

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	2.08
Grey-wolf	2.8
Dragon-fly	3.04
QuantumEigensolver	2.08

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 3 degrees of freedom: 11.016.
P-value computed by Friedman Test: 0.011639671410613173.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 3 and 72 degrees of freedom: 4.132033.

P-value computed by Iman and Davenport Test: 0.0092413572837734.

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	2.629068	0.008562	0.008333
5	Dragon-fly vs. QuantumEigensolver	2.629068	0.008562	0.01
4	Slime-mould vs. Grey-wolf	1.971801	0.048632	0.0125
3	Grey-wolf vs. QuantumEigensolver	1.971801	0.048632	0.016667
2	Grey-wolf vs. Dragon-fly	0.657267	0.511009	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	2.629068	0.008562	0.016667
5	Dragon-fly vs. QuantumEigensolver	2.629068	0.008562	0.02
4	Slime-mould vs. Grey-wolf	1.971801	0.048632	0.025
3	Grey-wolf vs. QuantumEigensolver	1.971801	0.048632	0.033333
2	Grey-wolf vs. Dragon-fly	0.657267	0.511009	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	0.008562	0.051372
2	Dragon-fly vs .QuantumEigensolver	0.008562	0.051372
3	Slime-mould vs .Grey-wolf	0.048632	0.194529
4	Grey-wolf vs .QuantumEigensolver	0.048632	0.194529
5	Grey-wolf vs .Dragon-fly	0.511009	1.022018
6	Slime-mould vs .QuantumEigensolver	1	1.022018

Table 4: Adjusted p -values