

data/SIA.csv

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1 Tables of Friedman, Aligned Friedman, Bonferroni-Dunn, Holm, Hochberg and Hommel Tests

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Table 1: Average Rankings of the algorithms (Friedman)

Algorithm	Ranking
<i>continuos_GM_{tst}</i>	4.726190476190474
<i>CADD_GM_{tst}</i>	6.595238095238098
<i>CAIM_GM_{tst}</i>	4.154761904761904
<i>Chi2Merge_GM_{tst}</i>	3.547619047619046
<i>ChiMerge_GM_{tst}</i>	3.261904761904762
<i>Fayyad_GM_{tst}</i>	4.833333333333333
<i>ID_{3G}M_{tst}</i>	4.285714285714287
<i>USD_GM_{tst}</i>	4.595238095238093

Friedman statistic (distributed according to chi-square with 7 degrees of freedom: 50.164682539682275. P-value computed by Friedman

Test: 1.344510847101077E-8.

Iman and Davenport statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 8.435004434752129. P-value computed by Iman and Davenport Test: 2.193466711727845E-9.

Table 2: Average Rankings of the algorithms (Aligned Friedman)

Algorithm	Ranking
<i>continuous_GM_{tst}</i>	174.32142857142856
<i>CADD_GM_{tst}</i>	251.33333333333326
<i>CAIM_GM_{tst}</i>	158.41666666666663
<i>Chi2Merge_GM_{tst}</i>	127.35714285714285
<i>ChiMerge_GM_{tst}</i>	132.2380952380952
<i>Fayyad_GM_{tst}</i>	189.11904761904765
<i>ID3_GM_{tst}</i>	150.88095238095244
<i>USD_GM_{tst}</i>	164.33333333333333

Aligned Friedman statistic (distributed according to chi-square with 7 degrees of freedom): 38.11838899486677. P-value computed by Aligned Friedman Test: 2.8771353478562744E-6.

Table 3: Average Rankings of the algorithms (Quade)

Algorithm	Ranking
continuous M_tst	4.546511627906979
CADD M_tst	6.365448504983388
CAIM M_tst	4.304540420819491
Chi2Merge M_tst	3.489479512735327
ChiMerge M_tst	3.624584717607974
Fayyad M_tst	5.051495016611297
ID3 M_tst	4.246954595791806
USD M_tst	4.370985603543744

Quade statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 6.618152865500346. P-value computed by Quade Test: 2.898595781386579E-7.

Table 4: Contrast Estimation

continuous $M_{f, st}$	continuous $G_{M_{f, st}}$	CADD $G_{M_{f, st}}$	CAIM $G_{M_{f, st}}$	Chi2Merge $G_{M_{f, st}}$	ChiMerge $G_{M_{f, st}}$	Fayyad $G_{M_{f, st}}$	ID3 $G_{M_{f, st}}$	USD $G_{M_{f, st}}$
0.00000000	0.00000000	0.13939812	-0.04458437	-0.06693812	-0.07389875	0.00213125	-0.02833625	-0.01367687
-0.13939812	-0.04458437	0.00000000	-0.18398250	-0.20633625	-0.21329687	-0.13726687	-0.16773437	-0.15307500
0.04458437	0.06693812	0.18398250	0.00000000	-0.02235375	-0.02931437	0.04671563	0.01624813	0.03090750
0.06693812	0.07389875	0.20633625	0.02235375	0.00000000	-0.00696062	0.06906938	0.03860188	0.05326125
0.07389875	-0.00213125	0.02235375	0.02931437	0.00696062	0.00000000	0.07603000	0.04556250	0.0602187
-0.00213125	0.02833625	0.13726687	-0.04458437	-0.00906938	-0.07603000	0.00000000	-0.03004675	-0.01580813
0.02833625	0.01367687	0.15307500	-0.01624813	-0.03860188	-0.04556250	0.03004675	0.00000000	0.01465937
0.01367687	0.01367687	0.01367687	-0.05090750	-0.05326125	-0.0602187	0.01367687	-0.01367687	0.00000000

Table 5: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (FRIEDMAN)

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
7	CADD $_G M_t.st$	6.23609564462324	4.4862686826919834E-10	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.02142210010443
6	Fayyad $_G M_t.st$	2.9398736610366676	0.003283460986069086	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.02142210010443
5	continuous $_G M_t.st$	2.7394277296023453	0.006154624437049656	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.02142210010443
4	USD $_G M_t.st$	2.49443825784929	0.012615667221804698	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.02142210010443
3	ID3 $_G M_t.st$	1.915372233705711	0.05544504957222216	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.02142210010443
2	CAM $_G M_t.st$	1.6703827619526515	0.0948436579936146	0.025	0.025320565519103666	0.025	0.0430132001682938	0.02142210010443
1	Chi2Merge $_G M_t.st$	0.534522483824846	0.5929800980174286	0.05	0.050000000000000044	0.05	0.050000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value $\leq 0.0071428571428571435$.

Holm's procedure rejects those hypotheses that have a p-value ≤ 0.0125 .

Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.01 .

Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.0125 .

