

data/GAssist.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
continuous M_tst	2.404761904761904
CADD $_G M_tst$	5.714285714285715
CAIM $_G M_tst$	4.8809523809523805
Chi2Merge $_G M_tst$	4.38095238095238
ChiMerge $_G M_tst$	3.785714285714286
Fayyad $_G M_tst$	4.226190476190475
ID3 $_G M_tst$	5.821428571428573
USD $_G M_tst$	4.785714285714286

Friedman statistic (distributed according to chi-square with 7 degrees of freedom: 59.057539682539584. P-value computed by Friedman

Test: 2.7902413712865837E-10.

Iman and Davenport statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 10.306179324555975. P-value computed by Iman and Davenport Test: 1.5711378163373994E-11.

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

Algorithm	Ranking
continuous $_G M_{tst}$	89.40476190476188
CADD $_G M_{tst}$	227.92857142857147
CAIM $_G M_{tst}$	168.95238095238093
Chi2Merge $_G M_{tst}$	157.6428571428572
ChiMerge $_G M_{tst}$	146.3571428571429
Fayyad $_G M_{tst}$	157.34523809523813
ID3 $_G M_{tst}$	221.48809523809524
USD $_G M_{tst}$	178.88095238095232

Aligned Friedman statistic (distributed according to chi-square with 7 degrees of freedom: 37.566013745805925. P-value computed by Aligned Friedman Test: 3.663646505835949E-6.

Table 3: Average Rankings of the algorithms (Quade)

Algorithm	Ranking
$\text{continuos}_G M_{tst}$	2.3543743078626798
$\text{CADD}_G M_{tst}$	6.06312292358804
$\text{CAIM}_G M_{tst}$	4.739756367663345
$\text{Chi2Merge}_G M_{tst}$	4.341085271317828
$\text{ChiMerge}_G M_{tst}$	3.7862679955703213
$\text{Fayyad}_G M_{tst}$	4.050387596899226
$\text{ID3}_G M_{tst}$	5.9296788482835
$\text{USD}_G M_{tst}$	4.735326688815061

Quade statistic (distributed according to F-distribution with 7 and 287 degrees of freedom: 11.278300106831782. P-value computed by Quade Test: 1.2629271572219412E-12.

Table 4: Contrast Estimation

continuous $M_{f, st}$	continuous $M_{f, st}$	CADD $M_{f, st}$	CAIM $M_{f, st}$	Chi2Merge $M_{f, st}$	ChiMerge $M_{f, st}$	Fayyad $M_{f, st}$	ID3 $M_{f, st}$	USD $M_{f, st}$
0.00000000	0.00000000	0.11680750	0.06153062	0.04290437	0.04127250	0.04926937	0.11078188	0.06443375
-0.11680750	-0.11680750	0.00000000	-0.05527688	-0.07390313	-0.07553500	-0.06753812	-0.00602562	-0.05237375
-0.06153062	-0.06153062	0.05527688	0.00000000	-0.01862625	-0.02025812	-0.01226125	0.04925125	0.00290313
-0.04290437	-0.04290437	0.07390313	0.01862625	0.00000000	-0.00163187	0.00636500	0.06787750	0.02152038
-0.04127250	-0.04127250	0.07553500	0.02025812	0.00163187	0.00000000	0.00792687	0.06950938	0.02316125
-0.04926937	-0.04926937	0.06753812	0.01226125	-0.00636500	-0.00792687	0.00000000	0.06151250	0.01516438
-0.11078188	-0.11078188	0.00602562	-0.04925125	-0.06787750	-0.06950938	-0.06151250	0.00000000	-0.046634813
-0.06443375	-0.06443375	0.05237375	-0.00290313	-0.02152038	-0.02316125	-0.01516438	0.046634813	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	ID3G M_t, st	6.39199803573882	1.637320029531503E-10	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.05211686166758
6	CADDG M_t, st	6.191552104304501	5.957463768705356E-10	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.05211686166758
5	CAlMG M_t, st	4.63252819314869	3.612271244627323E-6	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.05211686166758
4	USDG M_t, st	4.4543540318737405	8.414615335853842E-6	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.05211686166758
3	Chi2MergeG M_t, st	3.6971138464552022	2.180645643849004E-4	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.05211686166758
2	FayyadG M_t, st	3.40758083438341	6.554149218385312E-4	0.025	0.025320565519103666	0.025	0.0430132001682938	0.05211686166758
1	ChiMergeG M_t, st	2.5835253384867705	0.009779628315844353	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.05

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

Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

Hommel's procedure rejects all hypotheses.

