Output tables for the test of Multiple comparisons.

December 26, 2016

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking
SVRCC	2.9167
MORF	5.5
ST	3.7083
MTS	6
MTSC	8.2917
RC	3
ERC	7.0833
ERCC	9.9167
SVR	1.875
SVRRC	6.7083

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 9 degrees of freedom: 159.163636.
P-value computed by Friedman Test: 7.644362920444792E-11.

Iman and Davenport statistic considering reduction performance (distributed according to F-distribution with 9 and 207 degrees of freedom: 64.408829.
P-value computed by Iman and Daveport Test: 3.53348153092637E-55.

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 $\alpha = 0.05$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.001111.

Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.0025.

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm
45	ERCC vs. SVR	9.200914	0	0.001111
44	SVRCC vs. ERCC	8.009086	0	0.001136
43	RC vs. ERCC	7.913739	0	0.001163
42	MTSC vs. SVR	7.341662	0	0.00119
41	ST vs. ERCC	7.103296	0	0.00122
40	SVRCC vs. MTSC	6.149834	0	0.00125
39	MTSC vs. RC	6.054487	0	0.001282
38	ERC vs. SVR	5.959141	0	0.001316
37	SVR vs. SVRRC	5.530083	0	0.001351
36	ST vs. MTSC	5.244044	0	0.001389
35	MORF vs. ERCC	5.053352	0	0.001429
34	SVRCC vs. ERC	4.767313	0.000002	0.001471
33	MTS vs. SVR	4.71964	0.000002	0.001515
32	RC vs. ERC	4.671967	0.000003	0.001563
31	MTS vs. ERCC	4.481274	0.000007	0.001613
30	SVRCC vs. SVRRC	4.338255	0.000014	0.001667
29	RC vs. SVRRC	4.242909	0.000022	0.001724
28	MORF vs. SVR	4.147562	0.000034	0.001786
27	ST vs. ERC	3.861523	0.000113	0.001852
26	ERCC vs. SVRRC	3.670831	0.000242	0.001923
25	SVRCC vs. MTS	3.527812	0.000419	0.002
24	ST vs. SVRRC	3.432465	0.000598	0.002083
23	MTS vs. RC	3.432465	0.000598	0.002174
22	ERC vs. ERCC	3.241773	0.001188	0.002273
21	MORF vs. MTSC	3.1941	0.001403	0.002381
20	SVRCC vs. MORF	2.955734	0.003119	0.0025
19	MORF vs. RC	2.860388	0.004231	0.002632
18	ST vs. MTS	2.622022	0.008741	0.002778
17	MTS vs. MTSC	2.622022	0.008741	0.002941
16	ST vs. SVR	2.097618	0.035939	0.003125
15	MORF vs. ST	2.049945	0.04037	0.003333
14	MTSC vs. ERCC	1.859252	0.062991	0.003571
13	MORF vs. ERC	1.811579	0.070051	0.003846
12	MTSC vs. SVRRC	1.811579	0.070051	0.004167
11	MORF vs. SVRRC	1.382521	0.166812	0.004545
10	MTSC vs. ERC	1.382521	0.166812	0.005
9	RC vs. SVR	1.287174	0.198033	0.005556
8	MTS vs. ERC	1.239501	0.21516	0.00625
7	SVRCC vs. SVR	1.191828	0.233329	0.007143
6	SVRCC vs. ST	0.905789	0.365047	0.008333
5	MTS vs. SVRRC	0.810443	0.417685	0.01
4	ST vs. RC	0.810443	0.417685	0.0125
3	MORF vs. MTS	0.572078	0.567269	0.016667
2	ERC vs. SVRRC	0.429058	0.667881	0.025
1	SVRCC vs. RC	0.095346	0.92404	0.05

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

2.2 P-values for $\alpha = 0.10$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.002222.

Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.005556.

