

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)	
LR (1)	-	344.0	62.5	354.0	698.0	347.0	293.0	323.0	112.0	601.5	518.0	234.3	108.0	415.0	56.5	242.5	60.0	340.0	741.0	22.5	60.0	165.0	528.0	103.5	166.5	483.0	20.0	373.5	28.0	505.5	
Amesoft (2)	434.0	-	239.0	373.0	686.0	439.5	524.0	455.0	140.5	666.5	656.0	132.5	127.5	436.0	10.5	138.5	40.5	274.0	780.0	10.5	231.5	81.5	591.0	53.0	173.0	518.0	10.5	335.0	18.5	625.5	
Bayesian (3)	726.5	581.0	-	613.0	804.5	546.5	524.0	540.5	297.5	716.0	694.0	404.0	353.5	538.5	205.5	436.0	195.0	530.0	818.5	76.5	499.0	356.0	659.0	289.5	448.5	641.0	158.5	560.5	142.5	689.5	
CACC (4)	429.0	414.0	207.0	-	725.0	430.5	282.0	387.5	159.0	661.5	638.0	28.5	175.5	433.0	40.0	135.0	49.0	282.5	780.0	14.0	268.5	81.5	537.0	103.0	182.5	538.5	33.0	404.0	39.0	589.0	
CAOC (5)	124.0	84.0	38.5	177.0	-	483.0	37.0	13.5	177.0	157.0	157.0	25.5	15.0	123.5	0.0	36.0	14.0	54.0	498.0	0.0	52.5	2.5	127.0	10.0	20.0	172.0	1.5	74.0	3.0	121.0	
CM2 (6)	534.0	440.0	38.5	739.5	639.5	483.0	287.0	479.0	139.0	739.5	739.5	287.0	139.0	479.0	139.0	287.0	139.0	479.0	739.5	139.0	287.0	139.0	479.0	139.0	287.0	139.0	479.0	139.0	287.0	139.0	
CM2 (7)	534.0	440.0	38.5	739.5	639.5	483.0	287.0	479.0	139.0	739.5	739.5	287.0	139.0	479.0	139.0	287.0	139.0	479.0	739.5	139.0	287.0	139.0	479.0	139.0	287.0	139.0	479.0	139.0	287.0	139.0	
CM2 (8)	534.0	440.0	38.5	739.5	639.5	483.0	287.0	479.0	139.0	739.5	739.5	287.0	139.0	479.0	139.0	287.0	139.0	479.0	739.5	139.0	287.0	139.0	479.0	139.0	287.0	139.0	479.0	139.0	287.0	139.0	
CharacterAnalysis (9)	708.0	679.5	495.5	637.0	818.5	681.0	618.0	640.5	-	772.5	725.0	563.0	524.0	705.0	218.0	575.0	263.5	699.0	806.5	115.5	484.0	486.0	735.5	411.0	552.5	732.5	238.0	683.5	328.5	691.0	
DiBB (10)	218.5	153.5	67.0	158.5	643.0	105.5	93.0	67.0	47.5	-	378.0	17.5	14.0	276.0	7.5	33.0	14.5	32.5	799.0	1.5	125.5	14.5	285.0	10.0	12.5	340.0	1.5	51.0	1.5	297.0	
Distance (11)	262.0	124.0	86.0	182.0	623.0	87.0	137.0	41.0	55.0	442.0	-	42.0	12.0	289.0	0.0	0.0	5.0	64.0	803.0	0.0	159.0	0.0	161.0	5.0	0.0	359.0	0.0	82.0	0.0	269.0	
EqualFrequency (12)	285.5	652.5	383.0	391.5	794.5	672.0	540.0	688.5	228.0	802.5	758.0	569.5	-	310.5	639.0	83.5	433.5	202.0	522.0	780.0	70.5	358.0	253.0	794.5	253.0	375.5	46.0	75.5	686.0	693.5	724.0
EqualFrequency (13)	285.5	652.5	383.0	391.5	794.5	672.0	540.0	688.5	228.0	802.5	758.0	569.5	-	310.5	639.0	83.5	433.5	202.0	522.0	780.0	70.5	358.0	253.0	794.5	253.0	375.5	46.0	75.5	686.0	693.5	724.0
Exponential Ch2 (14)	403.0	384.0	231.5	387.0	696.5	325.0	170.0	297.0	115.0	544.0	531.0	164.0	125.0	693.0	42.0	243.0	67.0	230.0	690.0	0.0	280.0	156.5	408.0	0.0	253.0	505.0	23.0	346.0	76.0	489.0	
FFD (15)	733.5	809.5	588.0	747.0	780.0	802.0	742.0	766.5	602.0	812.5	780.0	703.5	723.5	778.0	-	745.0	367.5	767.0	780.0	204.5	639.0	688.0	818.5	599.0	715.0	777.5	370.5	777.5	500.0	769.0	
FUSINTER (16)	577.5	644.5	384.0	685.0	744.0	581.5	435.0	561.5	245.0	747.0	780.0	326.5	245.0	537.0	75.0	-	134.0	434.0	780.0	18.0	350.5	197.5	769.5	193.5	367.5	681.0	18.0	693.0	74.0	743.0	
HDD (17)	751.0	546.0	290.0	602.5	766.0	528.5	485.0	497.0	151.0	787.5	756.0	199.0	148.0	561.0	53.0	386.0	106.5	-	682.5	780.0	264.5	696.5	571.5	767.5	578.0	656.5	712.5	370.0	736.5	438.5	769.0
HellingerBD (18)	471.0	546.0	290.0	602.5	766.0	528.5	485.0	497.0	151.0	787.5	756.0	199.0	148.0	561.0	53.0	386.0	106.5	-	682.5	780.0	264.5	696.5	571.5	767.5	578.0	656.5	712.5	370.0	736.5	438.5	769.0
HellingerBD (19)	471.0	546.0	290.0	602.5	766.0	528.5	485.0	497.0	151.0	787.5	756.0	199.0	148.0	561.0	53.0	386.0	106.5	-	682.5	780.0	264.5	696.5	571.5	767.5	578.0	656.5	712.5	370.0	736.5	438.5	769.0
ID3 (20)	665.5	808.5	720.5	773.0	780.0	807.0	820.0	766.5	685.5	838.5	780.0	749.5	747.0	820.0	615.0	802.0	555.5	730.0	780.0	0.0	45.0	732.0	735.0	818.5	780.0	792.0	777.5	591.5	773.5	670.0	780.0
ID3 (21)	731.0	588.5	321.5	551.5	730.5	543.0	471.0	507.5	309.0	694.5	621.0	462.0	417.0	531.0	156.0	434.5	100.5	512.5	774.0	68.0	762.0	323.0	602.0	306.0	441.5	656.0	143.5	573.0	145.5	597.0	
Kilobits (22)	655.0	738.5	464.0	738.5	777.5	679.0	567.0	695.0	334.0	806.5	780.0	502.0	461.0	663.5	132.0	622.5	248.5	616.5	780.0	60.0	460.0	-	808.5	337.0	570.5	732.5	60.0	714.5	208.5	740.0	
MIDP (23)	292.0	229.0	121.0	283.0	693.0	181.0	176.0	149.5	84.5	515.0	622.0	55.5	32.5	352.0	1.5	178.0	11.5	-	9.0	1.5	178.0	-	9.0	1.5	437.0	1.5	205.0	1.5	288.0	-	-
Modified Ch2 (24)	628.5	647.0	338.5	602.5	700.0	578.5	446.0	596.0	236.5	807.5	780.0	413.5	303.0	597.0	105.0	432.5	232.5	409.0	780.0	27.5	343.5	249.5	818.5	239.0	375.5	293.0	618.0	112.0	734.5	277.5	693.5
MODL (25)	628.5	647.0	338.5	602.5	700.0	578.5	446.0	596.0	236.5	807.5	780.0	413.5	303.0	597.0	105.0	432.5	232.5	409.0	780.0	27.5	343.5	249.5	818.5	239.0	375.5	293.0	618.0	112.0	734.5	277.5	693.5
PKDD (26)	758.0	809.5	636.5	754.0	818.5	802.0	780.0	766.5	682.0	818.5	780.0	744.5	767.5	797.0	432.5	802.0	433.0	482.0	780.0	217.5	676.5	735.0	818.5	708.0	702.5	777.5	7.5	477.5	607.5	780.0	
PKDD (27)	758.0	809.5	636.5	754.0	818.5	802.0	780.0	766.5	682.0	818.5	780.0	744.5	767.5	797.0	432.5	802.0	433.0	482.0	780.0	217.5	676.5	735.0	818.5	708.0	702.5	777.5	7.5	477.5	607.5	780.0	
UCPD (28)	446.5	450.0	259.5	416.0	706.0	383.5	276.0	357.5	101.5	729.0	698.0	134.0	109.0	744.0	7.5	127.0	48.5	237.0	780.0	7.5	247.0	70.5	615.0	45.5	135.0	579.0	7.5	-	7.5	604.5	
UCPD (29)	792.0	801.5	654.5	748.0	777.0	766.5	703.0	757.5	468.5	818.5	780.0	623.5	590.5	744.0	299.0	746.0	381.5	698.0	780.0	150.0	651.5	524.5	818.5	505.5	750.5	777.5	292.5	777.5	-	815.0	
Zeta (30)	314.5	157.5	130.5	245.0	699.0	64.5	191.0	109.0	92.0	523.0	611.0	59.0	69.5	331.0	14.0	77.0	14.0	114.0	780.0	3.0	186.0	43.0	482.0	33.0	55.5	415.0	3.0	215.5	5.0	-	-

