

Results

June 18, 2010

1 Tables of Friedman, Bonferroni-Dunn, Holm, Hochberg and Hommel Tests

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Table 1: Average Rankings of the algorithms

Algorithm	Ranking
DE	2.6578947368421058
CHC	1.052631578947368
VXQR1	2.289473684210525

Friedman statistic considering reduction performance (distributed according to chi-square with 2 degrees of freedom: 26.868421052631504.
Inman and Davenport statistic considering reduction performance (distributed according to F-distribution with 2 and 36 degrees of freedom: 43.44680851063789.

Table 2: Holm / Hochberg Table for $\alpha = 0.05$

i	algorithm	$z = (R_0 - R_i) / SE$	p	Holm/Hochberg/Hommel
2	DE	4.947753344488261	7.507495729163992E-7	0.025
1	VXQR1	3.812203396572918	1.3773334607444819E-4	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.025 .
Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.05 .
Hommel's procedure rejects all hypotheses.

Table 3: Holm / Hochberg Table for $\alpha = 0.10$

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel
2	DE	4.947753344488261	7.507495729163992E-7	0.05
1	VXQR1	3.812203396572918	1.377334607444819E-4	0.1

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.05 .
Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.1 .
Hommel's procedure rejects all hypotheses.

Table 4: Adjusted p-values

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	DE	7.507495729163992E-7	1.5014991458327985E-6	1.5014991458327985E-6	1.5014991458327985E-6	1.5014991458327985E-6
2	VXQR1	1.377334607444819E-4	2.754669214889638E-4	1.377334607444819E-4	1.377334607444819E-4	1.377334607444819E-4

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Table 5: Holm / Shaffer Table for $\alpha = 0.05$

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
3	DE vs. CHC	4.947753344488261	7.507495729163992E-7	0.016666666666666666	0.016666666666666666
2	CHC vs. VXQR1	3.812203396572918	1.377334607444819E-4	0.025	0.05
1	DE vs. VXQR1	1.1355499479153426	0.2561449666035246	0.05	0.05

Nemenyi's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Holm's procedure rejects those hypotheses that have a p-value ≤ 0.05 .
Shaffer's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Bergmann's procedure rejects these hypotheses:

- DE vs. CHC

- CHC vs. VXQR1

Table 6: Holm / Shaffer Table for $\alpha = 0.10$

i	algorithms	$z = (\hat{R}_0 - R_i)/SE$	p	Holm	Shaffer
3	DE vs. CHC	4.9477533344488261	7.507495729163992E-7	0.03333333333333333333	0.03333333333333333333
2	CHC vs. VXQR1	3.812203396572918	1.377334607444819E-4	0.05	0.1
1	DE vs. VXQR1	1.1355499479153426	0.2561449666035246	0.1	0.1

Nemenyi's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.

Holm's procedure rejects those hypotheses that have a p-value ≤ 0.1 .

Shaffer's procedure rejects those hypotheses that have a p-value $\leq 0.033333333333333333$.

Bergmann's procedure rejects these hypotheses:

- DE vs. CHC
- CHC vs. VXQR1

Table 7: Adjusted p-values

i	hypothesis	unadjusted p	p_{Nemen}	p_{Holm}	p_{Shaf}	p_{Berg}
1	DE vs. CHC	7.507495729163992E-7	2.252248718749198E-6	2.252248718749198E-6	2.252248718749198E-6	2.252248718749198E-6
2	CHC vs. VXQR1	1.377334607444819E-4	4.132003822334457E-4	2.754669214889638E-4	1.377334607444819E-4	1.377334607444819E-4
3	DE vs. VXQR1	0.2561449666035246	0.7684348998105738	0.2561449666035246	0.2561449666035246	0.2561449666035246