Editorial

Editorial to the Special Issue Section on "Hybrid Intelligent Systems for Optimization and Pattern Recognition - Part II"

The special issue on hybrid intelligent systems for optimization and pattern recognition comprises five contributions, which are selected and extended versions of papers previously presented at the International Seminar on Computational Intelligence held at Tijuana, Mexico on January of 2010. The papers describe different contributions to the area of hybrid intelligent systems with application on optimization and pattern recognition. In the papers, an optimal combination of intelligent techniques is applied to solve in an efficient and accurate manner a problem in a particular area of application.

In the first paper, by Mario I. Chacon-Murguia *et al.*, a method for Fusion of Door and Corner Features for Scene Recognition is presented. This paper presents a scenery recognition system using a neural network hierarchical approach. The system is based on information fusion in indoor scenarios. The system extracts relevant information with respect to color and landmarks. Color information is related mainly to localization of doors. Landmarks are related to corner detection. The corner detection method proposed in the paper based on corner detection windows has 99% detection of real corners and 13.43% of false positives.

In the second paper, by Martha Cárdenas *et al*., the Optimization of a Modular Neural Network for Pattern Recognition using Parallel Genetic Algorithm is presented. In this paper, the implementation of a Parallel Genetic Algorithm for the training stage and the optimization of a monolithic and modular neural network for patter recognition is presented. The optimization consists in obtaining the best architecture in layers, and neurons per layer achieving the less training error in a shorter time. The implementation was performed in a multi-core architecture, using parallel programming techniques to exploit its resources. We present the results obtained in terms of performance by comparing results of the training stage for sequential and parallel implementations.

In the third paper, by Claudia Gómez Santillán *et al.*, an Adaptive Ant-Colony Algorithm for Semantic Query Routing is presented. In this paper, a new ant-colony algorithm, Adaptive Neighboring-Ant Search (AdaNAS), for the semantic query routing problem (SQRP) in a P2P network is described. The proposed algorithm incorporates an adaptive control parameter tuning technique for runtime estimation of the time-to-live (TTL) of the ants. AdaNAS uses three strategies that take advantage of the local environment: learning, characterization, and exploration. Two classical learning rules are used to gain experience on past performance using three new learning functions based on the distance traveled and the resources found by the ants. The experimental results show that the AdaNAS algorithm outperforms the NAS algorithm where the TTL value is not tuned at runtime.

In the fourth paper, by Leslie Astudillo *et al.*, a new Optimization Method Based on a Paradigm Inspired by Nature is described. A new optimization method for soft computing problems is presented, which is inspired on a nature paradigm: the reaction methods existing on chemistry, and the way the elements combine with each other to form compounds, in other words, quantum chemistry. This paper is the first approach for the proposed method, and it presents the background, main ideas, desired goals and preliminary results in optimization.

In the fifth paper, by Marco Aurelio Sotelo-Figueroa *et al.*, the Application of the Bee Swarm Optimization BSO to the Knapsack Problem is presented. In this paper, a novel hybrid algorithm based on the Bees Algorithm (BA) and Particle Swarm Optimization (PSO) is applied to the Knapsack Problem. The Bee Algorithm is a new population-based search algorithm inspired by the natural foraging behavior of honey bees, it performs a kind of exploitative neighborhood search combined with random explorative search to scan the solution, but the results obtained with this algorithm in the Knapsack Problem are not very good. Although the

combination of BA and PSO is given by BSO, Bee Swarm Optimization, this algorithm uses the velocity vector and the collective memories of PSO and the search based on the BA and the results are much better.

In conclusion, this special issue represents a contribution to the state of the art in the area of hybrid intelligent systems with application on optimization and pattern recognition.

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