Rom's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

Li's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

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 $_G M_t, st$	6.534917478459199	6.364462350574513E-11	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.007300831979014655	0.0522518393687
6	ID3 $_G M_t, st$	6.231085375000413	4.6321456509536996E-10	0.0083333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.0522518393687
5	USD $_G M_t, st$	4.221075951194508	2.4313899089148657E-5	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.0522518393687
4	CAIM $_G M_t, st$	3.7526915255297655	1.7494607864018276E-4	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.0522518393687
3	Chi2Merge $_G M_t, st$	3.219160105408057	0.0012856667889907013	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.0522518393687
2	Fayyad $_G M_t, st$	3.2051198048785374	0.001350062737302048	0.025	0.025320565519103666	0.025	0.0430132001682938	0.0522518393687
1	ChiMerge $_G M_t, st$	2.6867519093287062	0.007215051994154525	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.05

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

Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

Hommel's procedure rejects all hypotheses.

Rom's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

Li's procedure rejects those hypotheses that have a p-value ≤ 0.05 .

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 $_G M_t st$	3.2307086292503695	0.001234837489565923	0.0071428571428571435	0.0073000831979014655	0.0075128293213784685	0.007300831979014655	0.041459119420995
6	ID3 $_G M_t st$	3.114464858027716	0.0018427890685145376	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.01454836181044361	0.041459119420995
5	CAM $_G M_t st$	2.0779177030174076	0.03771693970246513	0.01	0.010206218313011495	0.010515350115740741	0.021742978644310407	0.041459119420995
4	USD $_G M_t st$	2.0740589886199743	0.03807383278351096	0.0125	0.012741455098566168	0.013109375000000001	0.028885068789519686	0.041459119420995
3	Chi2Merge $_G M_t st$	1.7306334072484801	0.08351716935398636	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.035975015734599824	0.041459119420995
2	Fayyad $_G M_t st$	1.4774052749169735	0.13956703303336634	0.025	0.025320565519103666	0.025	0.0430132001682938	0.041459119420995
1	ChiMerge $_G M_t st$	1.2473294289700594	0.2122767310018589	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 $\leq 0.0414591194209954794$.

Table 8: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	ID _{3G} M_tst	1.637320029531503E-10	1.1461240206720523E-9	1.1461240206720523E-9	1.1461240206720523E-9	1.1461240206720523E-9
2	CADD _G M_tst	5.957463768705356E-10	4.170224638093749E-9	3.5744782612232135E-9	3.5744782612232135E-9	3.5744782612232135E-9
3	CAIM _G M_tst	3.612271244627323E-6	2.5285898712391262E-5	1.8061356223136616E-5	1.8061356223136616E-5	1.8061356223136616E-5
4	USD _G M_tst	8.414615335853842E-6	5.8902307350976897E-5	3.365846134341537E-5	3.365846134341537E-5	3.365846134341537E-5
5	Chi2Merge _G M_tst	2.180645643849004E-4	0.0015264519506943029	6.541936931547012E-4	6.541936931547012E-4	6.541936931547012E-4
6	Fayyad _G M_tst	6.554149218385312E-4	0.004587904452869719	0.0013108298436770624	0.0013108298436770624	0.0013108298436770624
7	ChiMerge _G M_tst	0.009779628315844353	0.06845739821091047	0.009779628315844353	0.009779628315844353	0.009779628315844353

Table 9: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Hol}	p_{Finn}	p_{Li}
1	ID _{3G} M_tst	1.637320029531503E-10	1.1461241955501578E-9	1.1461241955501578E-9	1.6534905522858902E-10
2	CADD _G M_tst	5.957463768705356E-10	3.5744780468860426E-9	2.0851121940168582E-9	6.016300952270634E-10
3	CAIM _G M_tst	3.612271244627323E-6	1.806122573888569E-5	1.717618151020957E-5	8.428612606636854E-6
4	USD _G M_tst	8.414615335853842E-6	3.365803651123045E-5	3.209388447524707E-5	1.472553037140667E-5
5	Chi2Merge _G M_tst	2.180645643849004E-4	6.540510470613992E-4	6.541936931547012E-4	3.0527707495486833E-4
6	Fayyad _G M_tst	6.554149218385312E-4	0.001310400274957213	0.0013108298436770624	7.646089709136827E-4
7	ChiMerge _G M_tst	0.009779628315844353	0.009779628315844353	0.009779628315844353	0.009779628315844353

