

data/Fayyad.csv

May 9, 2011

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
C45Rules $_G M_t st$	5.333333333333331
OCEC $_G M_t st$	2.297619047619047
Ripper $_G M_t st$	3.952380952380951
GAssist $_G M_t st$	6.357142857142858
REGAL $_G M_t st$	5.440476190476192
UCS $_G M_t st$	6.011904761904758
REGALTC $_G M_t st$	3.2857142857142847
SIA $_G M_t st$	6.761904761904764
Oblique-DT $_G M_t st$	5.5595238095238075

Friedman statistic (distributed according to chi-square with 8 degrees of freedom: 100.39365079365024. P-value computed by Friedman

Test: 9.385259236438515E-11.

Iman and Davenport statistic (distributed according to F-distribution with 8 and 328 degrees of freedom: 17.47041069311186. P-value computed by Iman and Davenport Test: 1.1115755303834138E-21.

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

Algorithm	Ranking
C45Rules _G M _t st	197.9047619047619
OCEC _G M _t st	100.79761904761902
Ripper _G M _t st	167.71428571428572
GAssist _G M _t st	225.90476190476184
REGAL _G M _t st	217.82142857142858
UCS _G M _t st	207.9642857142857
REGALTC _G M _t st	131.8095238095238
SIA _G M _t st	249.57142857142858
Oblique-DT _G M _t st	206.0119047619048

Aligned Friedman statistic (distributed according to chi-square with 8 degrees of freedom: 37.830402498607164. P-value computed by

Aligned Friedman Test: 8.091312979963128E-6.

Table 3: Average Rankings of the algorithms (Quade)

Algorithm	Ranking
C45Rules $_G M_t st$	5.065891472868218
OCEC $_G M_t st$	1.9772978959025467
Ripper $_G M_t st$	4.187153931339978
GAssist $_G M_t st$	6.102990033222592
REGAL $_G M_t st$	5.934108527131784
UCS $_G M_t st$	5.612403100775194
REGALTC $_G M_t st$	3.44296788482835
SIA $_G M_t st$	7.0143964562569225
Oblique-DT $_G M_t st$	5.66279069767442

Quade statistic (distributed according to F-distribution with 8 and 328 degrees of freedom: 13.137150761406986. P-value computed by Quade Test: 1.8422325982066778E-16.

Table 4: Contrast Estimation

C45Rules $M_{f, st}$	C45Rules $M_{f, st}$	OCEC $M_{f, st}$	Ripper $M_{f, st}$	GAssist $M_{f, st}$	REGAL $M_{f, st}$	UCSG $M_{f, st}$	REGALTC $M_{f, st}$	SIA $M_{f, st}$	Oblique-DT $M_{f, st}$
0.00000000	-0.06342389	-0.02231778	0.01336000	-0.04381944	0.05534167	0.00363222			
0.06342389	0.00000000	0.04110611	0.07379389	0.01960444	0.11876556	0.06705611			
0.02231778	-0.04110611	0.00000000	0.03268778	-0.02150167	0.07765944	0.02595000			
-0.02230222	-0.08572611	0.04462000	-0.01193222	-0.00894222	0.03303944	-0.01867000			
-0.01037000	0.00000000	0.01193222	0.00000000	0.00299000	0.04497167	-0.00673778			
-0.01336000	-0.07379389	-0.03268778	-0.03567778	0.00000000	0.04198167	-0.00972778			
0.04381944	-0.01960444	0.02150167	0.06512167	0.05418944	0.00000000	0.04743167			
-0.05534167	-0.11876556	-0.07765944	-0.07765944	-0.03303944	-0.04198167	-0.00000000			
-0.00363222	-0.06705611	-0.02595000	-0.02595000	0.01867000	0.00972778	-0.04743167			

