Output tables for the test of Multiple comparisons.

October 15, 2023

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking
Average Fitness HC	4
Average Fitness HCRR	2.4
Average Fitness SA	1.6
Average Fitness GRASP	2

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 9.96.
P-value computed by Friedman Test: 0.018909228254433197.

2 Post hoc comparisons

Results achieved on post hoc comparisons for $\alpha = 0.05$, $\alpha = 0.10$ and adjusted p-values.

2.1 P-values for $\alpha = 0.05$

i	algorithms	$z = (R_0 - R_i)/SE$	p
6	Average Fitness HC vs. Average Fitness SA	2.939388	0.003289
5	Average Fitness HC vs. Average Fitness GRASP	2.44949	0.014306
4	Average Fitness HC vs. Average Fitness HCRR	1.959592	0.050044
3	Average Fitness HCRR vs. Average Fitness SA	0.979796	0.327187
2	Average Fitness HCRR vs. Average Fitness GRASP	0.489898	0.624206
1	Average Fitness SA vs. Average Fitness GRASP	0.489898	0.624206

Table 2: P-values Table for $\alpha = 0.05$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.008333.

2.2 P-values for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i)/SE$	p
6	Average Fitness HC vs. Average Fitness SA	2.939388	0.003289
5	Average Fitness HC vs. Average Fitness GRASP	2.44949	0.014306
4	Average Fitness HC vs. Average Fitness HCRR	1.959592	0.050044
3	Average Fitness HCRR vs. Average Fitness SA	0.979796	0.327187
2	Average Fitness HCRR vs. Average Fitness GRASP	0.489898	0.624206
1	Average Fitness SA vs. Average Fitness GRASP	0.489898	0.624206

Table 3: P-values Table for $\alpha = 0.10$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.016667.

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}
1	Average Fitness HC vs .Average Fitness SA	0.003289	0.019732
2	Average Fitness HC vs .Average Fitness GRASP	0.014306	0.085835
3	Average Fitness HC vs .Average Fitness HCRR	0.050044	0.300261
4	Average Fitness HCRR vs .Average Fitness SA	0.327187	1.963121
5	Average Fitness HCRR vs .Average Fitness GRASP	0.624206	3.745237
6	Average Fitness SA vs .Average Fitness GRASP	0.624206	3.745237

Table 4: Adjusted p-values