

Arulseivan, Ashwin

A note on the set union knapsack problem. (English) Zbl 1288.05177

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Summary: Recently, *S. Khuller et al.* [*Inf. Process. Lett.* 70, No.1, 39–45 (1999; [Zbl 1002.68203](#))] presented a greedy algorithm for the budgeted maximum coverage problem. In this note, we observe that this algorithm also approximates a special case of a set-union knapsack problem within a constant factor. In the special case, an element is a member of less than a constant number of subsets. This guarantee naturally extends to densest k -subgraph problem on graphs of bounded degree.

MSC:

- [05C60](#) Isomorphism problems in graph theory (reconstruction conjecture, etc.) and homomorphisms (subgraph embedding, etc.) Cited in 1 Document
- [05C42](#) Density (toughness, etc.)
- [90C10](#) Integer programming
- [68W25](#) Approximation algorithms

Keywords:

approximation; densest k -subgraph; set-union knapsack; greedy

Full Text: [DOI](#)

References:

- [1] Feige, U.; Kortsarz, G.; Peleg, D., The dense k -subgraph problem, *Algorithmica*, 29, 2001, (1999)
- [2] Goldschmidt, O.; Nehme, D.; Yu, G., Note: on the set-union knapsack problem, *Naval Res. Logist. (NRL)*, 41, 6, 833-842, (1994) · [Zbl 0831.90088](#)
- [3] M.T. Hajiaghayi, K. Jain, K. Konwar, L.C. Lau, I.I. Măndoiu, A. Russell, A. Shvartsman, V.V. Vazirani, The minimum k -colored subgraph problem in haplotyping and DNA primer selection, in: *Proc. Int. Workshop on Bioinformatics Research and Applications*, IWBRA, 2006.
- [4] Khuller, S.; Moss, A.; Naor, J., The budgeted maximum coverage problem, *Inform. Process. Lett.*, 70, 39-45, (1999) · [Zbl 1002.68203](#)
- [5] Prasad Raghavendra, David Steurer, Graph expansion and the unique games conjecture, in: *STOC*, 2010, pp. 755-764. · [Zbl 1293.05373](#)

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