Diversification-based learning in computing and optimization

Titre	Diversification-based learning in computing and optimization
Type de publication	Article de revue
Auteur	Glover, Fred [1], Hao, Jin-Kao [2]
Editeur	Springer Verlag
Type	Article scientifique dans une revue à comité de lecture
Année	2019
Langue	Anglais
Date	Octobre 2019
Numéro	4-5
Pagination	521–537
Volume	25
Titre de la revue	Journal of Heuristics
ISSN	1381-1231
Mots-clés	Diversification strategies [3], Learning-based optimization [4], Metaheuristic search. [5]
Résumé en anglais	Diversification-based learning (DBL) derives from a collection of principles and methods introduced in the field of metaheuristics that have broad applications in computing and optimization. We show that the DBL framework goes significantly beyond that of the more recent opposition-based learning (OBL) framework introduced in Tizhoosh (in: Proceedings of international conference on computational intelligence for modelling, control and automation, and international conference on intelligent agents, web technologies and internet commerce (CIMCA/IAWTIC-2005), pp 695–701, 2005), which has become the focus of numerous research initiatives in machine learning and metaheuristic optimization. We unify and extend earlier proposals in metaheuristic search (Glover, in Hao J-K, Lutton E, Ronald E, Schoenauer M, Snyers D (eds) Artificial evolution, Lecture notes in computer science, Springer, Berlin, vol 1363, pp 13–54, 1997; Glover and Laguna Tabu search, Springer, Berlin, 1997) to give a collection of approaches that are more flexible and comprehensive than OBL for creating intensification and diversification strategies in metaheuristic search. We also describe potential applications of DBL to various subfields of machine learning and optimization.
URL de la notice	http://okina.univ-angers.fr/publications/ua20327 [6]
DOI	10.1007/s10732-018-9384-y [7]
Lien vers le document	https://link.springer.com/article/10.1007%2Fs10732-018-9384-y [8]
Titre abrégé	J Heuristics

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