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)			
IR (1)	-																																
Anova (2)		-																															
Bayesian (3)			-																														
CACC (4)				-																													
CADD (5)					-																												
CAM (6)						-																											
Chi2 (7)							-																										
ChiMerge (8)								-																									
ClusterAnalysis (9)									-																								
DIPL (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)																					-												
Khops (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  $\alpha = 0.95$

Method	$\alpha = 0.9$		$\alpha = 0.95$	
	+	$\pm$	+	$\pm$
1R	4	16	3	17
Ameva	6	16	6	16
Bayesian	10	28	10	29
CACC	5	16	4	17
CADD	0	1	0	1
CAIM	6	18	6	19
Chi2	11	19	9	20
ChiMerge	6	19	6	20
ClusterAnalysis	16	29	15	29
DIBD	2	5	2	7
Distance	2	5	2	6
EqualFrequency	13	26	12	26
EqualWidth	16	26	16	26
Extended Chi2	3	14	2	14
FFD	21	29	21	29
FUSINTER	13	23	11	23
HDD	18	29	18	29
HellingerBD	9	21	8	21
Heter-Disc	0	1	0	1
ID3	24	29	23	29
IDD	8	28	8	28
Khiops	15	27	15	27
MDLP	4	8	3	9
Modified Chi2	17	26	17	26
MODL	12	24	12	24
MVD	2	13	2	13
PKID	22	29	22	29
UCPD	6	15	6	17
USD	18	29	18	29
Zeta	3	9	3	9

Table 3: Wilcoxon test summary results