data/SIA.csv

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

Table 1: Average Rankings of the algorithms (Friedman)

Algorithm	Ranking
continuos$_G M_t st$	2.833333333333333
CADD$_G M_t st$	7.428571428571433
CAIM$_G M_t st$	5.30952380952381
Chi2Merge$_G M_t st$	2.833333333333332
ChiMerge$_G M_t st$	5.285714285714286
Fayyad$_G M_t st$	3.619047619047619
ID3$_G M_t st$	4.309523809523808
USD$_G M_t st$	4.380952380952381

Friedman statistic (distributed according to chi-square with 7 degrees of freedom: 113.61904761904805. P-value computed by Friedman

Test: 9.487088892257134E-11.

Iman and Davenport statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 25.8252375923972. P-value computed by Iman and Daveport Test: 1.1102230246513948E-16.

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

Algorithm	Ranking
continuos$_G M_t st$	89.61904761904762
CADD$_G M_t st$	293.45238095238096
CAIM$_G M_t st$	205.1904761904762
Chi2Merge$_G M_t st$	103.35714285714286
ChiMerge$_G M_t st$	204.78571428571428
Fayyad$_G M_t st$	138.8809523809524
ID3$_G M_t st$	152.49999999999997
USD$_G M_t st$	160.21428571428572

Aligned Friedman statistic (distributed according to chi-square with 7 degrees of freedom: 37.3851803469975. P-value computed by Aligned Friedman Test: 3.964840094350386E-6.

Table 3: Average Rankings of the algorithms (Quade)

Algorithm	Ranking
continuos$_G M_t st$	2.548172757475083
CADD$_G M_t st$	7.638981173864895
CAIM$_G M_t st$	5.675526024363235
Chi2Merge$_G M_t st$	2.7386489479512734
ChiMerge$_G M_t st$	5.540420819490587
Fayyad$_G M_t st$	3.3898117386489477
ID3$_G M_t st$	4.005537098560353
USD$_G M_t st$	4.462901439645627

Quade statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 28.523228806814863. P-value computed by Quade Test: -2.2204460492502093E-16.

Table 4: Contrast Estimation

	continuos$_G M_t st$	CADD$_G M_t st$	CAIM$_G M_t st$	Chi2Merge$_G M_t st$	ChiMerge$_G M_t st$	Fayyad$_G M_t st$	ID3$_G M_t st$	USD$_G M_t st$
continuos$_G M_t st$	0,00000000	0,35875500	0,10414813	0,02519625	0,11007687	0,04496812	0,05798500	0,06611563
CADD$_G M_t st$	-0,35875500	0,00000000	-0,25460688	-0,33355875	-0,24867813	-0,31378688	-0,30077000	-0,29263938
CAIM$_G M_t st$	-0,10414813	0,25460688	0,00000000	-0,07895188	0,00592875	-0,05918000	-0,04616313	-0,03803250
Chi2Merge$_G M_t st$	-0,02519625	0,33355875	0,07895188	0,00000000	0,08488062	0,01977187	0,03278875	0,04091938
ChiMerge$_G M_t st$	-0,11007687	0,24867813	-0,00592875	-0,08488062	0,00000000	-0,06510875	-0,05209187	-0,04396125
Fayyad$_G M_t st$	-0,04496812	0,31378688	0,05918000	-0,01977187	0,06510875	0,00000000	0,01301688	0,02114750
ID3$_G M_t st$	-0,05798500	0,30077000	0,04616313	-0,03278875	0,05209187	-0,01301688	0,00000000	0,00813063
USD$_G M_t st$	-0,06611563	0,29263938	0,03803250	-0,04091938	0,04396125	-0,02114750	-0,00813063	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	$\text{CADD}_G M_t st$	8.596903281516328	8.189595063984888E-18	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	7.01193489236
6	$\text{CAIM}_G M_t st$	4.632528193148692	3.612271244627276E-6	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	7.01193489236
5	$\text{ChiMerge}_G M_t st$	4.587984652829953	4.475455309427794E-6	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	7.01193489236
4	$\text{USD}_G M_t st$	2.895330120717934	0.003787599770715234	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	7.01193489236
3	$\text{ID3}_G M_t st$	2.761699499761719	0.005750137483796391	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	7.01193489236
2	$\text{Fayyad}_G M_t st$	1.4699368305183362	0.1415788633552433	0.025	0.025320565519103666	0.025	0.0430132001682938	7.01193489236
1	$\text{continuos}_G M_t st$	1.6616296724220897E-15	0.9999999999999987	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 ≤ 0.025.
Hochberg's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.025.
Holland's procedure rejects those hypotheses that have a p-value $\leq 0.025320565519103666$.
Rom's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
Finner's procedure rejects those hypotheses that have a p-value ≤ 0.0430132001682938.
Li's procedure rejects those hypotheses that have a p-value $\leq 7.01193489236941E - 17$.

