Wilcoxon Signed Ranks test.

KEEL non-parametric statistical module

May 9, 2011

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1R (1)	-	139.0	331.5	205.0	726.0	101.5	177.0	116.5	241.0	418.0	171.5	173.0	199.5	308.0	159.0	103.5	244.0	206.0	571.5	254.0	302.5	149.5	200.5	147.0	147.0	474.0	136.0	347.0	240.5	164.0
Ameva (2)	681.0	-	614.0	604.5	794.0	409.0	436.0	357.5	540.0	695.5	510.0	435.0	410.0	562.0	424.0	389.0	472.0	484.0	800.5	489.5	611.5	487.0	482.0	398.5	429.0	704.0	422.0	618.0	435.0	422.5
Bayesian (3)	488.5	206.0	-	255.0	762.0	139.5	204.0	178.5	224.0	424.5	246.0	199.0	229.0	336.0	162.0	108.0	259.0	256.5	677.5	227.0	362.5	190.0	236.0	133.5	162.0	547.5	139.0	369.0	130.5	207.5
CACC (4)	575.0	215.5	525.0	-	770.0	264.0	307.0	291.0	414.0	596.0	322.0	318.0	340.0	451.0	299.5	201.5	425.5	401.5	776.5	416.0	555.0	312.0	334.0	290.0	314.0	612.0	297.0	492.0	378.0	265.5
CADD (5)	94.0	26.0	18.0	50.0	-	1.0	34.0	9.5	8.0	100.0	57.0	26.5	20.0	74.5	7.0	3.0	9.0	11.0	335.5	17.0	15.0	13.0	47.0	12.5	15.0	185.0	4.0	63.0	7.0	0.0
CAIM (6)	718.5	374.0	640.5	556.0	819.0	-	454.5	378.5	520.5	734.0	557.0	454.0	468.5	564.0	421.5	342.5	503.0	553.0	804.0	478.0	637.5	435.0	547.0	391.0	384.0	709.5	377.5	653.5	463.0	437.5
Chi2 (7)	603.0	384.0	616.0	513.0	786.0	365.5	-	407.0	486.0	662.0	379.0	375.0	365.0	588.0	390.5	311.0	441.5	428.5	748.5	435.5	549.0	432.0	401.0	333.5	403.5	685.0	359.0	593.0	460.0	376.5
ChiMerge (8)	703.5	425.5	601.5	529.0	810.5	441.5	413.0	-	484.0	739.5	546.0	465.0	496.5	549.0	396.0	365.0	453.0	506.0	787.0	439.0	606.0	447.0	502.5	379.5	363.0	714.5	385.0	636.0	442.0	467.0
ClusterAnalysis (9)	539.0	280.0	556.0	406.0	772.0	259.5	294.0	296.0	-	582.0	355.0	306.5	319.0	417.0	247.5	216.0	418.0	359.0	703.0	429.0	474.0	344.5	350.0	238.5	332.5	603.0	236.5	500.5	330.0	287.5
DIBD (10)	402.0	124.5	395.5	184.0	720.0	46.0	158.0	80.5	238.0	-	161.0	104.0	163.0	270.0	75.0	64.0	220.0	119.0	641.0	240.0	268.0	95.0	148.0	78.0	105.0	490.0	70.0	316.0	212.5	96.0
Distance (11)	608.5	310.0	574.0	498.0	763.0	223.0	401.0	234.0	425.0	619.0	-	355.5	356.0	512.0	307.0	264.0	411.0	440.0	737.0	434.0	556.0	371.0	374.0	381.0	289.0	586.5	344.0	517.0	400.5	270.0
EqualFrequency (12)	647.0	385.0	621.0	502.0	793.5	326.0	405.0	318.0	513.5	676.0	464.5	-	363.5	533.5	332.5	271.5	467.0	542.0	772.5	506.0	574.0	467.0	453.5	377.0	373.5	619.0	382.0	650.5	425.0	395.5
EqualWidth (13)	620.5	370.0	591.0	440.0	800.0	351.5	455.0	283.5	461.0	657.0	464.0	416.5	-	574.0	364.5	300.0	452.0	476.0	763.0	438.0	554.5	428.0	412.0	337.0	336.0	667.5	350.5	584.5	440.0	374.5
Extended Chi2 (14)	472.0	258.0	444.0	329.0	745.5	216.0	192.0	231.0	403.0	550.0	308.0	246.5	206.0	-	270.5	188.0	347.5	288.0	652.5	334.0	436.0	254.0	304.5	177.5	200.5	612.5	188.5	470.0	278.0	256.5
FFD (15)	661.0	356.0	658.0	480.5	813.0	358.5	389.5	384.0	572.5	705.0	513.0	487.5	455.5	549.5	-	271.5	511.0	547.5	795.0	511.0	612.0	447.5	484.5	372.5	381.0	689.0	316.0	636.5	476.5	387.0
