Output tables for 1xN statistical comparisons.

June 12, 2025

1 Average rankings of Friedman test

Average ranks obtained by each method in the Friedman test.

Friedman statistic (distributed according to chi-square with 15 degrees of freedom): 335.85049.
P-value computed by Friedman Test: 0.

Iman and Davenport statistic (distributed according to F-distribution with 15 and 525 degrees of freedom): 57.579208.
P-value computed by Iman and Daveport Test: -0.

Algorithm	Ranking
BestCyclicAssignment	12.75
BestNearest	7.125
CLARA	9.6389
CoefficientPropagation	11.6111
CyclicAssignment	14.1667
Farthest-First	3.4444
KMEANS	4.5139
NearestByCustomer	6.9444
NearestByDepot	10.9722
PAM	9.0556
Parallel	6.9444
RandomByElement	16
Simplified	6.0833
Sweep	6.1528
ThreeCriteriaClustering	3.3472
UPGMC	7.25

Table 1: Average Rankings of the algorithms (Friedman)

2 Post hoc comparison (Friedman)

P-values obtained in by applying post hoc methods over the results of Friedman procedure.

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm Hochberg Hommel	Holland	Rom	Finner	Li
15	RandomByElement	11.275305	0	0.003333	0.003414	0.003507	0.003414	0.003634
14	CyclicAssignment	9.641562	0	0.003571	0.003657	0.003757	0.006816	0.003634
13	BestCyclicAssignment	8.379124	0	0.003846	0.003938	0.004046	0.010206	0.003634
12	CoefficientPropagation	7.364222	0	0.004167	0.004265	0.004383	0.013585	0.003634
11	NearestByDepot	6.794888	0	0.004545	0.004652	0.004782	0.016952	0.003634
10	CLARA	5.60671	0	0.005	0.005116	0.00526	0.020308	0.003634
9	PAM	5.086883	0	0.005556	0.005683	0.005844	0.023653	0.003634
8	UPGMC	3.477893	0.000505	0.00625	0.006391	0.006574	0.026986	0.003634
7	BestNearest	3.366502	0.000761	0.007143	0.007301	0.007513	0.030307	0.003634
6	NearestByCustomer	3.205603	0.001348	0.008333	0.008512	0.008764	0.033617	0.003634
5	Parallel	3.205603	0.001348	0.01	0.010206	0.010515	0.036916	0.003634
4	Sweep	2.500123	0.012415	0.0125	0.012741	0.013109	0.040204	0.003634
3	Simplified	2.438238	0.014759	0.016667	0.016952	0.016667	0.043481	0.003634
2	KMEANS	1.039655	0.2985	0.025	0.025321	0.025	0.046746	0.003634
1	Farthest-First	0.086638	0.930959	0.05	0.05	0.05	0.05	0.05

Table 2: Post Hoc comparison Table for $\alpha = 0.05$ (FRIEDMAN)

Bonferroni-Dunn's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.003333.
Holm's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.025.
Hochberg's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.016667.
Hommel's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.025.
Holland's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.025321.
Rom's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.016667.
Finner's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.046746.
Li's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.003634.

3 Adjusted P-Values (Friedman)

Adjusted P-values obtained through the application of the post hoc methods (Friedman).

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	$p_{Hochberg}$	p_{Hommel}
1	RandomByElement	0	0	0	0	0
2	CyclicAssignment	0	0	0	0	0
3	BestCyclicAssignment	0	0	0	0	0
4	CoefficientPropagation	0	0	0	0	0
5	NearestByDepot	0	0	0	0	0
6	CLARA	0	0	0	0	0
7	PAM	0	0.000005	0.000003	0.000003	0.000003
8	UPGMC	0.000505	0.007581	0.004043	0.004043	0.003145
9	BestNearest	0.000761	0.011419	0.005329	0.005329	0.004043
10	NearestByCustomer	0.001348	0.020217	0.008087	0.006739	0.006739
11	Parallel	0.001348	0.020217	0.008087	0.006739	0.006739
12	Sweep	0.012415	0.186226	0.04966	0.044277	0.037245
13	Simplified	0.014759	0.221386	0.04966	0.044277	0.044277
14	KMEANS	0.2985	4.477504	0.597001	0.597001	0.597001
15	Farthest-First	0.930959	13.96439	0.930959	0.930959	0.930959

Table 3: Adjusted p-values (FRIEDMAN) (I)

i	algorithm	unadjusted p	$p_{Holland}$	p_{Rom}	p_{Finner}	p_{Li}
1	RandomByElement	0	0	0	0	0
2	CyclicAssignment	0	0	0	0	0
3	BestCyclicAssignment	0	0	0	0	0
4	CoefficientPropagation	0	0	0	0	0
5	NearestByDepot	0	0	0	0	0
6	CLARA	0	0	0	0	0
7	PAM	0	0.000003	0.000003	0.000001	0.0000
8	UPGMC	0.000505	0.004036	0.003844	0.000947	0.0072
9	BestNearest	0.000761	0.005317	0.005067	0.001268	0.0109
10	NearestByCustomer	0.001348	0.00806	0.006409	0.002021	0.0191
11	Parallel	0.001348	0.00806	0.006409	0.002021	0.0191
12	Sweep	0.012415	0.048743	0.044277	0.015495	0.1524
13	Simplified	0.014759	0.048743	0.044277	0.01701	0.1761
14	KMEANS	0.2985	0.507898	0.597001	0.316042	0.8121
15	Farthest-First	0.930959	0.930959	0.930959	0.930959	0.9309

Table 4: Adjusted p-values (FRIEDMAN) (II)