Wilcoxon Signed Ranks test.

KEEL non-parametric statistical module

January 15, 2017

1 Detailed results for SVRCC

1.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
MORF	268.0	32.0	3.224E-4	0.00071
ST	241.0	59.0	0.00792	0.008941
MTS	224.0	76.0	0.03398	0.03329
MTSC	226.0	74.0	0.02914	0.028837
RC	263.0	37.0	6.498E-4	0.001183
ERC	234.0	66.0	0.015044	0.015766
ERCC	224.0	76.0	0.03398	0.03329
SVR	262.0	38.0	7.424E-4	0.001308
SVRRC	245.0	55.0	0.00533	0.006361

Table 1: Results obtained by the Wilcoxon test for algorithm SVRCC

1.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
MORF	[-0.44425 , -0.11495]	0.9049
ST	[-0.40205 , -0.037]	0.9049
MTS	[-0.40985 , -0.0333]	0.9049
MTSC	[-0.365 , -0.03055]	0.9049
RC	[-0.50745 , -0.09335]	0.9049
ERC	[-0.43815 , -0.0318]	0.9049
ERCC	[-0.35335 , -0.02165]	0.9049
SVR	[-0.08015 , -0.02525]	0.9049
SVRRC	[-0.03535 , -0.00795]	0.9049

Table 2: Confidence intervals for algorithm SVRCC (α=0.90)

α=0.95	Confidence interval	Exact confidence
MORF	[-0.4789 , -0.10185]	0.95094
ST	[-0.45065 , -0.02695]	0.95094
MTS	[-0.4577 , -0.01665]	0.95094
MTSC	[-0.38195 , -0.01115]	0.95094
RC	[-0.5322 , -0.0658]	0.95094
ERC	[-0.4681 , -0.0185]	0.95094
ERCC	[-0.36935 , -0.0092]	0.95094
SVR	[-0.0867 , -0.02]	0.95094
SVRRC	[-0.039 , -0.0061]	0.95094

Table 3: Confidence intervals for algorithm SVRCC (α=0.95)

2 Detailed results for MORF

2.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	32.0	268.0	≥ 0.2	1
ST	128.0	172.0	≥ 0.2	1
MTS	133.0	167.0	≥ 0.2	1
MTSC	128.0	172.0	≥ 0.2	1
RC	182.0	118.0	≥ 0.2	0.353111
ERC	147.0	153.0	≥ 0.2	1
ERCC	117.0	183.0	≥ 0.2	1
SVR	58.0	242.0	≥ 0.2	1
SVRRC	33.0	267.0	≥ 0.2	1

Table 4: Results obtained by the Wilcoxon test for algorithm MORF

2.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.11495 , 0.44425]	0.9049
ST	[-0.0472 , 0.09465]	0.9049
MTS	[-0.04005 , 0.082]	0.9049
MTSC	[-0.05045 , 0.08735]	0.9049
RC	[-0.11995 , 0.04385]	0.9049
ERC	[-0.0758 , 0.08125]	0.9049
ERCC	[-0.03185 , 0.1136]	0.9049
SVR	[0.04855 , 0.4195]	0.9049
SVRRC	[0.0722 , 0.4444]	0.9049

Table 5: Confidence intervals for algorithm MORF (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.10185 , 0.4789]	0.95094
ST	[-0.05875 , 0.1055]	0.95094
MTS	[-0.05475 , 0.0967]	0.95094
MTSC	[-0.05625 , 0.10085]	0.95094
RC	[-0.1452 , 0.0547]	0.95094
ERC	[-0.0912 , 0.10425]	0.95094
ERCC	[-0.03705 , 0.13145]	0.95094
SVR	[0.0374 , 0.445]	0.95094
SVRRC	[0.06615 , 0.4619]	0.95094

Table 6: Confidence intervals for algorithm MORF (α=0.95)

