

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	0.9999999999999996
VXQR1	2.342105263157894

Friedman statistic considering reduction performance (distributed according to chi-square with 2 degrees of freedom: 29.44736842105258.
Inman and Davenport statistic considering reduction performance (distributed according to F-distribution with 2 and 36 degrees of freedom: 61.975384615384144.

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

i	algorithm	$z = (R_0 - R_i) / SE$	p	Holm/Hochberg/Hommel
2	DE	5.109974765619023	3.222018441378448E-7	0.025
1	VXQR1	4.136646238834443	3.524187887096871E-5	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	5.109974765619023	3.222018441378448E-7	0.05
1	VXQR1	4.136646238834443	3.524187887096871E-5	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	3.222018441378448E-7	6.444036882756896E-7	6.444036882756896E-7	6.444036882756896E-7	6.444036882756896E-7
2	VXQR1	3.524187887096871E-5	7.048375774193742E-5	3.524187887096871E-5	3.524187887096871E-5	3.524187887096871E-5

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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	5.109974765619023	3.222018441378448E-7	0.016666666666666666	0.016666666666666666
2	CHC vs. VXQR1	4.136646238834443	3.524187887096871E-5	0.025	0.05
1	DE vs. VXQR1	0.9733285267845796	0.33039004884879203	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	5.109974765619023	3.222018441378448E-7	0.03333333333333333333	0.03333333333333333333
2	CHC vs. VXQR1	4.136646238834443	3.524187887096871E-5	0.05	0.1
1	DE vs. VXQR1	0.97333285267845796	0.33039004884879203	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_{Neme}	p_{Holm}	p_{Shaf}	p_{Berg}
1	DE vs. CHC	3.222018441378448E-7	9.666055324135343E-7	9.666055324135343E-7	9.666055324135343E-7	9.666055324135343E-7
2	CHC vs. VXQR1	3.524187887096871E-5	1.0572563661290612E-4	7.048375774193742E-5	3.524187887096871E-5	3.524187887096871E-5
3	DE vs. VXQR1	0.33039004884879203	0.991170146546376	0.33039004884879203	0.33039004884879203	0.33039004884879203