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	$\text{CADD}_G M_t st$	9.615921026656785	6.849358743292828E-22	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.02542525801020
6	$\text{CAIM}_G M_t st$	5.4521295016227125	4.9770189142583596E-8	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.02542525801020
5	$\text{ChiMerge}_G M_t st$	5.433034692902566	5.5403630705728E-8	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.02542525801020
4	$\text{USD}_G M_t st$	3.3303592856018422	8.673398974224852E-4	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.02542525801020
3	$\text{ID3}_G M_t st$	2.9664346958767154	0.0030127433463323955	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.02542525801020
2	$\text{Fayyad}_G M_t st$	2.3239505436459407	0.02012814485997978	0.025	0.025320565519103666	0.025	0.0430132001682938	0.02542525801020
1	$\text{Chi2Merge}_G M_t st$	0.6481002724425845	0.5169200978060947	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 ≤ 0.05.
Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.025.
Hommel's procedure rejects those hypotheses that have a p-value ≤ 0.05.
Holland's procedure rejects those hypotheses that have a p-value $\leq 0.050000000000000044$.
Rom's procedure rejects those hypotheses that have a p-value ≤ 0.025.
Finner's procedure rejects those hypotheses that have a p-value $\leq 0.050000000000000044$.
Li's procedure rejects those hypotheses that have a p-value $\leq 0.025425258010205544$.

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	$\text{CADD}_G M_t st$	4.434627521249313	9.223161330249794E-6	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.00693598978360
6	$\text{CAIM}_G M_t st$	2.724252364587353	0.006444724036055078	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.00693598978360
5	$\text{ChiMerge}_G M_t st$	2.6065615754656606	0.009145637837710647	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.00693598978360
4	$\text{USD}_G M_t st$	1.6679292982902036	0.09532976278160304	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.00693598978360
3	$\text{ID3}_G M_t st$	1.2695170367552948	0.2042567181298077	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.00693598978360
2	$\text{Fayyad}_G M_t st$	0.7331557355121766	0.46346344940836487	0.025	0.025320565519103666	0.025	0.0430132001682938	0.00693598978360
1	$\text{Chi2Merge}_G M_t st$	0.16592471908959774	0.8682161941114697	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 $\leq 0.012741455098566168$.
Rom's procedure rejects those hypotheses that have a p-value $\leq 0.010515350115740741$.
Finner's procedure rejects those hypotheses that have a p-value $\leq 0.028885068789519686$.
Li's procedure rejects those hypotheses that have a p-value $\leq 0.006935989783606861$.

Table 8: Adjusted p-values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homm}
1	CADD$_G M_t st$	8.189595063984888E-18	5.732716544789421E-17	5.732716544789421E-17	5.732716544789421E-17	5.732716544789421E-17
2	CAIM$_G M_t st$	3.612271244627276E-6	2.528589871239093 4E-5	2.1673627467763658E-5	2.1673627467763658E-5	1.8061356223136382E-5
3	ChiMerge$_G M_t st$	4.475455309427794E-6	3.132818716599456E-5	2.237727654713897E-5	2.237727654713897E-5	2.237727654713897E-5
4	USD$_G M_t st$	0.003787599770715234	0.026513198395006637	0.015150399082860935	0.015150399082860935	0.011500274967592782
5	ID3$_G M_t st$	0.005750137483796391	0.04025096238657473	0.017250412451389172	0.017250412451389172	0.017250412451389172
6	Fayyad$_G M_t st$	0.1415788633552433	0.9910520434867032	0.2831577267104866	0.2831577267104866	0.2831577267104866
7	continuos$_G M_t st$	0.9999999999999987	6.999999999999991	0.9999999999999987	0.9999999999999987	0.9999999999999987

Table 9: Adjusted p-values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Holl}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD$_G M_t st$	8.189595063984888E-18	0.0	5.4504067067520215E-17	0.0	0.006147109546412933
2	CAIM$_G M_t st$	3.612271244627276E-6	2.1673431741420224E-5	2.0608193908118894E-5	1.2642892269321138E-5	0.9999999996474451
3	ChiMerge$_G M_t st$	4.475455309427794E-6	2.2377076251189898E-5	2.1280581531604693E-5	1.2642892269321138E-5	0.99999999969499
4	USD$_G M_t st$	0.003787599770715234	0.015064540751209221	0.01444614930427741	0.0066188821189319125	0.9999999999996309
5	ID3$_G M_t st$	0.005750137483796391	0.017151410331153416	0.017250412451389172	0.008040923863161242	0.9999999999997508
6	Fayyad$_G M_t st$	0.1415788633552433	0.26311315216152387	0.2831577267104866	0.1631445097597416	0.9999999999999908
7	continuos$_G M_t st$	0.9999999999999987	0.9999999999999987	0.9999999999999987	0.9999999999999987	0.9999999999999987

