Algorithmics	Student information	Date	Number of session
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Activity 1. Measurements

n	Time_BT	Time_BT_balancing	ZNCC_greedy	ZNCC_BT	ZNCC_BT_balancing
2	179	147	0	0	0
3	216	138	0,025926	0,025926	0,025926
4	283	265	0,034195	0,034195	0,034195
5	518	409	0,032674	0,041304	0,041304
6	749	637	0,041953	0,049491	0,049491
…	5185	3731	0,054205	0,064898	0,064898
Until not tracible	45480	26529	0,053187	0,079951	0,079951

Activity 2. Questions

a) State the algorithm that provides better results and explain why.

The algorithm that provides the best results is backtracking with balancing , as it has the highest zncc and the lowest time of execution.

b) Which algorithm will you use for processing a realistic dataset a million of images? Explain why.

Probably backtracking with balancing , as it takes less time than normal backtracking or a greedy algorithm, as its execution time is even lower (even if its results are worse)

c) Determine the theoretical time complexity for backtracking (without balancing condition) and validate this analysis from the experimental results.

The time complexity for backtracking would be O(3^n)

This can bee proved by the measurements taken, but it can be more easily determined by explaining how in each iteration of backtracking we get 3 new "roots" or options, (0, 1 or 2), therefore the backtracking grows according to a O(3^n) complexity.

d) Determine the advantage of including the balancing condition in terms of time for backtracking, does it affect the quality of the results?

Taking as basis the results for the different measurements made, balancing does not affect the quality of the result, but it decreases the execution time.