

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	2.1333
Grey-wolf	2.75
Dragon-fly	2.9833
QuantumEigensolver	2.1333

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 10.17.
P-value computed by Friedman Test: 0.01717499645355014.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 3 and 87 degrees of freedom: 3.694476.

P-value computed by Iman and Davenport Test: 0.014820258556002589.

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. Dragon-fly	2.55	0.010772	0.008333
5	Dragon-fly vs. QuantumEigensolver	2.55	0.010772	0.01
4	Slime-mould vs. Grey-wolf	1.85	0.064314	0.0125
3	Grey-wolf vs. QuantumEigensolver	1.85	0.064314	0.016667
2	Grey-wolf vs. Dragon-fly	0.7	0.483927	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 ≤ 0.008333 .

2.2 P-values for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i) / SE$	p	Holm
6	Slime-mould vs. Dragon-fly	2.55	0.010772	0.016667
5	Dragon-fly vs. QuantumEigensolver	2.55	0.010772	0.02
4	Slime-mould vs. Grey-wolf	1.85	0.064314	0.025
3	Grey-wolf vs. QuantumEigensolver	1.85	0.064314	0.033333
2	Grey-wolf vs. Dragon-fly	0.7	0.483927	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 ≤ 0.025 .

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Holm}
1	Slime-mould vs .Dragon-fly	0.010772	0.064634
2	Dragon-fly vs .QuantumEigensolver	0.010772	0.064634
3	Slime-mould vs .Grey-wolf	0.064314	0.257254
4	Grey-wolf vs .QuantumEigensolver	0.064314	0.257254
5	Grey-wolf vs .Dragon-fly	0.483927	0.967855
6	Slime-mould vs .QuantumEigensolver	1	1

Table 4: Adjusted p -values