



Hypervolume-based multi-objective local search

Submitted by Emmanuel Lemoine on Mon, 10/06/2014 - 17:47

Titre Hypervolume-based multi-objective local search

Type de publication Article de revue

Auteur Basseur, Matthieu [1], Zeng, Rong-Qiang [2], Hao, Jin-Kao [3]

Editeur Springer Verlag

Type Article scientifique dans une revue à comité de lecture

Année 2012

Langue Anglais

Date 2012/11/01

Numéro 8

Pagination 1917 - 1929

Volume 21

Titre de la revue Neural Computing and Applications

ISSN 0941-0643 / 1433-3058

Mots-clés Artificial Intelligence (incl. Robotics) [4], Computational Biology/Bioinformatics [5], Computational Science and Engineering [6], Data Mining and Knowledge Discovery [7], Flow shop problem [8], Hypervolume contribution [9], image processing and computer vision [10], Local search [11], Multi-objective [12], Probability and Statistics in Computer Science [13], Quadratic assignment problem [14]

Résumé en anglais This paper presents a multi-objective local search, where the selection is realized according to the hypervolume contribution of solutions. The HBMOLS algorithm proposed is inspired from the IBEA algorithm, an indicator-based multi-objective evolutionary algorithm proposed by Zitzler and Künzli in 2004, where the optimization goal is defined in terms of a binary indicator defining the selection operator. In this paper, we use the indicator optimization principle, and we apply it to an iterated local search algorithm, using hypervolume contribution indicator as selection mechanism. The methodology proposed here has been defined in order to be easily adaptable and to be as parameter-independent as possible. We carry out a range of experiments on the multi-objective flow shop problem and the multi-objective quadratic assignment problem, using the hypervolume contribution selection as well as two different binary indicators which were initially proposed in the IBEA algorithm. Experimental results indicate that the HBMOLS algorithm is highly effective in comparison with the algorithms based on binary indicators.

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DOI 10.1007/s00521-011-0588-4 [16]

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