Special Session on Artificial Bee Colony algorithms and their applications (CEC 2014 under WCCI 2014)

Aims and Scope

Biological communities like insect colonies display remarkable collective intelligence in carrying out their tasks references for studying the delicate processes of swarming behaviour. Bee colony is one such potent example and swarm literature presents instances of successful algorithms devised based on various activities of the bees. In general, swarm intelligence is based on collective behavior of self-organized systems. As a typical example of swarm intelligence, the bee swarming around her hive has received significant interest from researchers. Recently there has been a surge of interest in developing algorithms for search, optimization, and communication by simulating different aspects of the social life of a very well-known creature: the honey bee. Several articles reporting the success of the heuristics based on swarming, mating, and foraging behaviors of the honey bees are being published on a regular basis. By modeling the specific intelligent behaviors of honey bee swarms, an artificial bee colony (ABC) algorithm is developed to optimize multi-variable and multi-modal continuous functions.

For over past one decade or so, researchers have been developing several algorithms based on various intelligent behaviors of the honey bee swarms. Among these, ABC has been vastly accepted by the computational intelligence community and today it is the one of the most widely studied approaches for real parameter optimization. During the last five years, research on and with the algorithms based on bees swarm etc. has reached a very promising state. But there is still a long way to go in order to fully utilize the potential of the SI algorithms imitating the behaviour of the honey bees. As for example, the convergence and stability of the dynamics of ABC algorithm has been hardly studied. Application of ABC and similar algorithms based on the bees foraging behaviour to discrete/combinatorial optimization problems are also rare. This special session aims at bringing researchers from academia and industry together to report and review the latest progresses in this rapidly emerged field, to explore future directions of research, and to publicize the bee colony based algorithms and metaheuristics to a wider audience.

Topics Covered

Authors are invited to submit their original and unpublished work in the areas including (but not limited to) the following:

1) Theoretical and empirical study of ABC and similar bees foraging based algorithms with special emphasis on mathematical modeling and dynamical analysis for investigating issues like convergence, stability, and robustness.
2) Connections to / comparison with other powerful swarm and evolutionary computing algorithms like Particle Swarm Optimization, Genetic Algorithms, Differential Evolution etc.
3) Development, benchmarking, and evaluation of new bee colony based algorithms.
4) Parameter automation and self-adaptation in foraging based optimization techniques
5) ABC algorithms for optimization in dynamic and noisy environments
6) ABC algorithms for constrained, niching, and multi-objective optimization
7) ABC algorithms for discrete and combinatorial optimization
7) Applications to diverse domains including: Swarm robotics, Adaptive and optimal control, Optimal dynamics resource allocation problems, Distributed control of uninhabited autonomous vehicles, Fuzzy/neural controller design for nonlinear systems, Training artificial neural networks for pattern recognition, Clustering and Classification, Forming manufacturing cells, Optimal scheduling of jobs for a production machine, Telecommunication network routing and network optimization, Financial prediction,

Econometrics, and Business Intelligence, Generalized assignment problems, Power Systems, Robust multi-agent system design.

Submission

Please follow the IEEE WCCI 2014 instruction for authors and submit your paper via the IEEE WCCI 2014 online submission system. Please specify that your paper is for the Special Session on Artificial Bee Colony algorithms and their applications. The authors intended to contribute to IEEE WCCI 2014 Special Sessions are kindly recommended to follow the manuscript style information and templates of regular IEEE WCCI 2014 papers, as described here.

Please note that this Special Session is specifically and exclusively related to **IEEE CEC 2014**.

When submitting their manuscripts, authors are recommended to follow these steps:

1. Identify the conference associated to the Special Session they are interested in, by looking at the "Provisionally Accepted Special Session" list under the column called ID;
2. Go to the related conference submission website;
3. Select the Special Session name in the Main Research topic dropdown list;
4. Fill out the input fields, upload the pdf file and finalize the submission by December 20, 2013.

Important Dates

Paper Submission Deadline: December 20, 2013
Notification of Acceptance: March 15, 2014
Final Paper Submission Deadline: April 15, 2014
Early/Paper Author Registration: April 15, 2014

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