FUSINTER (16)	716.5	431.0	712.0	578.5	817.0	477.5	472.0	455.0	564.0	716.0	556.0	508.5	520.0	632.0	511.5	-	591.5	561.0	792.0	557.0	679.0	499.5	548.5	448.0	479.5	714.0	437.5	653.0	530.0	483.0
HDD (17)	536.0	308.0	521.0	394.5	811.0	317.0	338.5	327.0	402.0	560.0	369.0	313.0	328.0	472.5	269.0	228.5	-	365.0	720.0	324.0	513.0	341.5	345.0	310.0	255.0	630.0	269.5	486.0	290.5	319.0
HellingerBD (18)	614.0	296.0	563.5	418.5	809.0	267.0	351.5	274.0	421.0	661.0	380.0	241.0	304.0	532.0	235.5	219.0	418.0	-	763.0	434.5	544.0	299.5	348.0	323.5	305.0	639.0	269.5	568.0	396.5	309.0
Heter-Disc (19)	248.5	19.5	142.5	43.5	484.5	16.0	71.5	33.0	77.0	139.0	83.0	47.5	57.0	127.5	25.0	28.0	100.0	57.0	-	93.0	160.0	20.0	71.0	33.0	41.0	273.0	29.0	62.0	73.0	19.0
ID3 (20)	526.0	330.5	556.0	364.0	803.0	302.0	344.5	341.0	354.0	540.0	386.0	314.0	345.0	446.0	272.0	223.0	461.0	348.5	727.0	-	494.0	299.5	357.0	306.0	262.0	630.0	237.5	474.0	244.0	339.0
IDD (21)	517.5	168.5	457.5	265.0	768.0	142.5	231.0	174.0	306.0	512.0	264.0	246.0	265.5	384.0	208.0	141.0	307.0	236.0	623.0	326.0	-	230.0	249.0	198.5	176.0	538.0	144.5	427.0	300.0	216.5
Khiops (22)	670.5	333.0	630.0	468.0	807.0	345.0	388.0	333.0	475.5	685.0	412.0	353.0	392.0	566.0	335.5	283.5	478.5	483.5	760.0	480.5	590.0	-	376.0	334.5	360.5	628.0	392.0	599.5	453.5	404.0
MDLP (23)	619.5	298.0	584.0	486.0	773.0	273.0	419.0	317.5	430.0	632.0	409.0	366.5	368.0	475.5	335.5	271.5	435.0	432.0	749.0	423.0	571.0	404.0	-	341.5	311.5	587.0	348.5	563.0	435.0	271.0
Modified Chi2 (24)	633.0	381.5	686.5	530.0	807.5	389.0	449.5	400.5	541.5	702.0	439.0	403.0	443.0	642.5	407.5	332.0	510.0	496.5	787.0	514.0	581.5	445.5	438.5	-	383.0	697.0	357.0	633.0	509.5	459.5
MODL (25)	673.0	391.0	658.0	506.0	805.0	436.0	416.5	457.0	487.5	715.0	491.0	446.5	484.0	579.5	399.0	303.5	525.0	478.0	779.0	521.0	604.0	459.5	508.5	437.0	-	661.0	387.0	580.5	486.5	433.0
MVD (26)	346.0	116.0	272.5	171.0	635.0	110.5	135.0	105.5	177.0	330.0	233.5	161.0	152.5	207.5	131.0	106.0	150.0	181.0	514.0	150.0	245.0	152.0	233.0	123.0	159.0	-	100.0	288.0	133.0	108.0
PKID (27)	684.0	398.0	681.0	523.0	776.0	402.5	461.0	435.0	583.5	710.0	476.0	438.0	469.5	631.5	504.0	345.5	550.5	550.5	791.0	547.5	635.5	391.0	471.5	423.0	433.0	720.0	-	653.5	521.0	439.5
UCPD (28)	473.0	202.0	451.0	288.0	757.0	166.5	187.0	184.0	279.5	504.0	263.0	169.5	195.5	350.0	143.5	127.0	294.0	252.0	758.0	306.0	393.0	220.5	257.0	147.0	199.5	532.0	166.5	-	279.0	187.5
USD (29)	539.5	345.0	689.5	402.0	813.0	357.0	360.0	378.0	453.0	607.5	379.5	355.0	340.0	502.0	303.5	250.0	529.5	383.5	747.0	539.0	520.0	366.5	385.0	310.5	293.5	647.0	259.0	541.0	-	372.0
Zeta (30)	656.0	397.5	572.5	514.5	820.0	382.5	403.5	316.0	532.5	684.0	510.0	424.5	445.5	563.5	393.0	297.0	501.0	511.0	801.0	481.0	563.5	416.0	509.0	360.5	347.0	672.0	340.5	632.5	408.0	-

