I. AIM AND SCOPE

Differential Evolution (DE) is arguably one of the most powerful stochastic real-parameter optimization algorithms in current use. DE operates through the same computational steps as employed by a standard Evolutionary Algorithm (EA). However, unlike the traditional EAs, the DE-variants perturb the current-generation population members with the scaled differences of randomly selected and distinct population members. Therefore, no separate probability distribution has to be used, which makes the scheme completely self-organizing. DE is a very simple algorithm, requiring only a few lines of code in most of the existing programming languages. Additionally, it takes very few control parameters, which makes it easy to use. Nonetheless, DE exhibits remarkable performance in optimizing a wide variety of multi-dimensional and multi-modal objective functions in terms of final accuracy, convergence speed, and robustness. The last decade has witnessed a rapidly growing research interest in DE as demonstrated by the significant increase in the number of research publications on DE in the form of books, monographs, and archival articles. Although research on and with DE has reached an impressive state, there are still many open problems and new application areas are continually emerging for the algorithm. This special issue aims at bringing researchers from academia and industry together to report and review the latest progresses in this field, to explore future directions of research and to publicize DE to a wider audience.

II. TOPICS COVERED

Authors are invited to submit their original and unpublished work in the areas including (but not limited to) the following:

- Theoretical analysis of the search mechanism, complexity of DE.
- Adaptation and tuning of the control parameters of DE.
- Development of new vector perturbation techniques for DE.
- Adaptive mixing of the perturbation techniques.
- Balancing explorative and exploitative tendencies in DE and memetic DE.
- DE for finding multiple global optima.
- DE for noisy and dynamic objective functions.
- DE for multi-objective optimization.
- Constraints handling with DE.
- DE for high-dimensional optimization.
- DE-variants for handling mixed-integer, discrete, and binary optimization problems.
- Hybridization of DE with other search methods.
- Applications of DE in diverse domains.

III. IMPORTANT DATES

- November 30, 2009, Submission deadline
- April 1, 2010, Notification of the first-round review
- June 1, 2010, Revised submission due
- September 15, 2010, Final notice of acceptance/reject
- October 15, 2010, Final manuscript

The expected publication time of the special issue will be in the middle of 2011.

IV. SUBMISSION

Manuscripts should be prepared according to the instructions of the “Information for Authors” section of the journal available at (http://ieee-cis.org/pubs/tec/authors/). Submission should be done through the IEEE TEC journal website: http://mc.manuscriptcentral.com/tevc-ieee and clearly indicate “Special Issue on Differential Evolution” in the comments to the editor-in-chief. Submission of a manuscript implies that it is the authors’ original unpublished work and is not being submitted for possible publication elsewhere. The review Process will be handled by the guest editors of this special issue and the Editor-in-Chief, Prof. Garrison W. Greenwood.

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Please inform us as soon as you submit your Special Issue contribution at the IEEE TEC MC system so that we can select reviewers.