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 issue are based on various topics of interest, among which are included: Radar Clutter, Radar Detectors Performance, Butterfly Optimization Algorithm, Artificial Bee Colony, Evolutionary strategy, Fractal Coding, User Experience, Handwritten Arabic Character Recognition, Feature Extraction, Embedded Hidden Markov Models, Artificial Immune System, Hopfield Neural Network, Browsers, Multimedia, MoCap and Animations.

Machado-Fernandez, J. R. et al. [1] contribute to the improvement of radar detection by suggesting an application of an adaptive scheme which assumes the clutter shape parameter which is known a priori. Offered mathematical expressions are valid for three false alarm probabilities and several windows sizes, covering also a wide range of clutter conditions.

Arora, S. and Singh, S. [2] present a new hybrid optimization algorithm which combines the standard Butterfly Optimization Algorithm (BOA) with Artificial Bee Colony (ABC) algorithm is proposed. The proposed algorithm used the advantages of both algorithms in order to balance the trade-off between exploration and exploitation. Experiments have been conducted on the proposed algorithm using ten benchmark problems having a broad range of dimensions and diverse complexities. The simulation results demonstrate that the convergence speed and accuracy of the proposed algorithm in finding optimal solutions is significantly better than BOA and ABC. for both identification and verification applications.

Habiboghli, A. and Jalali, T. [3]. Biogeography-based Optimization (BBO) is a global optimization algorithm based on population, governed by mathematics of biogeography, and dealing with geographical distribution of biological organisms. The BBO algorithm was used in the present study to provide a solution for the N-queens problem. The performance of the proposed algorithm has been evaluated in terms of the quality of the obtained results, cost function, and execution time. Furthermore, the results of this algorithm were compared against those of genetic and particle swarm algorithms.

Kamble, S.D., et al. [4], present a paper in which the main objective is to develop an approach for video coding using modified three step search (MTSS) block matching algorithm and weighted finite automata (WFA) coding with a specific focus on reducing the encoding time. The MTSS block matching algorithm are used for computing motion vectors between the two frames i.e. displacement of pixels and WFA is used for the coding as it behaves like the Fractal Coding (FC). WFA represents an image (frame or motion compensated prediction error) based on the idea of fractal that the image has self-similarity in itself.

Schrepp, M. et al. [5] talk about questionnaires. These are a cheap and highly efficient tool for achieving a quantitative measure of a product's user experience (UX). However, it is not always easy to decide, if a questionnaire result can show whether a product satisfies this quality aspect. So a benchmark is useful. It allows comparing the results of one product to a large set of other products. In this paper, they describe a benchmark for the User Experience Questionnaire (UEQ), a widely used evaluation tool for interactive products. They also describe how the benchmark can be applied to the quality assurance process for concrete projects.

Boulid, Y. et al. [6] write about handwritten character recognition. A good Arabic handwritten recognition system must consider the characteristics of Arabic letters which can be explicit such as the presence of diacritics or implicit such as the baseline information (a virtual line on which cursive text are aligned and/join). In order to find an adequate method of features extraction, we have taken into consideration the nature of the Arabic characters. The paper investigates two methods based on two different visions: one describes the image in terms of the distribution of pixels, and the other describes it in terms of local patterns. Spatial Distribution of Pixels (SDP) is used according to the first vision; whereas Local Binary Patterns (LBP) are used for the second one. Tested on the Arabic portion of the Isolated Farsi Handwritten Character Database (IFHCDB) and using neural networks as a classifier, SDP achieve a recognition rate around 94% while LBP achieve a recognition rate of about 96%.

Jalal, A. et al. [7] talk about elderly people and they need special care in the form of healthcare monitoring systems. Recent advancements in depth video technologies have made human activity recognition (HAR) realizable for elderly healthcare applications. In this paper, a depth video-based novel method for HAR is presented using robust multi-features and embedded Hidden Markov Models (HMMs) to recognize daily life activities of elderly people living alone in indoor environment such as smart homes. In the proposed HAR framework, initially, depth maps are analyzed by temporal motion identification method to segment human silhouettes from noisy background and compute depth silhouette area for each activity to track human movements in a scene. Several representative features, including invariant, multi-view differentiation and spatiotemporal body joints features were fused together to explore gradient orientation change, intensity differentiation, temporal variation and local motion of specific body parts. Then, these features are processed by the dynamics of their respective class and learned, modeled, trained and recognized with specific embedded HMM having active feature values. Furthermore, we construct a new online human activity dataset by a depth sensor to evaluate the proposed features. Our experiments on three depth datasets demonstrated that the proposed multi-features are efficient and robust over the state of the art features for human action and activity recognition.

Bin Mansor, M. A., et al. [8] in this paper they implement an artificial immune system algorithm incorporated with the Hopfield neural network to solve the restricted MAX-kSAT problem. The proposed paradigm are compared with the traditional method, Brute force search algorithm integrated with Hopfield neural network. The results demonstrate that the artificial immune system integrated with Hopfield network outperforms the conventional Hopfield network in solving restricted MAX-kSAT. All in all, the result has provided a concrete evidence of the effectiveness of our proposed paradigm to be applied in other constraint optimization problem. The work presented here has many profound implications for future studies to counter the variety of satisfiability problem.

Beltrán-Alfonso, R. et al. [9] present a study of the development and evolution of search engines, more specifically, to analyze the relevance of findings based on the number of results displayed in paging systems with Google as a case study. Finally, it is intended to contribute to indexing criteria in search results, based on an approach to Semantic Web as a stage in the evolution of the Web.

Magdin, M., [10] proposes a new easy-to-use system for home usage, through which we are making character animation. In its implementation, they paid attention to the elimination of errors from the previous solutions. In this paper the authors describe the method

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how motion capture characters on a treadmill and as well as an own Java application that processes the video for its further use in Cinema 4D. This paper describes the implementation of this technology of sensing in a way so that the animated character authentically imitated human movement on a treadmill.

Wall, F.,[11] studies the effects of learning-induced alterations of distributed search systems' organizations. In particular, scenarios where alterations of the search-systems' organizational setup are based on a form of reinforcement learning are compared to scenarios where the organizational setup is kept constant and to scenarios where the setup is changed randomly. The results indicate that learning-induced alterations may lead to high levels of performance combined with high levels of efficiency in terms of reorganization-effort. However, the results also suggest that the complexity of the underlying search problem together with the aspiration level (which drives positive or negative reinforcement) considerably shapes the effects of learning.

Gil, E. and Medinaceli, K. [13] present a paper that focuses on analyzing from the point of view of medical diagnosis the importance of electronic medical records as a unifying element of the information essential for this type of diagnosis, and the use of artificial intelligence techniques in this field. To this end the current situation of electronic medical records is analyzed in a country like Bolivia exhaustively analyzing three of the most important health centers. Is used for this unstructured interview experts on the subject reflect the status of electronic medical records from the point of view of protection of the right to privacy of individuals and will serve as a model for development, not only in Bolivia but also in other Latin American countries.

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