Table 10: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{ocb}	p_{Hommel}
1	CADD $_G M_t st$	6.364462350574513E-11	4.455123645402159E-10	4.455123645402159E-10	4.455123645402159E-10	4.455123645402159E-10
2	ID3 $_G M_t st$	4.6321456509536996E-10	3.24250195566759E-9	2.77928739057222E-9	2.77928739057222E-9	2.77928739057222E-9
3	USD $_G M_t st$	2.4313899089148657E-5	1.701972936240406E-4	1.2156949544574328E-4	1.2156949544574328E-4	1.2156949544574328E-4
4	CAlM $_G M_t st$	1.7494607864018276E-4	0.0012246225504812793	6.99784314560731E-4	6.99784314560731E-4	6.99784314560731E-4
5	Chi2Merge $_G M_t st$	0.0012856667889907013	0.00899966752293491	0.003857000366972104	0.002700125474604096	0.0025713335779814026
6	Fayyad $_G M_t st$	0.001350062737302048	0.009450439161114335	0.003857000366972104	0.002700125474604096	0.002700125474604096
7	ChiMerge $_G M_t st$	0.007215051994154525	0.05050536395908168	0.007215051994154525	0.007215051994154525	0.007215051994154525

Table 11: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD $_G M_t st$	6.364462350574513E-11	4.4551251576763207E-10	4.2357293626143163E-10	4.4551251576763207E-10	6.410715999422094E-11
2	ID3 $_G M_t st$	4.6321456509536996E-10	2.779287466836422E-9	2.642663003989151E-9	1.6212510223212462E-9	4.665809708433608E-10
3	USD $_G M_t st$	2.4313899089148657E-5	1.2156358393278222E-4	1.1561145763825998E-4	5.6731511619556585E-5	2.449000267016855E-5
4	CAlM $_G M_t st$	1.7494607864018276E-4	6.996006991950576E-4	6.672556038719723E-4	3.061355520544984E-4	1.7618644990841645E-4
5	Chi2Merge $_G M_t st$	0.0012856667889907013	0.003852043674823946	0.002700125474604096	0.0017994705625726803	0.0012933354732108714
6	Fayyad $_G M_t st$	0.001350062737302048	0.003852043674823946	0.002700125474604096	0.0017994705625726803	0.0013580275543186365
7	ChiMerge $_G M_t st$	0.007215051994154525	0.007215051994154509	0.007215051994154525	0.007215051994154509	0.007215051994154525

Table 12: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Hommel}
1	CADD $_G M_t st$	0.001234837489565923	0.008643862426961461	0.008643862426961461	0.008643862426961461	0.007409024937395538
2	ID3 $_G M_t st$	0.0018427890685145376	0.012899523479601764	0.011056734411087225	0.011056734411087225	0.011056734411087225
3	CAIM $_G M_t st$	0.03771693970246513	0.2640185779172559	0.18858469851232568	0.15229533113404384	0.15086775880986053
4	USD $_G M_t st$	0.03807383278351096	0.2665168294845767	0.18858469851232568	0.15229533113404384	0.15229533113404384
5	Chi2Merge $_G M_t st$	0.08351716935398636	0.5846201854779045	0.2505515080619591	0.2122767310018589	0.2093505495500495
6	Fayyad $_G M_t st$	0.13956703303336634	0.9769692312335644	0.2791340660667327	0.2122767310018589	0.2122767310018589
7	ChiMerge $_G M_t st$	0.2122767310018589	1.4859371170130122	0.2791340660667327	0.2122767310018589	0.2122767310018589

Table 13: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Hol}	p_{Rom}	p_{Finn}	p_{Li}
1	CADD $_G M_t st$	0.001234837489565923	0.008611906951333181	0.00821819208678198	0.008611906951333181	0.0015651496314084245
2	ID3 $_G M_t st$	0.0018427890685145376	0.01100592132246947	0.010513206756606094	0.008611906951333181	0.002333926401328372
3	CAIM $_G M_t st$	0.03771693970246513	0.1748855298842904	0.14521604875713356	0.08580264252497227	0.04569312144587492
4	USD $_G M_t st$	0.03807383278351096	0.1748855298842904	0.14521604875713356	0.08580264252497227	0.046105553896189394
5	Chi2Merge $_G M_t st$	0.08351716935398636	0.23020869740718586	0.2122767310018589	0.11493724216778478	0.09586006993884665
6	Fayyad $_G M_t st$	0.13956703303336634	0.259655109356996	0.2122767310018589	0.16085589359057106	0.15051061434332152
7	ChiMerge $_G M_t st$	0.2122767310018589	0.259655109356996	0.2122767310018589	0.2122767310018589	0.2122767310018589