

A fast dynamic programming multi-objective knapsack problem

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June 9, 2017

Abstract

This work addresses... The Multidimensional Objective knapsack programming.
The dynamic programming method... The data structure...

1 Introduction

2 The Multidimensional Knapsack Problem

3 The Dynamic Programming Algorithm

[1]

4 The use of data structure

The k -d tree is a type of binary search tree for indexing multidimensional data with simple construction and low space usage. Despite its simplicity it efficiently supports operations like nearest neighbour search and range search [2]. For those reasons k -d tree is widely used on spacial geometry algorithms [7, 3], clustering [5, 4] and graphic rendering algorithms [6].

Like a standard binary search tree, the k -d tree subdivides data at each recursive level of the tree. Unlike a standard binary tree, that uses only one key for all levels of the tree, the k -d tree uses k keys and cycles through these keys for successive levels of the tree.

Concerning its efficiency, it is important to consider the number of dimensions k -d tree is indexing. As a general rule, a k -d tree is suitable for efficiently indexing of n elements if n is much greater than 2^k . Otherwise, when k -d tree are used with high-dimensional data, most of the elements in the tree will be evaluated and the efficiency is no better than exhaustive search [8].

Its operations...

*Research supported by Fundação de Amparo à Pesquisa do Espírito Santo.

Use on the algorithm.
Indexing the solutions and range operations.
Tends to increase the feasibility on problems with higher dimensions.

5 Computational experiments

- Base de dados utilizaca
- Parametros dos algoritmos
- Anlise dos resultados (comparao)

6 Conclusions and future remarks

- Conclues dos resultados
- Trabalhos futuros

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