Editor's Note

The International Journal of Interactive Multimedia and Artificial Intelligence provides an interdisciplinary forum in which scientists and professionals can share their research results and report new advances on Artificial Intelligence and Interactive Multimedia techniques. The research works presented in this regular issue are based on various topics of interest, among which are included: nature inspired optimization algorithms, multi-agent systems, fast motion estimation, handwritten recognition, supervised and unsupervised machine learning methods, or web mining.

The fields of application are diverse: e-commerce, computer security, 2.0 enterprises, decision making in business, online banking systems, video compression, user experience evaluation, accessibility for Deaf people, or wireless networks, which is the domain of the first article of this issue. This first article is authored by Kaur and Arora [1], who compare the performance of nature inspired optimization algorithms when solving the problem of localization of sensor nodes in wireless sensor networks. They show the behavior of the algorithms considering values of relevant parameters not previously analyzed. Specifically, they apply Flower Pollination Algorithm (FPA), Firefly Algorithm (FA), Particle Swarm Optimization (PSO) and Grey Wolf Optimization (GWO) algorithm, finding that FPA shows better localization accuracy.

Idrus et al. [2] present a framework for decision making applied to the construction domain problem, whose resolution involves the proposal of solutions, negotiation and conflict resolution. They focus on the first part of the process, proposing an algorithm for software agents to generate solutions and rank them to facilitate subsequent negotiation. They apply the algorithm to a validation scenario and show that the algorithm ranks solutions according to each stakeholder position, but conflicts between the different stakeholders exist, which makes necessary to develop a conflict resolution algorithm for the last phase of the process.

With the aim of facilitating industrial site selection for decision-makers, Taibi and Atmani [3] also provide a ranking model through the combination of Fuzzy Analytic Hierarchy Process (FAHP), Geographic Information System (GIS) and decision rules. The model provides a rank for each zone that is an index that allows to optimize the use of zones in the future.

Arora et al. [4] propose a hybrid technique for fast motion estimation, a key process in video compression. Simulation results are compared with results obtained with other existing techniques. The comparison shows that the proposed solution increases video quality and search efficiency and reduces the computation required to estimate the motion vectors.

A dissertation on handwriting recognition is presented by Boulid et al. in next article [5]. The recognition task bases on the multi-agent systems paradigm and it is inspired by the mechanisms the human reader applies while reading. Authors focus on Arabic handwritten documents, obtaining promising results. Continuing with this line, Souhar et al. [6] explore methods based on the watershed transform technique to segment text lines in handwritten Arabic documents. They compare the methods and discuss about the possible reasons that justify the results.

In order to prevent malicious mobile agents attacking a mobile agent platform, Bagga et al. [7] propose the use of machine learning algorithms to detect those unknown malicious agents. They consider an n-gram representation of the agent, which is used as feature for the classification process undertaken by commonly used algorithms, such as Naïve Bayesian or J48 Decision Tree. The different algorithms are compared via extensive experiments done with a benchmark dataset involving malware and benign traces, probing the suitability of supervised machine learning for the detection of malicious agents.

Related also to the field of computer security, Harish and Kumar [8] present a network anomaly detection method based on fuzzy clustering, which, as unsupervised learning method, has the advantage of better detecting unknown attacks when compared with supervised ones. They apply different techniques to mitigate disadvantages of unsupervised methods such as the higher false alarm rate. They compare the performance of this method with other clustering methods finding that it outperforms the other ones.

In the field of semantic web, Anoop and Asharaf [9] propose a method guided by topic modeling for extracting concepts and relationships from unstructured e-commerce product descriptions. The described evaluation shows that their method outperforms other existing techniques, some guided also on topic modelling. Besides, authors explore the possibility of creating a product knowledge base, which can potentially serve for product discovery experience for customers.

The article authored by Bader et al. [10] analyses the state of research on heuristics used for the evaluation of user experience, contributing to reduce the existing research gap in that topic. From the analysis done, they propose a mapping of heuristics with the different dimensions of the User Experience Questionnaire, a widely used questionnaire to measure the user experience with products. Moreover, they also provide a set of quality criteria for heuristics. The article concludes with some recommendations about the convenient heuristics when it is intended to apply heuristic evaluation for measuring user experience.

With the same focus on user experience, the article of Schrepp et al. [11] describes the design and evaluation of a short version of the above mentioned User Experience Questionnaire. The aim is to propose an alternative short questionnaire for those scenarios in which the use of the longer one is not practical.

Reguieg and Taghezout [12] apply an enterprise 2.0 project to help organizations improve business processes, based on multi-agent systems. They implement a collaborative environment, a social network, for employers to share diagnosis and fault repair procedures. Besides, they propose a coordination protocol that manages interaction between agents.

In addition, in order to also improve processes in companies, specifically the processes in bank operation centers, Serengil and Ozpinar [13] propose a hybrid multi stage approach for workforce planning. The approach is based on supervised and unsupervised learning algorithms. Expected workload is predicted via a neural network while employees are grouped via k-means clustering.

Next article, authored by Farhane et al. [14] describes a robust adaptive fuzzy neural network sliding mode (AFNNSM) control design for a variable speed wind turbine. A fuzzy neural network is used to approximate the model function, which provides a better description of the plant. In order to optimize the learning rate of backpropagation algorithm used to train the neural network, a particle swarm optimization algorithm is also used. Through simulations, the authors show the effectiveness of the method, with the trajectory tracking errors converging to zero.

Last article corresponds to an interdisciplinary research done by Pérez et al. [15] whose main result is a system that translates video subtitles in oral language to SignWriting, a method of writing Sign

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Language. This system complements a platform that automatically provides accessible web content for Deaf people and that is prepared to be extended to satisfy the needs of other people. A first prototype of the video translator has been tested and results in usability and accessibility tests show that this tool can enhance the accessibility of video content available on the Web for Deaf people.

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