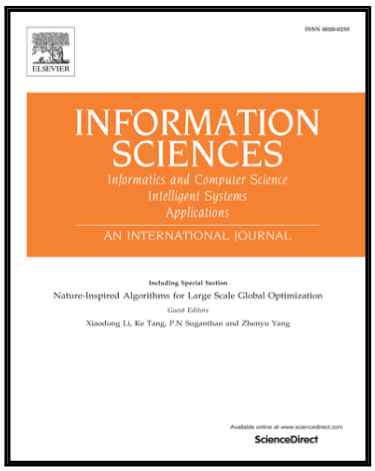

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An Ensemble Framework for Assessing Solutions of Interval Programming Problems

Jing Sun[a], Dunwei Gong[b,c*], Xiaojun Zeng[d], Na Geng[e]

[a] *College of Sciences, Huaihai Institute of Technology, Lianyungang, 222005, China*
[b] *School of Information and Control Engineering,China University of Mining and Technology, Xuzhou, 221116, China*
[c] *School of Information Science and Technology, Qingdao University of Science and Technology, Qingdao, 266061, China*
[d] *School of Computer Science, The University of Manchester, Manchester, M13 9PL, UK*
[e] *School of Electrical engineering and automation, Jiangsu Normal University, Xuzhou, 221116, China*

Abstract

Interval programming is a commonly used technique in real-world situations. Its related theories and methods have been widely researched. There are a variety of approaches for assessing solutions of an interval programming problem due to the particularity of intervals. It is well-known that different assessing approaches may produce different optimal solution(s) for the same interval programming problem, and it is rather difficult to choose from these assessing approaches for users, especially for those who have little knowledge about interval arithmetic, which greatly restricts its extensive applications.

In this paper, we develop an ensemble framework for assessing solutions of interval programming problems. At the start, interval dominance rules are defined, and their correlations are described via exclusion, inclusion and equivalence; then, a rule reduction strategy is developed through inspecting the impact of different rules on the sorting of solutions, and a novel ensemble dominance relation for interval programming is proposed to evaluate solutions; furthermore, their complexities are analyzed; finally, the experimental results empirically validate the correctness and effectiveness of the proposed framework.

*Corresponding author. Tel.:+86 516 83995312.
Email address: dwgong@vip.163.com (Dunwei Gong[b,c*])