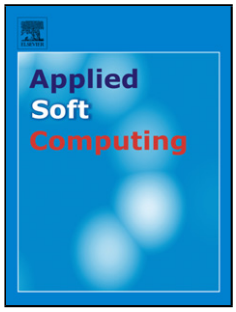

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Adaptive Neighborhood Selection for Many-objective Optimization Problems

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Abstract

It is generally accepted that conflicts between convergence and distribution deteriorate with an increase in the number of objectives. Furthermore, Pareto dominance loses its effectiveness in many-objectives optimization problems (MaOPs), which have more than three objectives. Therefore, a more valid selection method is needed to balance convergence and distribution. This paper presents a many-objective evolutionary algorithm, called *Adaptive Neighborhood Selection for Many-objective evolutionary algorithm*(ANS-MOEA), to deal with MaOPs. This method defines the performance of each individual by two types of information, convergence information (CI) and distribution information (DI). In the critical layer, a well-converged individual is selected first from the population, and its neighbors, calculated by DI, are pushed into neighbor collection (NC) soon afterwards. Then, the proper distribution of the population is ensured by competition individuals with large DI go back to the population and individuals with small DI remain in the collection. Four state-of-the-art MaOEAs

☆ Fully documented templates are available in the elsarticle package on CTAN.

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