Output tables for the test of Multiple comparisons.

June 23, 2019

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking
DSC-R	2.5769
DSC-S	2.0769
KMeanClustering	5.8077
LearnppCDS	3.5
LearnppNIE	4.8846
REA	3.4615
OUSE	5.8077
MLPClassifier	7.8846

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 7 degrees of freedom: 115.576923.

P-value computed by Friedman Test: 6.261435814280958E-11.

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
28	DSC-S vs. MLPClassifier	8.548692	0
27	DSC-R vs. MLPClassifier	7.812712	0
26	REA vs. MLPClassifier	6.510593	0
25	LearnppCDS vs. MLPClassifier	6.453979	0
24	DSC-S vs. KMeanClustering	5.491544	0
23	DSC-S vs. OUSE	5.491544	0
22	DSC-R vs. KMeanClustering	4.755564	0.000002
21	DSC-R vs. OUSE	4.755564	0.000002
20	LearnppNIE vs. MLPClassifier	4.41588	0.00001
19	DSC-S vs. LearnppNIE	4.132811	0.000036
18	KMeanClustering vs. REA	3.453445	0.000553
17	REA vs. OUSE	3.453445	0.000553
16	DSC-R vs. LearnppNIE	3.396831	0.000682
15	KMeanClustering vs. LearnppCDS	3.396831	0.000682
14	LearnppCDS vs. OUSE	3.396831	0.000682
13	KMeanClustering vs. MLPClassifier	3.057148	0.002235
12	OUSE vs. MLPClassifier	3.057148	0.002235
11	LearnppNIE vs. REA	2.094713	0.036197
10	DSC-S vs. LearnppCDS	2.094713	0.036197
9	LearnppCDS vs. LearnppNIE	2.038099	0.04154
8	DSC-S vs. REA	2.038099	0.04154
7	DSC-R vs. LearnppCDS	1.358732	0.174231
6	KMeanClustering vs. LearnppNIE	1.358732	0.174231
5	LearnppNIE vs. OUSE	1.358732	0.174231
4	DSC-R vs. REA	1.302119	0.192876
3	DSC-R vs. DSC-S	0.73598	0.461743
2	LearnppCDS vs. REA	0.056614	0.954853
1	KMeanClustering vs. OUSE	0	1

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

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.001786.

2.2 P-values for $\alpha = 0.10$

i	algorithms	$z = (R_0 - R_i)/SE$	p
28	DSC-S vs. MLPClassifier	8.548692	0
27	DSC-R vs. MLPClassifier	7.812712	0
26	REA vs. MLPClassifier	6.510593	0
25	LearnppCDS vs. MLPClassifier	6.453979	0
24	DSC-S vs. KMeanClustering	5.491544	0
23	DSC-S vs. OUSE	5.491544	0
22	DSC-R vs. KMeanClustering	4.755564	0.000002
21	DSC-R vs. OUSE	4.755564	0.000002
20	LearnppNIE vs. MLPClassifier	4.41588	0.00001
19	DSC-S vs. LearnppNIE	4.132811	0.000036
18	KMeanClustering vs. REA	3.453445	0.000553
17	REA vs. OUSE	3.453445	0.000553
16	DSC-R vs. LearnppNIE	3.396831	0.000682
15	KMeanClustering vs. LearnppCDS	3.396831	0.000682
14	LearnppCDS vs. OUSE	3.396831	0.000682
13	KMeanClustering vs. MLPClassifier	3.057148	0.002235
12	OUSE vs. MLPClassifier	3.057148	0.002235
11	LearnppNIE vs. REA	2.094713	0.036197
10	DSC-S vs. LearnppCDS	2.094713	0.036197
9	LearnppCDS vs. LearnppNIE	2.038099	0.04154
8	DSC-S vs. REA	2.038099	0.04154
7	DSC-R vs. LearnppCDS	1.358732	0.174231
6	KMeanClustering vs. LearnppNIE	1.358732	0.174231
5	LearnppNIE vs. OUSE	1.358732	0.174231
4	DSC-R vs. REA	1.302119	0.192876
3	DSC-R vs. DSC-S	0.73598	0.461743
2	LearnppCDS vs. REA	0.056614	0.954853
1	KMeanClustering vs. OUSE	0	1

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

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.003571.

2.3 Adjusted p-values

i	hypothesis	unadjusted p	p_{Neme}
1	DSC-S vs .MLPClassifier	0	0
2	DSC-R vs .MLPClassifier	0	0
3	REA vs .MLPClassifier	0	0
4	LearnppCDS vs .MLPClassifier	0	0
5	DSC-S vs .KMeanClustering	0	0.000001
6	DSC-S vs .OUSE	0	0.000001
7	DSC-R vs .KMeanClustering	0.000002	0.000055
8	DSC-R vs .OUSE	0.000002	0.000055
9	LearnppNIE vs .MLPClassifier	0.00001	0.000282
10	DSC-S vs .LearnppNIE	0.000036	0.001003
11	KMeanClustering vs .REA	0.000553	0.015497
12	REA vs .OUSE	0.000553	0.015497
13	DSC-R vs .LearnppNIE	0.000682	0.019088
14	KMeanClustering vs .LearnppCDS	0.000682	0.019088
15	LearnppCDS vs .OUSE	0.000682	0.019088
16	KMeanClustering vs .MLPClassifier	0.002235	0.062567
17	OUSE vs .MLPClassifier	0.002235	0.062567
18	LearnppNIE vs .REA	0.036197	1.013504
19	DSC-S vs .LearnppCDS	0.036197	1.013504
20	LearnppCDS vs .LearnppNIE	0.04154	1.163122
21	DSC-S vs .REA	0.04154	1.163122
22	DSC-R vs .LearnppCDS	0.174231	4.878479
23	KMeanClustering vs .LearnppNIE	0.174231	4.878479
24	LearnppNIE vs .OUSE	0.174231	4.878479
25	DSC-R vs .REA	0.192876	5.400524
26	DSC-R vs .DSC-S	0.461743	12.928799
27	LearnppCDS vs .REA	0.954853	26.735878
28	KMeanClustering vs .OUSE	1	28

Table 4: Adjusted p-values