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	2.75
DSC-S	2.6167
KMeanClustering	5.1083
LearnppCDS	1.9833
LearnppNIE	7.05
REA	3.65
OUSE	5.9083
MLPClassifier	6.9333

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 7 degrees of freedom: 284.426389.

P-value computed by Friedman Test: 1.1914536024448807E-10.

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	LearnppCDS vs. LearnppNIE	11.329411	0
27	LearnppCDS vs. MLPClassifier	11.068536	0
26	DSC-S vs. LearnppNIE	9.913235	0
25	DSC-S vs. MLPClassifier	9.65236	0
24	DSC-R vs. LearnppNIE	9.615092	0
23	DSC-R vs. MLPClassifier	9.354218	0
22	LearnppCDS vs. OUSE	8.776567	0
21	LearnppNIE vs. REA	7.602631	0
20	DSC-S vs. OUSE	7.36039	0
19	REA vs. MLPClassifier	7.341757	0
18	DSC-R vs. OUSE	7.062248	0
17	KMeanClustering vs. LearnppCDS	6.987712	0
16	DSC-S vs. KMeanClustering	5.571536	0
15	DSC-R vs. KMeanClustering	5.273394	0
14	REA vs. OUSE	5.049787	0
13	KMeanClustering vs. LearnppNIE	4.341699	0.000014
12	KMeanClustering vs. MLPClassifier	4.080824	0.000045
11	LearnppCDS vs. REA	3.72678	0.000194
10	KMeanClustering vs. REA	3.260932	0.00111
9	LearnppNIE vs. OUSE	2.552844	0.010685
8	DSC-S vs. REA	2.310604	0.020855
7	OUSE vs. MLPClassifier	2.29197	0.021907
6	DSC-R vs. REA	2.012461	0.044171
5	KMeanClustering vs. OUSE	1.788854	0.073638
4	DSC-R vs. LearnppCDS	1.714319	0.08647
3	DSC-S vs. LearnppCDS	1.416176	0.156724
2	DSC-R vs. DSC-S	0.298142	0.765594
1	LearnppNIE vs. MLPClassifier	0.260875	0.794189

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	LearnppCDS vs. LearnppNIE	11.329411	0
27	LearnppCDS vs. MLPClassifier	11.068536	0
26	DSC-S vs. LearnppNIE	9.913235	0
25	DSC-S vs. MLPClassifier	9.65236	0
24	DSC-R vs. LearnppNIE	9.615092	0
23	DSC-R vs. MLPClassifier	9.354218	0
22	LearnppCDS vs. OUSE	8.776567	0
21	LearnppNIE vs. REA	7.602631	0
20	DSC-S vs. OUSE	7.36039	0
19	REA vs. MLPClassifier	7.341757	0
18	DSC-R vs. OUSE	7.062248	0
17	KMeanClustering vs. LearnppCDS	6.987712	0
16	DSC-S vs. KMeanClustering	5.571536	0
15	DSC-R vs. KMeanClustering	5.273394	0
14	REA vs. OUSE	5.049787	0
13	KMeanClustering vs. LearnppNIE	4.341699	0.000014
12	KMeanClustering vs. MLPClassifier	4.080824	0.000045
11	LearnppCDS vs. REA	3.72678	0.000194
10	KMeanClustering vs. REA	3.260932	0.00111
9	LearnppNIE vs. OUSE	2.552844	0.010685
8	DSC-S vs. REA	2.310604	0.020855
7	OUSE vs. MLPClassifier	2.29197	0.021907
6	DSC-R vs. REA	2.012461	0.044171
5	KMeanClustering vs. OUSE	1.788854	0.073638
4	DSC-R vs. LearnppCDS	1.714319	0.08647
3	DSC-S vs. LearnppCDS	1.416176	0.156724
2	DSC-R vs. DSC-S	0.298142	0.765594
1	LearnppNIE vs. MLPClassifier	0.260875	0.794189

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	LearnppCDS vs .LearnppNIE	0	0
2	LearnppCDS vs .MLPClassifier	0	0
3	DSC-S vs .LearnppNIE	0	0
4	DSC-S vs .MLPClassifier	0	0
5	DSC-R vs .LearnppNIE	0	0
6	DSC-R vs .MLPClassifier	0	0
7	LearnppCDS vs .OUSE	0	0
8	LearnppNIE vs .REA	0	0
9	DSC-S vs .OUSE	0	0
10	REA vs .MLPClassifier	0	0
11	DSC-R vs .OUSE	0	0
12	KMeanClustering vs .LearnppCDS	0	0
13	DSC-S vs .KMeanClustering	0	0.000001
14	DSC-R vs .KMeanClustering	0	0.000004
15	REA vs .OUSE	0	0.000012
16	KMeanClustering vs .LearnppNIE	0.000014	0.000396
17	KMeanClustering vs .MLPClassifier	0.000045	0.001257
18	LearnppCDS vs .REA	0.000194	0.00543
19	KMeanClustering vs .REA	0.00111	0.031093
20	LearnppNIE vs .OUSE	0.010685	0.299172
21	DSC-S vs .REA	0.020855	0.583933
22	OUSE vs .MLPClassifier	0.021907	0.613407
23	DSC-R vs .REA	0.044171	1.236798
24	KMeanClustering vs .OUSE	0.073638	2.061872
25	DSC-R vs .LearnppCDS	0.08647	2.421165
26	DSC-S vs .LearnppCDS	0.156724	4.388268
27	DSC-R vs .DSC-S	0.765594	21.436646
28	LearnppNIE vs .MLPClassifier	0.794189	22.237298

Table 4: Adjusted p-values