Lab Exercise Part 1 e 2??

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1 Introduction

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2 Technical Approach

2.1 Instancing

... Class 1 - Random
Class 2 - Domain specific random How...

2.2 part2

Used tabu search or genetic or various.... Used from moodle?? Added: clever initial solution, intesification, diversification, 3 opt instead of 2 opt, alterating ...

3 Results

I tested class 3 only for n=10 with 6 instances, 5 runs each. The class 2 intances are random but slightly domain specific. In this case I simply removed the possiblity to have holes in the borders of the board.

Class 1 is fully random: board as size = N so $x \in 0, N-1$ hole of size 1

Both class 1 and 2 were tested using 30 random instances for $10 \leq n \leq 70$. Due to the considerable time I reduced it to 10 instances for $80 \leq n \leq 100$.

The time to drill a hole is constant so we can diregard it. The total cost would be $cost_{real} = cost_{exp} + cN, c \in \mathbb{R}$.

The cost matrix was computed from the hole positions (random or not) using Manhattan distance

n	**class1**	**class2**
10	$0.125s$	$0.131s$
20	$0.537s$	$0.449s$
30	$1.561s$	$1.580s$
40	$5.549s$	$6.303s$
50	$14.534s$	$13.757s$
60	$29.168s$	$26.621s$
70	$47.808s$	$48.775s$
80	$91.089s$	$105.980s$
90	$142.739s$	$199.926s$
100	$257.982s$	$292.470s$

Table 1: Average Time

Assuming a max time as 20 seconds.... we can solve for up to ?? nodes.
Class 1 vs Class 2 ...
Tested 3,4,5 instance for each n and ...

n	**class1**	**class2**
5	0.15	
10	0.25	
20		
30		
50		
70		
100		
150		
200		

Table 2: Average Time

n	**sol**	**optimal**	**cplex heuristic**
5	40	30	N/A
10	100	90	N/A
20			N/A
30			N/A
50			
70			
100			
150			
200			

Table 3: Solution

Assuming a max time as 20 seconds.... we can solve for up to ?? nodes.
Class 1 vs Class 2 ...
std. deviation of ...

4 Conclusions