Output tables for the test of Multiple comparisons.

March 30, 2022

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking
Slime-mould	2
Grey-wolf	3.2333
Dragon-fly	2.7667
QuantumEigensolver	2

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 19.96.
P-value computed by Friedman Test: 1.7301339599196108E-4.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 3 and 87 degrees of freedom: 8.26442.

P-value computed by Iman and Daveport Test: 6.723596630911235E-5.

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	Holm
6	Slime-mould vs. Grey-wolf	3.7	0.000216	0.008333
5	Grey-wolf vs. QuantumEigensolver	3.7	0.000216	0.01
4	Slime-mould vs. Dragon-fly	2.3	0.021448	0.0125
3	Dragon-fly vs. QuantumEigensolver	2.3	0.021448	0.016667
2	Grey-wolf vs. Dragon-fly	1.4	0.161513	0.025
1	Slime-mould vs. QuantumEigensolver	0	1	0.05

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

Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.0125.

2.2 P-values for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm
6	Slime-mould vs. Grey-wolf	3.7	0.000216	0.016667
5	Grey-wolf vs. QuantumEigensolver	3.7	0.000216	0.02
4	Slime-mould vs. Dragon-fly	2.3	0.021448	0.025
3	Dragon-fly vs. QuantumEigensolver	2.3	0.021448	0.033333
2	Grey-wolf vs. Dragon-fly	1.4	0.161513	0.05
1	Slime-mould vs. QuantumEigensolver	0	1	0.1

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

Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.05.

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Holm}
1	Slime-mould vs .Grey-wolf	0.000216	0.001294
2	Grey-wolf vs .QuantumEigensolver	0.000216	0.001294
3	Slime-mould vs .Dragon-fly	0.021448	0.085793
4	Dragon-fly vs .QuantumEigensolver	0.021448	0.085793
5	Grey-wolf vs .Dragon-fly	0.161513	0.323027
6	Slime-mould vs .QuantumEigensolver	1	1

Table 4: Adjusted p-values