Table 10: Adjusted p-values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homm}
1	CADD$_G M_t st$	6.849358743292828E-22	4.7945511203049795E-21	4.7945511203049795E-21	4.7945511203049795E-21	4.7945511203049795E-21
2	CAIM$_G M_t st$	4.9770189142583596E-8	3.4839132399808517E-7	2.986211348555016E-7	2.7701815352864E-7	2.48850945712918E-7
3	ChiMerge$_G M_t st$	5.5403630705728E-8	3.8782541494009597E-7	2.986211348555016E-7	2.7701815352864E-7	2.7701815352864E-7
4	USD$_G M_t st$	8.673398974224852E-4	0.006071379281957397	0.003469359589689941	0.003469359589689941	0.003469359589689941
5	ID3$_G M_t st$	0.0030127433463323955	0.02108920342432677	0.009038230038997187	0.009038230038997187	0.009038230038997187
6	Fayyad$_G M_t st$	0.02012814485997978	0.14089701401985846	0.04025628971995956	0.04025628971995956	0.04025628971995956
7	Chi2Merge$_G M_t st$	0.5169200978060947	3.618440684642663	0.5169200978060947	0.5169200978060947	0.5169200978060947

Table 11: Adjusted p-values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Holl}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD$_G M_t st$	6.849358743292828E-22	0.0	4.558441600558081E-21	0.0	1.4178521425102752E-21
2	CAIM$_G M_t st$	4.9770189142583596E-8	2.986210979605275E-7	2.634416833291773E-7	1.7419565134790815E-7	1.030268156238511E-7
3	ChiMerge$_G M_t st$	5.5403630705728E-8	2.986210979605275E-7	2.634416833291773E-7	1.7419565134790815E-7	1.1468832402251288E-7
4	USD$_G M_t st$	8.673398974224852E-4	0.003464848528062725	0.003308090192791362	0.0015173511020329933	0.0017922199404926168
5	ID3$_G M_t st$	0.0030127433463323955	0.009011027517118575	0.009038230038997187	0.004215297697375275	0.006197878889905991
6	Fayyad$_G M_t st$	0.02012814485997978	0.039851147504455287	0.04025628971995956	0.023443224559403397	0.039999648212748866
7	Chi2Merge$_G M_t st$	0.5169200978060947	0.5169200978060947	0.5169200978060947	0.5169200978060947	0.5169200978060948

Table 12: Adjusted p-values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homm}
1	CADD$_G M_t st$	9.223161330249794E-6	6.456212931174856E-5	6.456212931174856E-5	6.456212931174856E-5	6.456212931174856E-5
2	CAIM$_G M_t st$	0.006444724036055078	0.04511306825238555	0.03866834421633047	0.03866834421633047	0.032223620180275386
3	ChiMerge$_G M_t st$	0.009145637837710647	0.06401946486397453	0.04572818918855324	0.04572818918855324	0.04572818918855324
4	USD$_G M_t st$	0.09532976278160304	0.6673083394712214	0.3813190511264122	0.3813190511264122	0.3813190511264122
5	ID3$_G M_t st$	0.2042567181298077	1.429797026908654	0.6127701543894231	0.6127701543894231	0.6127701543894231
6	Fayyad$_G M_t st$	0.46346344940836487	3.2442441458585543	0.9269268988167297	0.8682161941114697	0.8682161941114697
7	Chi2Merge$_G M_t st$	0.8682161941114697	6.077513358780288	0.9269268988167297	0.8682161941114697	0.8682161941114697

Table 13: Adjusted p-values (QUADE)

i	algorithm	unadjusted p	p_{Holl}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD$_G M_t st$	9.223161330249794E-6	6.456034293822466E-5	6.13827423445147E-5	6.456034293822466E-5	6.998216367544328E-5
2	CAIM$_G M_t st$	0.006444724036055078	0.03805065495144444	0.0367674832882163	0.022375405903138246	0.04662368933223256
3	ChiMerge$_G M_t st$	0.009145637837710647	0.0448993770150905	0.04348708191855766	0.022375405903138246	0.06489515317662278
4	USD$_G M_t st$	0.09532976278160304	0.33017521906614056	0.36359385089526786	0.16081438702479955	0.4197449026925507
5	ID3$_G M_t st$	0.2042567181298077	0.49612948878130236	0.6127701543894231	0.27375664276059775	0.607833590090049
6	Fayyad$_G M_t st$	0.46346344940836487	0.7121285298792298	0.8682161941114697	0.5163485082236848	0.7786066131076913
7	Chi2Merge$_G M_t st$	0.8682161941114697	0.8682161941114697	0.8682161941114697	0.8682161941114697	0.8682161941114697