

ADVANCES IN MULTI-OBJECTIVE EVOLUTIONARY ALGORITHMS BASED ON DECOMPOSITION

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In the last decade, the framework which has attracted the most attention of researchers in the evolutionary multi-objective optimization community is the decomposition-based framework. Since the proposition of the multi-objective evolutionary algorithm based on decomposition (MOEA/D) by Zhang and Li in 2007, several studies have been conducted in the literature to: a) overcome the limitations in the design components of the original MOEA/D, b) improve the performance of MOEA/D, c) present novel decomposition-based MOEAs, and d) adapt decomposition-based MOEAs for different type of problems. However, the decomposition-based framework is still in its infancy as compared to the dominance- and indicator-based framework, and requires considerable attention of researchers for further growth.

Topics

- Design of novel weight vector generation methods
- Development of new decomposition methods
- Design of novel computational resource allocation strategies
- Integration of new reproduction operators
- Investigation of novel mating selection and replacement procedures
- Development of novel decomposition-based MOEAs
- Hybridization of dominance- and decomposition-based approaches
- Incorporation of user-preferences in decomposition-based MOEAs