Holland's procedure rejects those hypotheses that have a p-value $\leq 0.016952427508441503$.

Rom's procedure rejects those hypotheses that have a p-value $\leq 0.013109375000000001$.

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.035975015734599824$.

Li's procedure rejects those hypotheses that have a p-value $\leq 0.021422100104345865$.

Table 6: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (ALIGNED FRIEDMAN)

i	algorithm	$z = (R_0 - R_i) / SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
7	CADD $_G M_t, st$	5.848627588576318	4.956453837075193E-9	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.0095847884580404
6	Fayyad $_G M_t, st$	2.9136431658857282	0.003572379900656215	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.0095847884580404
5	continuous $_G M_t, st$	2.2155594235580547	0.026721690393486444	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.0095847884580404
4	USD $_G M_t, st$	1.744366937787405	0.08109512631339322	0.0125	0.012741455098566168	0.01310937500000001	0.028885068789519686	0.0095847884580404
3	CAM $_G M_t, st$	1.465245763260573	0.14285387806400493	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.0095847884580404
2	ID $_G M_t, st$	1.1097453538531632	0.2671087731753237	0.025	0.025320565519103666	0.025	0.0430132001682938	0.0095847884580404
1	ChiMerge $_G M_t, st$	0.2302609286841064	0.8178890192972323	0.05	0.050000000000000044	0.05	0.050000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value $\leq 0.0071428571428571435$.

Holm's procedure rejects those hypotheses that have a p-value ≤ 0.01 .

Hochberg's procedure rejects those hypotheses that have a p-value $\leq 0.008333333333333333$.

Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.01 .

Holland's procedure rejects those hypotheses that have a p-value $\leq 0.010206218313011495$.

Rom's procedure rejects those hypotheses that have a p-value $\leq 0.008764162596519848$.

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.021742978644310407$.

Li's procedure rejects those hypotheses that have a p-value $\leq 0.009584788458040405$.

Table 7: Holm / Hochberg / Holland / Rom / Finner / Li Table for $\alpha = 0.05$ (QUADE)

i	algorithm	$z = (R_0 - R_i)/SE$	p	Holm/Hochberg/Hommel	Holland	Rom	Finner	Li
7	CADD $_G M_t, st$	2.505270322533057	0.012235783754457887	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.0049309123540399
6	Fayyad $_G M_t, st$	1.3606791643946403	0.1736151018496729	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.0049309123540399
5	continuous $_G M_t, st$	0.9207857230873343	0.3571623102799034	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.0049309123540399
4	USD $_G M_t, st$	0.7678841650890702	0.4425560057699006	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.0049309123540399
3	CAM $_G M_t, st$	0.7100034491275818	0.47770199730763147	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.0049309123540399
2	ID $_G M_t, st$	0.6598401619609597	0.5093564072351583	0.025	0.025320365519103666	0.025	0.0430132001682938	0.0049309123540399
1	ChiMerge $_G M_t, st$	0.11769078912169188	0.9063126652732583	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value $\leq 0.0071428571428571435$.

Holm's procedure rejects those hypotheses that have a p-value $\leq 0.0071428571428571435$.

Hommel's procedure rejects those hypotheses that have a p-value $\leq 0.007300831979014655$.

Holland's procedure rejects those hypotheses that have a p-value $\leq 0.007300831979014655$.

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.007300831979014655$.

Li's procedure rejects those hypotheses that have a p-value $\leq 0.0049309123540399039$.

Table 8: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{ocb}	p_{Hommel}
1	CADD $_G M_{t,st}$	4.4862686826919834E-10	3.1403880778843883E-9	3.1403880778843883E-9	3.1403880778843883E-9	3.1403880778843883E-9
2	Fayyad $_G M_{t,st}$	0.003283460986069086	0.0229842269024836	0.019700765916414516	0.019700765916414516	0.018463873311148966
3	continuous $_G M_{t,st}$	0.006154624437049656	0.04308237105934759	0.030773122185248282	0.030773122185248282	0.030773122185248282
4	USD $_G M_{t,st}$	0.012615667221804698	0.08830967055263289	0.050462668887218794	0.050462668887218794	0.050462668887218794
5	ID3 $_G M_{t,st}$	0.05544504957222216	0.3881153470055551	0.1663351487166665	0.1663351487166665	0.1422654869904219
6	C $_G M_{t,st}$	0.0948436579936146	0.6639056059553022	0.1896873159872292	0.1896873159872292	0.1896873159872292
7	Chi2Merge $_G M_{t,st}$	0.5929800980174286	4.150860686122	0.5929800980174286	0.5929800980174286	0.5929800980174286

