Results

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

Table 1: Average Rankings of the algorithms

Algorithm	Ranking
Burke2008	2.4615384615384612
Pillay2010	1.1538461538461535
Demeester2012	2.6538461538461537
Leite2014	4.038461538461538
cMA	4.6923076923076925

Friedman statistic considering reduction performance (distributed according to chi-square with 4 degrees of freedom: 40.35384615384614. P-value computed by Friedman Test: 3.661511793762173E-8.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 4 and 48 degrees of freedom: 41.57992073976216.

P-value computed by Iman and Daveport Test: 4.978593790699881E-15.

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

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel
4	cMA	5.70559779110359	1.1593547166448002E-8	0.0125
3	Leite2014	4.651302547095318	3.2984499852687415E-6	0.016666666666666666
2	Demeester2012	2.418677324489565	0.015577051213613233	0.025
1	Burke2008	2.1085904880165436	0.03497994463544376	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.0125.
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
4	cMA	5.70559779110359	1.1593547166448002E-8	0.025
3	Leite2014	4.651302547095318	3.2984499852687415E-6	0.03333333333333333
2	Demeester2012	2.418677324489565	0.015577051213613233	0.05
1	Burke2008	2.1085904880165436	0.03497994463544376	0.1

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 ≤ 0.1.
Hommel's procedure rejects all hypotheses.

Table 4: Adjusted p-values

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homm}
1	cMA	1.1593547166448002E-8	4.6374188665792006E-8	4.6374188665792006E-8	4.6374188665792006E-8	4.6374188665792006E-8
2	Leite2014	3.2984499852687415E-6	1.3193799941074966E-5	9.895349955806225E-6	9.895349955806225E-6	9.895349955806225E-6
3	Demeester2012	0.015577051213613233	0.06230820485445293	0.031154102427226465	0.031154102427226465	0.031154102427226465
4	Burke2008	0.03497994463544376	0.13991977854177504	0.03497994463544376	0.03497994463544376	0.03497994463544376

Nemenyi's procedure rejects those hypotheses that have a p-value ≤ 0.005.
Holm's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.

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

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
10	Pillay2010 vs. cMA	5.70559779110359	1.1593547166448002E-8	0.005	0.005
9	Pillay2010 vs. Leite2014	4.651302547095318	3.2984499852687415E-6	0.005555555555555556	0.008333333333333333
8	Burke2008 vs. cMA	3.5970073030870457	3.2189944909628143E-4	0.00625	0.008333333333333333
7	Demeester2012 vs. cMA	3.2869204666140246	0.001012894364644191	0.007142857142857143	0.008333333333333333
6	Burke2008 vs. Leite2014	2.5427120590787733	0.010999583241544148	0.008333333333333333	0.008333333333333333
5	Pillay2010 vs. Demeester2012	2.418677324489565	0.015577051213613233	0.01	0.01
4	Demeester2012 vs. Leite2014	2.232625222605752	0.025573669368214643	0.0125	0.0125
3	Burke2008 vs. Pillay2010	2.1085904880165436	0.03497994463544376	0.016666666666666666	0.016666666666666666
2	Leite2014 vs. cMA	1.0542952440082725	0.29174776552126863	0.025	0.025
1	Burke2008 vs. Demeester2012	0.31008683647302143	0.7564949222136523	0.05	0.05

Shaffer's procedure rejects those hypotheses that have a p-value ≤ 0.005.
Bergmann's procedure rejects these hypotheses:

- Burke2008 vs. Leite2014
- Burke2008 vs. cMA
- Pillay2010 vs. Leite2014
- Pillay2010 vs. cMA
- Demeester2012 vs. cMA

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

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
10	Pillay2010 vs. cMA	5.70559779110359	1.1593547166448002E-8	0.01	0.01
9	Pillay2010 vs. Leite2014	4.651302547095318	3.2984499852687415E-6	0.011111111111111112	0.016666666666666666
8	Burke2008 vs. cMA	3.5970073030870457	3.2189944909628143E-4	0.0125	0.016666666666666666
7	Demeester2012 vs. cMA	3.2869204666140246	0.001012894364644191	0.014285714285714287	0.016666666666666666
6	Burke2008 vs. Leite2014	2.5427120590787733	0.010999583241544148	0.016666666666666666	0.016666666666666666
5	Pillay2010 vs. Demeester2012	2.418677324489565	0.015577051213613233	0.02	0.025
4	Demeester2012 vs. Leite2014	2.232625222605752	0.025573669368214643	0.025	0.025
3	Burke2008 vs. Pillay2010	2.1085904880165436	0.03497994463544376	0.03333333333333333	0.03333333333333333
2	Leite2014 vs. cMA	1.0542952440082725	0.29174776552126863	0.05	0.05
1	Burke2008 vs. Demeester2012	0.31008683647302143	0.7564949222136523	0.1	0.1

Nemenyi's procedure rejects those hypotheses that have a p-value ≤ 0.01.
Holm's procedure rejects those hypotheses that have a p-value ≤ 0.025.
Shaffer's procedure rejects those hypotheses that have a p-value ≤ 0.01.
Bergmann's procedure rejects these hypotheses:

- Burke2008 vs. Pillay2010
- Burke2008 vs. Leite2014
- Burke2008 vs. cMA
- Pillay2010 vs. Demeester2012
- Pillay2010 vs. Leite2014
- Pillay2010 vs. cMA
- Demeester2012 vs. Leite2014
- Demeester2012 vs. cMA

Table 7: Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}	p_{Holm}	p_{Shaf}	p_{Berg}
1	Pillay2010 vs .cMA	1.1593547166448002E-8	1.1593547166448001E-7	1.1593547166448001E-7	1.1593547166448001E-7	1.1593547166448001E-7
2	Pillay2010 vs .Leite2014	3.2984499852687415E-6	3.2984499852687414E-5	2.9686049867418673E-5	1.979069991161245E-5	1.979069991161245E-5
3	Burke2008 vs .cMA	3.2189944909628143E-4	0.0032189944909628144	0.0025751955927702515	0.0019313966945776885	0.0019313966945776885
4	Demeester2012 vs .cMA	0.001012894364644191	0.01012894364644191	0.007090260552509337	0.006077366187865146	0.004051577458576764
5	Burke2008 vs .Leite2014	0.010999583241544148	0.10999583241544147	0.06599749944926489	0.06599749944926489	0.032998749724632445
6	Pillay2010 vs .Demeester2012	0.015577051213613233	0.15577051213613233	0.07788525606806616	0.06599749944926489	0.06230820485445293
7	Demeester2012 vs .Leite2014	0.025573669368214643	0.2557366936821464	0.10229467747285857	0.10229467747285857	0.06230820485445293
8	Burke2008 vs .Pillay2010	0.03497994463544376	0.3497994463544376	0.10493983390633127	0.10493983390633127	0.06995988927088752
9	Leite2014 vs .cMA	0.29174776552126863	2.917477655212686	0.5834955310425373	0.5834955310425373	0.5834955310425373
10	Burke2008 vs .Demeester2012	0.7564949222136523	7.564949222136523	0.7564949222136523	0.7564949222136523	0.7564949222136523