



Dynamic thresholding search for minimum vertex cover in massive sparse graphs

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Résumé en français	<p>A number of important applications related to complex network analysis require finding small vertex covers in massive graphs. This paper proposes an effective stochastic local search algorithm called DTS_MVC to fulfill this task. Relying on a fast vertex-based search strategy, DTS_MVC effectively explores the search space by alternating between a thresholding search phase during which the algorithm accepts both improving and non-improving solutions that satisfy a dynamically changing quality threshold, and a conditional improving phase where only improving solutions are accepted. A novel non-parametric operation-prohibiting mechanism is introduced to avoid search cycling. Computational experiments on 86 massive real-world benchmark graphs indicate that DTS_MVC performs remarkably well by discovering 7 improved best known results (new upper bounds). Additional experiments are conducted to shed light on the key ingredients of DTS_MVC.</p>
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- [1] <http://okina.univ-angers.fr/publications?f%5Bauthor%5D=10752>
- [2] <http://okina.univ-angers.fr/jinkao.hao/publications>
- [3] <http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=29531>
- [4] <http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=29532>

[5] <http://okina.univ-angers.fr/publications?f%5Bkeyword%5D=29530>

[6] <http://okina.univ-angers.fr/publications/ua20330>

[7] <http://dx.doi.org/10.1016/j.engappai.2019.03.015>

[8] <https://www.sciencedirect.com/science/article/abs/pii/S095219761930065X?via%3Dihub>

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