

عنوان مقاله:

Enumeration of Dominant Solutions An Application in Transport Network Design

محل انتشار:

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خلاصه مقاله:

A One-Dimensional Binary Integer Programming Problem (1DB-IPP) is concerned with selecting a subset from a set of k items in budget constraint to optimize a goal function. In this problem a dominant solution is defined as a feasible selection to which no further item could be added in budget constraint. This paper presents a simple algorithm for Enumeration of Dominant Solutions (EDS) and investigates its functionality. The algorithm is then applied on the formulation of the Network Design Problem (NDP) with fixed travel-time links. The problem is a case study of 1DB-IPPs in the transportation planning literature which arises in the networks where the link travel-times are not sensitive to the amount of flow. The results are reported in detail for three illustrative examples and compared with the results of the Branch-and-Bound (B&B) algorithm. These examples suggest that in lower budget levels up to 40.2, 40.3 and 27.1 percentages the EDS algorithm outperforms the B&B algorithm. However, the overall performance of the B&B algorithm is notably faster in higher budget levels

کلمات کلیدی:

Enumeration, dominant solution, branch-and-bound algorithm, network design problem

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