Table 9: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Roll}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD $_G M_{t,st}$	4.4862686826919834E-10	3.140388393774174E-9	2.985738455368526E-9	3.140388393774174E-9	1.1022234185342648E-9
2	Fayyad $_G M_{t,st}$	0.003283460986069086	0.01953975542198938	0.01873231441057992	0.01445023472873905	0.008002520287215003
3	continuous $_G M_{t,st}$	0.006154624437049656	0.030396652335151986	0.029264952518493013	0.014301907175049977	0.014895943586800423
4	USD $_G M_{t,st}$	0.012615667221804698	0.0495157445892449	0.04811696675777715	0.021972861890880102	0.030063388682050586
5	ID3 $_G M_{t,st}$	0.05544504957222216	0.15728313474489164	0.1663351487166665	0.07675254340219617	0.111989027359979938
6	C $_G M_{t,st}$	0.0948436579936146	0.1806919965256195	0.1896873159872292	0.10975229020728161	0.18898295384927932
7	Chi2Merge $_G M_{t,st}$	0.5929800980174286	0.5929800980174286	0.5929800980174286	0.5929800980174286	0.5929800980174286

Table 10: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	CADD $_G M_{t,st}$	4.956453837075193E-9	3.469517685952635E-8	3.469517685952635E-8	3.469517685952635E-8	3.469517685952635E-8
2	Fayyad $_G M_{t,st}$	0.003572379900656215	0.025006659304593504	0.02143427940393729	0.02143427940393729	0.02143427940393729
3	continuous $_G M_{t,st}$	0.026721690393486444	0.18705183275440512	0.1336084519674322	0.1336084519674322	0.1336084519674322
4	USD $_G M_{t,st}$	0.08109512631339322	0.5676658841937525	0.32438050525357287	0.32438050525357287	0.28570775612800986
5	CAlM $_G M_{t,st}$	0.14285387806400493	0.9999771464480345	0.42856163419201476	0.42856163419201476	0.4006631597629856
6	ID3 $_G M_{t,st}$	0.2671087731753237	1.869761412227266	0.5342175463506474	0.5342175463506474	0.5342175463506474
7	ChiMerge $_G M_{t,st}$	0.8178890192972323	5.725223135080626	0.8178890192972323	0.8178890192972323	0.8178890192972323

Table 11: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD $_G M_{t,st}$	4.956453837075193E-9	3.4695176065469013E-8	3.298659948903094E-8	3.4695176065469013E-8	2.7216665810320095E-8
2	Fayyad $_G M_{t,st}$	0.003572379900656215	0.021243760299085257	0.020380611731660295	0.0124447596032207797	0.019239095463626284
3	continuous $_G M_{t,st}$	0.026721690393486444	0.12665623478194155	0.1270603931365345	0.06124318113711957	0.1279574228170937
4	USD $_G M_{t,st}$	0.08109512631339322	0.2870120011732591	0.3093020312310587	0.13757076270572965	0.3081050330964166
5	CAlM $_G M_{t,st}$	0.14285387806400493	0.37025519477255575	0.42856163419201476	0.1941080634897745	0.439597926391577
6	ID3 $_G M_{t,st}$	0.2671087731753237	0.46287044964342083	0.5342175463506474	0.30410116395283593	0.5946060271601755
7	ChiMerge $_G M_{t,st}$	0.8178890192972323	0.8178890192972323	0.8178890192972323	0.8178890192972323	0.8178890192972323

Table 12: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	CADD $_G M_t st$	0.012235783754457887	0.08565048628120521	0.08565048628120521	0.08565048628120521	0.08565048628120521
2	Fayyad $_G M_t st$	0.1736151018496729	1.2153057129477103	1.0416906110980375	0.9063126652732583	0.6791418763135444
3	continuous $_G M_t st$	0.3571623102799034	2.500136171959324	1.785811551399517	0.9063126652732583	0.7640346108527374
4	USD $_G M_t st$	0.4425560057699006	3.097892040389304	1.785811551399517	0.9063126652732583	0.8851120115398012
5	CAIM $_G M_t st$	0.47770199730763147	3.3430139811534204	1.785811551399517	0.9063126652732583	0.9063126652732583
6	ID3 $_G M_t st$	0.5093564072351583	3.565494850646108	1.785811551399517	0.9063126652732583	0.9063126652732583
7	ChiMerge $_G M_t st$	0.9063126652732583	6.344188656912808	1.785811551399517	0.9063126652732583	0.9063126652732583

Table 13: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Fin}	p_{Li}
1	CADD $_G M_t st$	0.012235783754457887	0.08256982058483509	0.08143259503872799	0.08256982058483509	0.115515705446584
2	Fayyad $_G M_t st$	0.1736151018496729	0.68151111503818309	0.9063126652732583	0.48697526808766267	0.6495081155013749
3	continuous $_G M_t st$	0.3571623102799034	0.890224188072347	0.9063126652732583	0.6433547530942154	0.7921982732727653
4	USD $_G M_t st$	0.4425560057699006	0.9034382865955999	0.9063126652732583	0.6433547530942154	0.8252895138241284
5	CAIM $_G M_t st$	0.47770199730763147	0.9034382865955999	0.9063126652732583	0.6433547530942154	0.8360359049876245
6	ID3 $_G M_t st$	0.5093564072351583	0.9034382865955999	0.9063126652732583	0.6433547530942154	0.8446425554107467
7	ChiMerge $_G M_t st$	0.9063126652732583	0.9063126652732583	0.9063126652732583	0.9063126652732583	0.9063126652732583