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Editorial

SPECIAL ISSUE SOCO13-JAL

The five papers included in this special issue represent a selection of extended contributions presented at the 8th International Conference on Soft Computing Models in Industrial and Environmental Applications, SOCO 2013 held in Salamanca, Spain, September 11th–13th, 2013, and organized by the 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 systems principles to solve real-world problems. The papers are organized as follows.

The first contribution, by Galdámez et al., presents a combined approach in biometric analysis field, integrating some of the most known techniques using ears to recognize people. This study uses Hausdorff distance as a pre-processing stage adding sturdiness to increase the performance filtering for the subjects to use it in the testing process. It also includes the Image Ray Transform (IRT) and the Haar based classifier for the detection step. Then, the system computes Speeded Up Robust Features (SURF) and Linear Discriminant Analysis (LDA) as an input of two neural networks to recognize a person by the patterns of his ear.

The second contribution, by Golínska-Pilarek et al., presents a new prefixed tableau system TK for verification of validity in modal logic K. The system TK is deterministic, it uniquely generates exactly one proof tree for each clausal representation of formulas, and, moreover, it uses some syntactic reductions of prefixes. TK is defined in the original methodology of tableau systems, without any external technique such as backtracking, backjumping, etc. Since all the necessary bookkeeping is built into the rules, the system is not only a basis for a validity algorithm, but is itself a decision procedure. Authors present also a deterministic tableau decision procedure, which is an extension of TK and can be used for the global assumptions problem.

In next contribution, Sagrado et al. introduce a bayesian network with the aim of achieving adequate inside climate conditions (mainly temperature and humidity) by acting on actuators based on the value of different state variables and disturbances acting on the system. The system is built and tested using data gathered from a real greenhouse under closed-loop control (where several controllers as gain scheduling ones are used), but where growers can also perform control actions independent on the automatic control system. The Bayesian Network has demonstrated to provide a good approximation of a control signal based on previous manual and control actions implemented in the same system (based on predefined setpoints), as well as on the environmental conditions.

The following paper, by Casteleiro-Roca et al., a novel intelligent system was designed to detect faults on this type of heating equipment. The novel approach has been successfully empirically tested under a real dataset obtained during measurements along one year. It was based on classification techniques with the aim of detecting failures in real time. Then, the model was validated and verified over the building; it obtains good results in all the operating conditions ranges.

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In the final paper, Sanchez-Pi et al., propose and evaluate an ontology-based heuristic algorithm for occupational health control process, particularly, for the case of automatic detection of accidents from unstructured texts, using techniques terms and contrasting the relevance of previous used techniques terms into the text, so the heuristic is more accurate. It divides the problem in subtasks such as: (i) text analysis, (ii) recognition and (iii) classification of failed occupational health control, resolving accidents as text analysis, recognition and classification of failed occupational health control, resolving accidents.

The guest editors wish to thank Professor Dov Gabbay, (Editor-in-Chief of Journal of Applied Logic) for providing the opportunity to edit this special issue. We would also like to thank the referees who have critically evaluated the papers within the short time. Finally, we hope the reader will share our joy and find this special issue very useful.

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