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
8	SIA _G $M_{t,st}$	7.470178808339965	8.008592065760866E-14	0.00625	0.006391150954545011	0.006574125233361166	0.006391150954545011	0.047460548996
7	GAssist _G $M_{t,st}$	6.7928825963383805	1.0991482795953245E-11	0.0071428571428571435	0.0073008331979014655	0.0075128293213784685	0.012741455098566168	0.047460548996
6	UCS _G $M_{t,st}$	6.215188768538843	5.126298525682244E-10	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490195694	0.047460548996
5	Oblique-DT _C $M_{t,st}$	5.458210649293729	4.809568567885809E-8	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	0.047460548996
4	REGAL _G $M_{t,st}$	5.259005881071335	1.448362582619604E-7	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	0.047460548996
3	C45Rules _G $M_{t,st}$	5.079721589671171	3.779884019447368E-7	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	0.047460548996
2	Ripper _G $M_{t,st}$	2.7689462782913443	0.005623790727636725	0.025	0.025320565519103666	0.025	0.04388935252272508	0.047460548996
1	REGALTC _G $M_{t,st}$	1.6533995762459106	0.09824956905813065	0.05	0.050000000000000044	0.05	0.050000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

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 $\leq 0.047460548996940494$.

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
8	SIA _G $M_t.st$	6.239664650606311	4.385099676022679E-10	0.00625	0.006391150954545011	0.006574125233361166	0.006391150954545011	0.0424539235954
7	GAssist _G $M_t.st$	5.24707016189659	1.5453705818865528E-7	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.0127414550985666168	0.0424539235954
6	REGAL _G $M_t.st$	4.908050213287993	9.198630624325935E-7	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490193694	0.0424539235954
5	UCS _G $M_t.st$	4.494635607326399	6.968918112936851E-6	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	0.0424539235954
4	Oblique-DT _G $M_t.st$	4.412751554937873	1.0206509722214292E-5	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	0.0424539235954
3	C45Rules _G $M_t.st$	4.072733020324532	4.646467531537563E-5	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	0.0424539235954
2	Ripper _G $M_t.st$	2.8065259663165625	0.005007887614708998	0.025	0.025320565519103666	0.025	0.04388935252272508	0.0424539235954
1	REGALTC _G $M_t.st$	1.3006582711714365	0.19337545168718207	0.05	0.0500000000000000044	0.05	0.0500000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .

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 $\leq 0.0500000000000000044$.

Rom's procedure rejects those hypotheses that have a p-value ≤ 0.025 .

Finner's procedure rejects those hypotheses that have a p-value $\leq 0.0500000000000000044$.

Li's procedure rejects those hypotheses that have a p-value $\leq 0.042453923595411475$.

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
8	SIA _G $M_t.st$	3.6711308405042047	2.4147967449071364E-4	0.00625	0.006391150954545011	0.006574125233361166	0.006391150954545011	0.0376091085841
7	GAssist _G $M_t.st$	3.0068809379572197	0.0026394311881588178	0.0071428571428571435	0.007300831979014655	0.0075128293213784685	0.012741455098566168	0.0376091085841
6	REGAL _G $M_t.st$	2.8837969645205064	0.00392919899529919	0.008333333333333333	0.008512444610847103	0.008764162596519848	0.019051173490195694	0.0376091085841
5	Oblique-DT _G $M_t.st$	2.686055498999229	0.0072301078255241815	0.01	0.010206218313011495	0.010515350115740741	0.025320565519103666	0.0376091085841
4	UCS _G $M_t.st$	2.6493320839738486	0.008065103932080592	0.0125	0.012741455098566168	0.013109375000000001	0.031549888917161595	0.0376091085841
3	C45Rules _G $M_t.st$	2.251024274852419	0.024383999932953773	0.016666666666666666	0.016952427508441503	0.016666666666666666	0.03773939976903784	0.0376091085841
2	Ripper _G $M_t.st$	1.6105840589702405	0.1072704105933688	0.025	0.025320565519103666	0.025	0.04388935252272508	0.0376091085841
1	REGALTC _G $M_t.st$	1.0682074678261657	0.28542693690130855	0.05	0.050000000000000044	0.05	0.050000000000000044	0.05

Bonferroni-Dunn's procedure rejects those hypotheses that have a p-value ≤ 0.00625 .
 Holm's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
 Hochberg's procedure rejects those hypotheses that have a p-value ≤ 0.0125 .
 Hommel's procedure rejects those hypotheses that have a p-value $\leq 0.016666666666666666$.
 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 ≤ 0.04388935252272508 .
 Li's procedure rejects those hypotheses that have a p-value ≤ 0.03760910858414166 .

