Optimal Binary Search Trees

Dynamic programming.

Operation Research.

The goal of the maximum weight independent set problem (MWIS) is to compute, for a given set of geometric objects with certain weights, a subset of disjoint (non-overlapping) objects with maximum total weight.

There is a PTAS (polynomial-time algorihtm scheme) for MWIS in disk graphs, provided that a disk representation of the graph is given. The running-time for achieving approximation ratio $1 + \epsilon$ is $n^{O(1/\epsilon^2)}$ for a disk graph with n disks.

Details:

- Executed on : Seg Out 13 13:06:29 BRT 2014.
- Number of disks : 13.
- Execution time : 0,000619 seconds.
- Memory required : 2044 bytes.

Nodes

	Name	Probabilities
1	1	1,65
2	10	1,98
3	11	3,00
4	12	2,47
5	13	1,98
6	2	2,81
7	3	2,96
8	4	2,41
9	5	3,16
10	6	2,46
11	7	1,98
12	8	2,96
13	9	2,47

Table 1: Nodes probabilities.

Contents

Execution

	1	2	3	4
0	0,00	340282346638528859811704183484516925440,00	340282346638528859811704183484516925440,00	3402823466385288598117
1		0,00	340282346638528859811704183484516925440,00	3402823466385288598117
2			0,00	3402823466385288598117
3				0,00
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Table 2: Table A.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		0	0	0	0	0	0	0	0	0	0	0	0	0
2			0	0	0	0	0	0	0	0	0	0	0	0
3				0	0	0	0	0	0	0	0	0	0	0
4					0	0	0	0	0	0	0	0	0	0
5						0	0	0	0	0	0	0	0	0
6							0	0	0	0	0	0	0	0
7								0	0	0	0	0	0	0
8									0	0	0	0	0	0
9										0	0	0	0	0
10											0	0	0	0
11												0	0	0
12													0	0
13														0

Table 3: Table R.

Analisis

Figure 1: Optimal search tree.

Digest

- Total nodes : 13.
- Levels : 1.
- Expected cost : 340282346638528859811704183484516925440,00.