3 Detailed results for ST

3.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	59.0	241.0	≥ 0.2	1
MORF	172.0	128.0	≥ 0.2	0.520317
MTS	154.5	145.5	≥ 0.2	0.885999
MTSC	152.0	148.0	≥ 0.2	0.943057
RC	272.0	28.0	1.7548E-4	0.000444
ERC	178.0	122.0	≥ 0.2	0.415481
ERCC	80.0	220.0	≥ 0.2	1
SVR	89.0	211.0	≥ 0.2	1
SVRRC	69.0	231.0	≥ 0.2	1

Table 7: Results obtained by the Wilcoxon test for algorithm ST

3.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.037 , 0.40205]	0.9049
MORF	[-0.09465 , 0.0472]	0.9049
MTS	[-0.0308 , 0.0388]	0.9049
MTSC	[-0.01565 , 0.0304]	0.9049
RC	[-0.0566 , -0.01125]	0.9049
ERC	[-0.0209 , 0.0078]	0.9049
ERCC	[0.0016 , 0.038]	0.9049
SVR	[0.0086 , 0.3492]	0.9049
SVRRC	[0.03155 , 0.40225]	0.9049

Table 8: Confidence intervals for algorithm ST (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.02695 , 0.45065]	0.95094
MORF	[-0.1055 , 0.05875]	0.95094
MTS	[-0.03505 , 0.0437]	0.95094
MTSC	[-0.0189 , 0.03935]	0.95094
RC	[-0.06135 , -0.0097]	0.95094
ERC	[-0.0236 , 0.0104]	0.95094
ERCC	[0.00015 , 0.04705]	0.95094
SVR	[-0.01295 , 0.3708]	0.95094
SVRRC	[0.01895 , 0.4281]	0.95094

Table 9: Confidence intervals for algorithm ST (α=0.95)

4 Detailed results for MTS

4.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	76.0	224.0	≥ 0.2	1
MORF	167.0	133.0	≥ 0.2	0.617075
ST	145.5	154.5	≥ 0.2	1
MTSC	147.0	153.0	≥ 0.2	1
RC	222.0	78.0	0.03948	0.038319
ERC	149.0	151.0	≥ 0.2	1
ERCC	122.0	178.0	≥ 0.2	1
SVR	105.0	195.0	≥ 0.2	1
SVRRC	82.0	218.0	≥ 0.2	1

Table 10: Results obtained by the Wilcoxon test for algorithm MTS

4.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.0333 , 0.40985]	0.9049
MORF	[-0.082 , 0.04005]	0.9049
ST	[-0.0388 , 0.0308]	0.9049
MTSC	[-0.03705 , 0.02205]	0.9049
RC	[-0.06065 , -0.00245]	0.9049
ERC	[-0.05285 , 0.03]	0.9049
ERCC	[-0.01315 , 0.0563]	0.9049
SVR	[-0.02525 , 0.37975]	0.9049
SVRRC	[0.0244 , 0.4018]	0.9049

Table 11: Confidence intervals for algorithm MTS (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.01665 , 0.4577]	0.95094
MORF	[-0.0967 , 0.05475]	0.95094
ST	[-0.0437 , 0.03505]	0.95094
MTSC	[-0.04235 , 0.03255]	0.95094
RC	[-0.10245 , -0.0008]	0.95094
ERC	[-0.07215 , 0.0347]	0.95094
ERCC	[-0.01725 , 0.0686]	0.95094
SVR	[-0.04595 , 0.4217]	0.95094
SVRRC	[-0.00285 , 0.4597]	0.95094

Table 12: Confidence intervals for algorithm MTS (α=0.95)

5 Detailed results for MTSC

5.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	74.0	226.0	≥ 0.2	1
MORF	172.0	128.0	≥ 0.2	0.520317
ST	148.0	152.0	≥ 0.2	1
MTS	153.0	147.0	≥ 0.2	0.920344
RC	221.0	79.0	0.04248	0.041067
ERC	167.0	133.0	≥ 0.2	0.617075
ERCC	75.0	225.0	≥ 0.2	1
SVR	95.0	205.0	≥ 0.2	1
SVRRC	79.0	221.0	≥ 0.2	1

