Output tables for the test of Multiple comparisons.

September 24, 2018

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking
Conf 1	3.2
Conf 2	3.8
Conf 3	5.2
Conf 4	2.6
Conf 5	4.4
Conf 6	4.6
Conf 7	4.2

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 6 degrees of freedom: 4.971429. P-value computed by Friedman Test: 0.5474828246699731.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 6 and 24 degrees of freedom: 0.794521.

P-value computed by Iman and Daveport Test: 0.5833663179134587.

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	Shaffer
21	Conf 3 vs. Conf 4	1.903005	0.05704	0.002381	0.002381
20	Conf 1 vs. Conf 3	1.46385	0.143235	0.0025	0.0025
19	Conf 4 vs. Conf 6	1.46385	0.143235	0.002632	0.002632
18	Conf 4 vs. Conf 5	1.317465	0.187683	0.002778	0.002778
17	Conf 4 vs. Conf 7	1.17108	0.241567	0.002941	0.002941
16	Conf 1 vs. Conf 6	1.024695	0.305507	0.003125	0.003125
15	Conf 2 vs. Conf 3	1.024695	0.305507	0.003333	0.003333
14	Conf 1 vs. Conf 5	0.87831	0.379775	0.003571	0.003571
13	Conf 2 vs. Conf 4	0.87831	0.379775	0.003846	0.003846
12	Conf 1 vs. Conf 7	0.731925	0.464214	0.004167	0.004167
11	Conf 3 vs. Conf 7	0.731925	0.464214	0.004545	0.004545
10	Conf 3 vs. Conf 5	0.58554	0.558185	0.005	0.005
9	Conf 2 vs. Conf 6	0.58554	0.558185	0.005556	0.005556
8	Conf 1 vs. Conf 2	0.439155	0.660549	0.00625	0.00625
7	Conf 3 vs. Conf 6	0.439155	0.660549	0.007143	0.007143
6	Conf 1 vs. Conf 4	0.439155	0.660549	0.008333	0.008333
5	Conf 2 vs. Conf 5	0.439155	0.660549	0.01	0.01
4	Conf 2 vs. Conf 7	0.29277	0.769698	0.0125	0.0125
3	Conf 6 vs. Conf 7	0.29277	0.769698	0.016667	0.016667
2	Conf 5 vs. Conf 7	0.146385	0.883617	0.025	0.025
1	Conf 5 vs. Conf 6	0.146385	0.883617	0.05	0.05

Table 2: P-values Table for $\alpha = 0.05$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.002381.
Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.002381.
Bergmann's procedure does not reject any hypotheses.

2.2 P-values for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm	Shaffer
21	Conf 3 vs. Conf 4	1.903005	0.05704	0.004762	0.004762
20	Conf 1 vs. Conf 3	1.46385	0.143235	0.005	0.005
19	Conf 4 vs. Conf 6	1.46385	0.143235	0.005263	0.005263
18	Conf 4 vs. Conf 5	1.317465	0.187683	0.005556	0.005556
17	Conf 4 vs. Conf 7	1.17108	0.241567	0.005882	0.005882
16	Conf 1 vs. Conf 6	1.024695	0.305507	0.00625	0.00625
15	Conf 2 vs. Conf 3	1.024695	0.305507	0.006667	0.006667
14	Conf 1 vs. Conf 5	0.87831	0.379775	0.007143	0.007143
13	Conf 2 vs. Conf 4	0.87831	0.379775	0.007692	0.007692
12	Conf 1 vs. Conf 7	0.731925	0.464214	0.008333	0.008333
11	Conf 3 vs. Conf 7	0.731925	0.464214	0.009091	0.009091
10	Conf 3 vs. Conf 5	0.58554	0.558185	0.01	0.01
9	Conf 2 vs. Conf 6	0.58554	0.558185	0.011111	0.011111
8	Conf 1 vs. Conf 2	0.439155	0.660549	0.0125	0.0125
7	Conf 3 vs. Conf 6	0.439155	0.660549	0.014286	0.014286
6	Conf 1 vs. Conf 4	0.439155	0.660549	0.016667	0.016667
5	Conf 2 vs. Conf 5	0.439155	0.660549	0.02	0.02
4	Conf 2 vs. Conf 7	0.29277	0.769698	0.025	0.025
3	Conf 6 vs. Conf 7	0.29277	0.769698	0.033333	0.033333
2	Conf 5 vs. Conf 7	0.146385	0.883617	0.05	0.05
1	Conf 5 vs. Conf 6	0.146385	0.883617	0.1	0.1

Table 3: P-values Table for $\alpha = 0.10$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.004762.
Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.004762.
Bergmann's procedure does not reject any hypotheses.

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}	p_{Holm}	p_{Shaf}	p_{Berg}
1	Conf 3 vs .Conf 4	0.05704	1.197837	1.197837	1.197837	1.197837
2	Conf 1 vs .Conf 3	0.143235	3.007933	2.864698	2.148524	2.148524
3	Conf 4 vs .Conf 6	0.143235	3.007933	2.864698	2.148524	2.148524
4	Conf 4 vs .Conf 5	0.187683	3.941338	3.37829	2.815242	2.148524
5	Conf 4 vs .Conf 7	0.241567	5.072898	4.106632	3.623499	2.174099
6	Conf 1 vs .Conf 6	0.305507	6.415649	4.888113	4.582606	3.055071
7	Conf 2 vs .Conf 3	0.305507	6.415649	4.888113	4.582606	3.360578
8	Conf 1 vs .Conf 5	0.379775	7.975285	5.316857	4.582606	3.360578
9	Conf 2 vs .Conf 4	0.379775	7.975285	5.316857	4.582606	3.417979
10	Conf 1 vs .Conf 7	0.464214	9.748501	5.570572	5.106357	3.417979
11	Conf 3 vs .Conf 7	0.464214	9.748501	5.570572	5.106357	3.417979
12	Conf 3 vs .Conf 5	0.558185	11.721878	5.581846	5.581846	3.417979
13	Conf 2 vs .Conf 6	0.558185	11.721878	5.581846	5.581846	3.907293
14	Conf 1 vs .Conf 2	0.660549	13.871533	5.581846	5.581846	3.907293
15	Conf 3 vs .Conf 6	0.660549	13.871533	5.581846	5.581846	3.907293
16	Conf 1 vs .Conf 4	0.660549	13.871533	5.581846	5.581846	3.907293
17	Conf 2 vs .Conf 5	0.660549	13.871533	5.581846	5.581846	3.907293
18	Conf 2 vs .Conf 7	0.769698	16.163657	5.581846	5.581846	3.907293
19	Conf 6 vs .Conf 7	0.769698	16.163657	5.581846	5.581846	3.907293
20	Conf 5 vs .Conf 7	0.883617	18.555967	5.581846	5.581846	3.907293
21	Conf 5 vs .Conf 6	0.883617	18.555967	5.581846	5.581846	3.907293

Table 4: Adjusted p-values