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	3.125
Average Fitness HCRR	2.0938
Average Fitness SA	2.9375
Average Fitness GRASP	1.8438

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 11.30625. P-value computed by Friedman Test: 0.010180055811426336.

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 GRASP	2.807078	0.004999
5	Average Fitness SA vs. Average Fitness GRASP	2.396286	0.016562
4	Average Fitness HC vs. Average Fitness HCRR	2.259356	0.023861
3	Average Fitness HCRR vs. Average Fitness SA	1.848564	0.064521
2	Average Fitness HCRR vs. Average Fitness GRASP	0.547723	0.583882
1	Average Fitness HC vs. Average Fitness SA	0.410792	0.681225

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 GRASP	2.807078	0.004999
5	Average Fitness SA vs. Average Fitness GRASP	2.396286	0.016562
4	Average Fitness HC vs. Average Fitness HCRR	2.259356	0.023861
3	Average Fitness HCRR vs. Average Fitness SA	1.848564	0.064521
2	Average Fitness HCRR vs. Average Fitness GRASP	0.547723	0.583882
1	Average Fitness HC vs. Average Fitness SA	0.410792	0.681225

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 GRASP	0.004999	0.029996
2	Average Fitness SA vs .Average Fitness GRASP	0.016562	0.099373
3	Average Fitness HC vs .Average Fitness HCRR	0.023861	0.143168
4	Average Fitness HCRR vs .Average Fitness SA	0.064521	0.387125
5	Average Fitness HCRR vs .Average Fitness GRASP	0.583882	3.503295
6	Average Fitness HC vs .Average Fitness SA	0.681225	4.087351

Table 4: Adjusted p-values