i	algorithms	$z = (R_0 - R_i)/SE$	p	Holm
45	ERCC vs. SVR	9.200914	0	0.002222
44	SVRCC vs. ERCC	8.009086	0	0.002273
43	RC vs. ERCC	7.913739	0	0.002326
42	MTSC vs. SVR	7.341662	0	0.002381
41	ST vs. ERCC	7.103296	0	0.002439
40	SVRCC vs. MTSC	6.149834	0	0.0025
39	MTSC vs. RC	6.054487	0	0.002564
38	ERC vs. SVR	5.959141	0	0.002632
37	SVR vs. SVRRC	5.530083	0	0.002703
36	ST vs. MTSC	5.244044	0	0.002778
35	MORF vs. ERCC	5.053352	0	0.002857
34	SVRCC vs. ERC	4.767313	0.000002	0.002941
33	MTS vs. SVR	4.71964	0.000002	0.00303
32	RC vs. ERC	4.671967	0.000003	0.003125
31	MTS vs. ERCC	4.481274	0.000007	0.003226
30	SVRCC vs. SVRRC	4.338255	0.000014	0.003333
29	RC vs. SVRRC	4.242909	0.000022	0.003448
28	MORF vs. SVR	4.147562	0.000034	0.003571
27	ST vs. ERC	3.861523	0.000113	0.003704
26	ERCC vs. SVRRC	3.670831	0.000242	0.003846
25	SVRCC vs. MTS	3.527812	0.000419	0.004
24	ST vs. SVRRC	3.432465	0.000598	0.004167
23	MTS vs. RC	3.432465	0.000598	0.004348
22	ERC vs. ERCC	3.241773	0.001188	0.004545
21	MORF vs. MTSC	3.1941	0.001403	0.004762
20	SVRCC vs. MORF	2.955734	0.003119	0.005
19	MORF vs. RC	2.860388	0.004231	0.005263
18	ST vs. MTS	2.622022	0.008741	0.005556
17	MTS vs. MTSC	2.622022	0.008741	0.005882
16	ST vs. SVR	2.097618	0.035939	0.00625
15	MORF vs. ST	2.049945	0.04037	0.006667
14	MTSC vs. ERCC	1.859252	0.062991	0.007143
13	MORF vs. ERC	1.811579	0.070051	0.007692
12	MTSC vs. SVRRC	1.811579	0.070051	0.008333
11	MORF vs. SVRRC	1.382521	0.166812	0.009091
10	MTSC vs. ERC	1.382521	0.166812	0.01
9	RC vs. SVR	1.287174	0.198033	0.011111
8	MTS vs. ERC	1.239501	0.21516	0.0125
7	SVRCC vs. SVR	1.191828	0.233329	0.014286
6	SVRCC vs. ST	0.905789	0.365047	0.016667
5	MTS vs. SVRRC	0.810443	0.417685	0.02
4	ST vs. RC	0.810443	0.417685	0.025
3	MORF vs. MTS	0.572078	0.567269	0.033333
2	ERC vs. SVRRC	0.429058	0.667881	0.05
1	SVRCC vs. RC	0.095346	0.92404	0.1

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

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}	p_{Holm}
1	ERCC vs .SVR	0	0	0
2	SVRCC vs .ERCC	0	0	0
3	RC vs .ERCC	0	0	0
4	MTSC vs .SVR	0	0	0
5	ST vs .ERCC	0	0	0
6	SVRCC vs .MTSC	0	0	0
7	MTSC vs .RC	0	0	0
8	ERC vs .SVR	0	0	0
9	SVR vs .SVRRC	0	0.000001	0.000001
10	ST vs .MTSC	0	0.000007	0.000006
11	MORF vs .ERCC	0	0.00002	0.000015
12	SVRCC vs .ERC	0.000002	0.000084	0.000063
13	MTS vs .SVR	0.000002	0.000106	0.000078
14	RC vs .ERC	0.000003	0.000134	0.000095
15	MTS vs .ERCC	0.000007	0.000334	0.00023
16	SVRCC vs .SVRRC	0.000014	0.000646	0.000431
17	RC vs .SVRRC	0.000022	0.000993	0.00064
18	MORF vs .SVR	0.000034	0.001512	0.000941
19	ST vs .ERC	0.000113	0.005071	0.003042
20	ERCC vs .SVRRC	0.000242	0.010879	0.006286
21	SVRCC vs .MTS	0.000419	0.018855	0.010475
22	ST vs .SVRRC	0.000598	0.026915	0.014355
23	MTS vs .RC	0.000598	0.026915	0.014355
24	ERC vs .ERCC	0.001188	0.053455	0.026134
25	MORF vs .MTSC	0.001403	0.06312	0.029456
26	SVRCC vs .MORF	0.003119	0.140367	0.062385
27	MORF vs .RC	0.004231	0.190405	0.080393
28	ST vs .MTS	0.008741	0.393344	0.157338
29	MTS vs .MTSC	0.008741	0.393344	0.157338
30	ST vs .SVR	0.035939	1.617252	0.575023
31	MORF vs .ST	0.04037	1.816643	0.605548
32	MTSC vs .ERCC	0.062991	2.834614	0.88188
33	MORF vs .ERC	0.070051	3.152308	0.910667
34	MTSC vs .SVRRC	0.070051	3.152308	0.910667
35	MORF vs .SVRRC	0.166812	7.506534	1.83493
36	MTSC vs .ERC	0.166812	7.506534	1.83493
37	RC vs .SVR	0.198033	8.911506	1.83493
38	MTS vs .ERC	0.21516	9.682195	1.83493
39	SVRCC vs .SVR	0.233329	10.499787	1.83493
40	SVRCC vs .ST	0.365047	16.427129	2.190284
41	MTS vs .SVRRC	0.417685	18.795847	2.190284
42	ST vs .RC	0.417685	18.795847	2.190284
43	MORF vs .MTS	0.567269	25.527125	2.190284
44	ERC vs .SVRRC	0.667881	30.05464	2.190284
45	SVRCC vs .RC	0.92404	41.581791	2.190284

Table 4: Adjusted p-values