Table 8: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Hoch}	p_{Homn}
1	SIA $_G M_t st$	8.008592065760866E-14	6.406873652608692E-13	6.406873652608692E-13	6.406873652608692E-13	6.406873652608692E-13
2	GAssist $_G M_t st$	1.0991482795953245E-11	8.793186236762596E-11	7.694037957167272E-11	7.694037957167272E-11	7.694037957167272E-11
3	UCS $_G M_t st$	5.126298525682244E-10	4.1010388205457955E-9	3.0757791154093467E-9	3.0757791154093467E-9	3.0757791154093467E-9
4	Oblique-DT $_G M_t st$	4.809568567885809E-8	3.847654854308647E-7	2.4047842839429046E-7	2.4047842839429046E-7	2.4047842839429046E-7
5	REGAL $_G M_t st$	1.448362582619604E-7	1.1586900660956832E-6	5.793450330478416E-7	5.793450330478416E-7	5.793450330478416E-7
6	C45Rules $_G M_t st$	3.779884019447368E-7	3.0239072155578944E-6	1.1339652058342105E-6	1.1339652058342105E-6	1.1339652058342105E-6
7	Ripper $_G M_t st$	0.005623790727636725	0.0449903258210938	0.01124758145527345	0.01124758145527345	0.01124758145527345
8	REGALTC $_G M_t st$	0.09824956905813065	0.7859965524650452	0.09824956905813065	0.09824956905813065	0.09824956905813065

Table 9: Adjusted p -values (FRIEDMAN)

i	algorithm	unadjusted p	p_{Holl}	p_{Rom}	p_{Finn}	p_{Li}
1	SIA $_G M_t st$	8.008592065760866E-14	6.403766406037903E-13	6.090994452859166E-13	6.403766406037903E-13	8.881162449121604E-14
2	GAssist $_G M_t st$	1.0991482795953245E-11	7.694000991875782E-11	7.315142089462847E-11	4.396571995353759E-11	1.2189051891373953E-11
3	UCS $_G M_t st$	5.126298525682244E-10	3.075778964856113E-9	2.924579769730562E-9	1.3670128362619494E-9	5.684830688036004E-10
4	Oblique-DT $_G M_t st$	4.809568567885809E-8	2.4047784051890374E-7	2.286927451272508E-7	9.619136898120217E-8	5.333591364452722E-8
5	REGAL $_G M_t st$	1.448362582619604E-7	5.7934449069368961E-7	5.524148110110528E-7	2.3173800312026316E-7	1.6061676271953588E-7
6	C45Rules $_G M_t st$	3.779884019447368E-7	1.13396477707080559E-6	1.1339652058342105E-6	5.039845041299174E-7	4.191716804702807E-7
7	Ripper $_G M_t st$	0.005623790727636725	0.011215954433125286	0.01124758145527345	0.006424603445994603	0.006197873593200982
8	REGALTC $_G M_t st$	0.09824956905813065	0.09824956905813065	0.09824956905813065	0.09824956905813065	0.09824956905813065

Table 10: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	P_{Bonf}	P_{Holm}	P_{ocb}	P_{Hommel}
1	SIA $_G M_t st$	4.385099676022679E-10	3.508079740818143E-9	3.508079740818143E-9	3.508079740818143E-9	3.508079740818143E-9
2	GAssist $_G M_t st$	1.5453705818865528E-7	1.2362964655092423E-6	1.081759407320587E-6	1.081759407320587E-6	1.081759407320587E-6
3	REGAL $_G M_t st$	9.198630624325935E-7	7.358904499460748E-6	5.51917837459561E-6	5.51917837459561E-6	5.51917837459561E-6
4	UCS $_G M_t st$	6.968918112936851E-6	5.575134490349481E-5	3.484459056468426E-5	3.484459056468426E-5	2.7875672451747406E-5
5	Oblique-DT $_G M_t st$	1.0206509722214292E-5	8.16520777771433E-5	4.082603888857167E-5	4.082603888857167E-5	4.082603888857167E-5
6	C45Rules $_G M_t st$	4.646467531537563E-5	3.7171740252300503E-4	1.3939402594612688E-4	1.3939402594612688E-4	1.3939402594612688E-4
7	Ripper $_G M_t st$	0.005007887614708998	0.040063100917671984	0.010015775229417996	0.010015775229417996	0.010015775229417996
8	REGALTC $_G M_t st$	0.19337545168718207	1.5470036134974565	0.19337545168718207	0.19337545168718207	0.19337545168718207

