



Editorial

Special issue SOCO 2014: Recent advancements in soft computing and its application in industrial and environmental problems



The six papers included in this special issue represent a selection of extended contributions presented at the 9th International Conference on Soft Computing Models in Industrial and Environmental Applications, SOCO 2014 held in Bilbao, Spain, June 25th–27th, 2014, and organized by DeustoTech, BISITE and the GICAP research groups.

This special issue is aimed at practitioners, researchers and postgraduate students who are engaged in developing and applying advanced intelligent system principles to solving real-world problems. The papers are organized as follows.

In the first contribution, Osaba et al. propose a procedure to introduce new techniques and their results in the field of routing problems. The novel procedure is detailed, and a set of good practices to follow are deeply described. It is noteworthy that this procedure can be applied to any combinatorial optimization problem.

In the next contribution by Martínez-de-Pison et al., a novel methodology referred as the Genetic Algorithm-PARSIMONY and specifically designed and evaluated in detail in thirteen public databases with five regression techniques. It is a GA-based meta-heuristic that splits the classic two-termed minimization functions by making two consecutive ranks of individuals.

In the third contribution Del Ser et al., a Harmony Search (HS) based scheme is proposed to determine the optimal number, position and model of a set of wireless relays that must be deployed over a largescale disaster area. The performance of different heuristic operators to enhance the proposed HS algorithm are assessed and discussed by means of extensive simulations over synthetically generated scenarios, as well as over a more realistic, orography-aware setup constructed with LIDAR (Laser Imaging Detection and Ranging) data captured in the city center of Bilbao (Spain).

Following Krawczyk et al. introduce a novel pipeline for feature extraction and classification of hyperspectral images. To obtain a compressed representation they propose to extract a set of statistical-based properties from these images. This allows for embedding feature space into fourteen channels, to obtain a significant dimensionality reduction. These features are used as an input for the ensemble learning based on randomized neural networks.

In next paper, Graña et al. present a first evaluation of the performance of the novel True Online Temporal-Difference policy evaluation algorithm in an Actor–Critic architecture compared to the classical Temporal-Difference (λ) policy evaluation method. They have carried out experiments to compare CRL (Conditioned Reinforcement Learning) methods, and unconditioned Actor–Critic agents in three different control benchmark scenarios.

As a final contribution, Irigoyen et al. present important enhancements and variations for an existing fuzzy logic stress detection system based on monitoring and processing different physiological signals (heart rate, galvanic skin response and breath). First of all, it proposes a method based on wavelet processing to improve the detection of R peaks of electrocardiograms. Afterwards, it proposes to decompose the galvanic response signal into two components: the average value and the variations. In addition, it extracts information about the breath signal by analyzing its frequency composition. Finally, an improved response in detecting stress changes is shown in comparison with other previous works.

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Received 18 June 2017
Accepted 23 June 2017