions to the Moon and Mars. For the test, 8 different factors have been taken into account, 6 groups of astronaut pairs were created and 4 test sessions were conducted. In addition, the experiment was recreated under stressful conditions, including a session in which a critical condition simulated in an extra-vehicular situation.

The last article reports on a comprehensive comparative analysis of four machine learning algorithms for customer segmentation in the retail sector. Specifically, the authors used two datasets, a large-scale Turkish market sales dataset and a focused marketing campaign dataset. K-means showed a robust performance, offering a balance between interpretability and statistical validity. Density-Based Spatial Clustering of Applications with Noise (DBSCAN) showed strengths in identifying non-spherical clusters and handling outliers, while Gaussian Mixture Models (GMM) and Self-Organized Maps (SOM) provided more granular segmentation but increased complexity. By introducing a methodological framework for the evaluation of customer segmentation techniques, this study enhances current practices in retail analytics.

As closure, I would like to thank the authors and reviewers for their hard work. Without them, publication of this issue would definitely not be possible. I would also like to thank all the readers of the journal for their continued interest.

Dr. Juan Antonio Morente Molinera

Associate Editor