

Results

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

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Table 1: Average Rankings of the algorithms

Algorithm	Ranking
kmeans	2.954545454545453
kmeans des	1.954545454545454
kmeans desthr	1.0909090909090906

Friedman statistic considering reduction performance (distributed according to chi-square with 2 degrees of freedom: 38.272727272726954.
P-value computed by Friedman Test: 4.942269260510557E-9.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 2 and 42 degrees of freedom: 140.33333333332433.

P-value computed by Iman and Daveport Test: 2.53745847591088E-19.

Bonferroni-Dunn’s procedure rejects those hypotheses that have a p-value ≤ 0.025 .

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

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel
2	kmeans	6.180982563844149	6.37038531465702E-10	0.025
1	kmeans des	2.864357773488753	0.004178557568166526	0.05

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	kmeans	6.180982563844149	6.37038531465702E-10	0.05
1	kmeans des	2.864357773488753	0.004178557568166526	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	$p_{Bon.f}$	p_{Holm}	p_{Hoch}	p_{Hommel}
1	kmeans	6.37038531465702E-10	1.274077062931404E-9	1.274077062931404E-9	1.274077062931404E-9	1.274077062931404E-9
2	kmeans des	0.004178557568166526	0.008357115136333053	0.004178557568166526	0.004178557568166526	0.004178557568166526

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

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
3	kmeans vs. kmeans destr	6.180982563844149	6.37038531465702E-10	0.016666666666666666	0.016666666666666666
2	kmeans vs. kmeans des	3.3166247903553963	9.111188771537253E-4	0.025	0.05
1	kmeans des vs. kmeans destr	2.864357773488753	0.004178557568166526	0.05	0.05

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

- kmeans vs. kmeans des
- kmeans vs. kmeans desthr
- kmeans des vs. kmeans desthr

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

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
3	kmeans vs. kmeans desthr	6.180982563844149	6.37038531465702E-10	0.0333333333333333	0.0333333333333333
2	kmeans vs. kmeans des	3.3166247903553963	9.111188771537253E-4	0.05	0.1
1	kmeans des vs. kmeans desthr	2.864357773488753	0.004178557568166526	0.1	0.1

Nemenyi's procedure rejects those hypotheses that have a p-value ≤ 0.0333333333333333 .
 Shaffer's procedure rejects those hypotheses that have a p-value ≤ 0.0333333333333333 .
 Bergmann's procedure rejects these hypotheses:

- kmeans vs. kmeans des
- kmeans vs. kmeans desthr
- kmeans des vs. kmeans desthr

Table 7: Adjusted p -values

i	hypothesis	unadjusted p	p_{Nemen}	p_{Holm}	p_{Shaf}	p_{Berg}
1	kmeans vs kmeans desthr	6.37038531465702E-10	1.911115594397106E-9	1.911115594397106E-9	1.911115594397106E-9	1.911115594397106E-9
2	kmeans vs kmeans des	9.111188771537253E-4	0.002733356631461176	0.0018222377543074507	9.111188771537253E-4	9.111188771537253E-4
3	kmeans des vs kmeans desthr	0.004178557568166526	0.012535672704499578	0.004178557568166526	0.004178557568166526	0.004178557568166526