Table 1: Ranks computed by the Wilcoxon test

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
1R (1)	-	○		○	●	○	○	○	○		○	○	○		○	○	○	○		○		○	○	○	○		○		○	○
Ameva (2)	●	-	●		●				●	●				●					●		●					●		●		
Bayesian (3)		○	-	○	●	○	○	○	○		○	○	○		○	○	○	○	●	○		○	○	○	○		○		○	○
CACC (4)	●			-	●					●						○			●		●					●				○
CADD (5)	○	○	○	○	-	○	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○	○
CAIM (6)	●		●		●	-			●	●	●			●				●	●		●					●		●		
Chi2 (7)	●		●		●		-			●				●					●		●					●		●		
ChiMerge (8)	●		●		●			-		●	●			●					●		●					●		●		
ClusterAnalysis (9)	●		●		●				-	●					○	○			●					○		●	○			
DIBD (10)		○		○	●	○	○	○	○	-	○	○	○	○	○	○	○	○	●	○	○	○	○	○	○		○		○	○
Distance (11)	●		●		●	○		○		●	-					○			●		●					●		●		○
EqualFrequency (12)	●		●		●					●		-		●				●	●		●					●		●		
EqualWidth (13)	●		●		●					●			-	●					●							●		●		
Extended Chi2 (14)		○			●	○	○	○				○	○	-	○	○			●			○		○	○	●	○			○
FFD (15)	●		●		●					●					-		●	●	●		●					●		●		
FUSINTER (16)	●		●	●	●				●	●	●			●		-	●	●	●	●	●		●			●		●	●	
HDD (17)	●				●					●						○	-		●						○	●				
HellingerBD (18)	●		●		●					●						○		-	●		●					●		●		
Heter-Disc (19)		○	○	○		○	○	○	○	○	○	○	○	○	○	○	○	○	-	○	○	○	○	○	○		○	○	○	○
ID3 (20)					●					●						○			●	-						●				
IDD (21)		○			●	○	○	○			○	○			○	○		○	●		-	○	○	○	○		○			○
Khiops (22)	●		●		●					●				●					●		●	-				●		●		
MDLP (23)	●		●		●					●									●		●		-			●		●		○
Modified Chi2 (24)	●		●		●				●	●				●					●		●			-		●		●		
MODL (25)	●		●		●					●				●					●		●				-	●		●		
MVD (26)		○		○	●	○	○	○	○		○	○	○	○	○	○	○	○		○		○	○	○	○	-	○		○	○
PKID (27)	●		●		●					●				●					●		●					●	-	●	●	
UCPD (28)		○			●	○	○	○				○	○		○	○			●			○	○	○	○		○	-	○	○
USD (29)	●		●		●					●									●							●			-	
Zeta (30)	●		●		●					●				●					●		●					●		●		-

Table 2: Summary of the Wilcoxon test. ●= the method in the row improves the method of the column. ○= the method in the column improves the method of the row. Upper diagonal of level significance $\alpha = 0.9$,Lower diagonal level of significance $\alpha = 0.95$

	$\alpha = 0.9$		$\alpha = 0.95$	
Method	+	±	+	±
1R	1	8	1	9
Ameva	10	29	9	29
Bayesian	2	8	2	11
CACC	7	27	5	28
CADD	0	1	0	1
CAIM	12	29	10	29
Chi2	9	29	9	29
ChiMerge	10	29	10	29
ClusterAnalysis	6	23	6	27
DIBD	2	6	2	8
Distance	8	25	7	26
EqualFrequency	10	29	9	29
EqualWidth	8	29	8	29
Extended Chi2	4	16	3	17
FFD	12	29	8	29
FUSINTER	17	29	15	29
HDD	6	26	5	28
HellingerBD	8	25	7	28
Heter-Disc	0	3	0	3
ID3	6	28	4	28
IDD	3	13	2	14
Khiops	9	29	9	29
MDLP	8	27	8	29
Modified Chi2	10	29	10	29
MODL	10	29	9	29
MVD	1	7	1	7
PKID	11	29	9	29
UCPD	2	12	2	15
USD	7	27	6	29
Zeta	12	29	9	29

Table 3: Wilcoxon test summary results