Table 11: Adjusted p -values (ALIGNED FRIEDMAN)

i	algorithm	unadjusted p	P_{Hall}	P_{Rom}	P_{Finn}	P_{Li}
1	SIA $_G M_t st$	4.385099676022679E-10	3.5080800486753105E-9	3.335120278641772E-9	3.5080800486753105E-9	5.436357823241194E-10
2	GAssist $_G M_t st$	1.5453705818865528E-7	1.0817589055633903E-6	1.0284877479440763E-6	6.181480892708535E-7	1.9158483200757703E-7
3	REGAL $_G M_t st$	9.198630624325935E-7	5.519165682144056E-6	5.247866252492058E-6	2.452966286092817E-6	1.14038435274402E-6
4	UCS $_G M_t st$	6.968918112936851E-6	3.484410490972589E-5	3.313688101789816E-5	1.393778766001219E-5	8.6395311416299959E-6
5	Oblique-DT $_G M_t st$	1.0206509722214292E-5	4.082541385586058E-5	3.89282849953346E-5	1.6330365552486015E-5	1.2653198565018099E-5
6	C45Rules $_G M_t st$	4.646467531537563E-5	1.393875491481067E-4	1.3939402594612688E-4	6.195242064521711E-5	5.760052681607782E-5
7	Ripper $_G M_t st$	0.005007887614708998	0.009990696291056553	0.010015775229417996	0.005721249934720007	0.006170142287359456
8	REGALTC $_G M_t st$	0.19337545168718207	0.19337545168718207	0.19337545168718207	0.19337545168718207	0.1933754516871821

Table 12: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Holm}	p_{Finn}	p_{Hoch}	p_{Hommel}
1	SIA $_G M_t st$	2.4147967449071364E-4	0.0019318373959257092	0.0019318373959257092	0.0019318373959257092	0.0019318373959257092	0.0019318373959257092
2	GAssist $_G M_t st$	0.0026394311881588178	0.021115449505270542	0.018476018317111723	0.018476018317111723	0.018476018317111723	0.015836587128952907
3	REGAL $_G M_t st$	0.003929119899529919	0.031432959196239355	0.023574719397179516	0.023574719397179516	0.023574719397179516	0.019645599497649595
4	Oblique-DT $_G M_t st$	0.0072301078255241815	0.05784086260419345	0.03615053912762091	0.03226041572832237	0.03226041572832237	0.028920431302096726
5	UCS $_G M_t st$	0.008065103932080592	0.06452083145664474	0.03615053912762091	0.03226041572832237	0.03226041572832237	0.03226041572832237
6	C45Rules $_G M_t st$	0.02438399932953773	0.19507199946363019	0.07315199979886132	0.07315199979886132	0.07315199979886132	0.07315199979886132
7	Ripper $_G M_t st$	0.1072704105933688	0.8581632847469504	0.2145408211867376	0.2145408211867376	0.2145408211867376	0.2145408211867376
8	REGALTC $_G M_t st$	0.28542693690130855	2.2834154952104684	0.28542693690130855	0.28542693690130855	0.28542693690130855	0.28542693690130855

Table 13: Adjusted p -values (QUADE)

i	algorithm	unadjusted p	p_{Bonf}	p_{Finn}	p_{Li}
1	SIA $_G M_t st$	2.4147967449071364E-4	0.0019302054361094445	0.0019302054361094445	3.3782143484920333E-4
2	GAssist $_G M_t st$	0.0026394311881588178	0.01833036165905877	0.01756615966669219	0.0036801243831973357
3	REGAL $_G M_t st$	0.003929119899529919	0.02334435923379019	0.022415831839371222	0.010515998673533145
4	Oblique-DT $_G M_t st$	0.0072301078255241815	0.0356631560392358486	0.03076082548588545	0.0054684870728355815
5	UCS $_G M_t st$	0.008065103932080592	0.0356631560392358486	0.03076082548588545	0.010016730483833372
6	C45Rules $_G M_t st$	0.02438399932953773	0.07138275966600605	0.07315199979886132	0.011160639307523812
7	Ripper $_G M_t st$	0.1072704105933688	0.20303388019786772	0.2145408211867376	0.032997857592558592
8	REGALTC $_G M_t st$	0.28542693690130855	0.28542693690130855	0.28542693690130855	0.13052413753614883