Table 13: Results obtained by the Wilcoxon test for algorithm MTSC

5.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.03055 , 0.365]	0.9049
MORF	[-0.08735 , 0.05045]	0.9049
ST	[-0.0304 , 0.01565]	0.9049
MTS	[-0.02205 , 0.03705]	0.9049
RC	[-0.07615 , -0.00325]	0.9049
ERC	[-0.0394 , 0.0082]	0.9049
ERCC	[0.0034 , 0.03125]	0.9049
SVR	[-0.0082 , 0.33825]	0.9049
SVRRC	[0.02465 , 0.3618]	0.9049

Table 14: Confidence intervals for algorithm MTSC (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.01115 , 0.38195]	0.95094
MORF	[-0.10085 , 0.05625]	0.95094
ST	[-0.03935 , 0.0189]	0.95094
MTS	[-0.03255 , 0.04235]	0.95094
RC	[-0.0828 , -0.00105]	0.95094
ERC	[-0.0669 , 0.0104]	0.95094
ERCC	[0.0014 , 0.03435]	0.95094
SVR	[-0.02945 , 0.3644]	0.95094
SVRRC	[0.00545 , 0.39155]	0.95094

Table 15: Confidence intervals for algorithm MTSC (α=0.95)

6 Detailed results for RC

6.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	37.0	263.0	≥ 0.2	1
MORF	118.0	182.0	≥ 0.2	1
ST	28.0	272.0	≥ 0.2	1
MTS	78.0	222.0	≥ 0.2	1
MTSC	79.0	221.0	≥ 0.2	1
ERC	66.0	234.0	≥ 0.2	1
ERCC	29.5	270.5	≥ 0.2	1
SVR	58.0	242.0	≥ 0.2	1
SVRRC	46.0	254.0	≥ 0.2	1

Table 16: Results obtained by the Wilcoxon test for algorithm RC

6.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.09335 , 0.50745]	0.9049
MORF	[-0.04385 , 0.11995]	0.9049
ST	[0.01125 , 0.0566]	0.9049
MTS	[0.00245 , 0.06065]	0.9049
MTSC	[0.00325 , 0.07615]	0.9049
ERC	[0.00275 , 0.0431]	0.9049
ERCC	[0.0138 , 0.09155]	0.9049
SVR	[0.0499 , 0.4076]	0.9049
SVRRC	[0.08325 , 0.4531]	0.9049

Table 17: Confidence intervals for algorithm RC (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.0658 , 0.5322]	0.95094
MORF	[-0.0547 , 0.1452]	0.95094
ST	[0.0097 , 0.06135]	0.95094
MTS	[0.0008 , 0.10245]	0.95094
MTSC	[0.00105 , 0.0828]	0.95094
ERC	[0.0017 , 0.0473]	0.95094
ERCC	[0.01105 , 0.1007]	0.95094
SVR	[0.03705 , 0.44055]	0.95094
SVRRC	[0.06395 , 0.50335]	0.95094

Table 18: Confidence intervals for algorithm RC (α=0.95)

7 Detailed results for ERC

7.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	66.0	234.0	≥ 0.2	1
MORF	153.0	147.0	≥ 0.2	0.920344
ST	122.0	178.0	≥ 0.2	1
MTS	151.0	149.0	≥ 0.2	0.965815
MTSC	133.0	167.0	≥ 0.2	1
RC	234.0	66.0	0.015044	0.015766
ERCC	79.0	221.0	≥ 0.2	1
SVR	86.0	214.0	≥ 0.2	1
SVRRC	74.0	226.0	≥ 0.2	1

Table 19: Results obtained by the Wilcoxon test for algorithm ERC

7.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.0318 , 0.43815]	0.9049
MORF	[-0.08125 , 0.0758]	0.9049
ST	[-0.0078 , 0.0209]	0.9049
MTS	[-0.03 , 0.05285]	0.9049
MTSC	[-0.0082 , 0.0394]	0.9049
RC	[-0.0431 , -0.00275]	0.9049
ERCC	[0.00305 , 0.0686]	0.9049
SVR	[0.00835 , 0.3764]	0.9049
SVRRC	[0.0285 , 0.4146]	0.9049

Table 20: Confidence intervals for algorithm ERC (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.0185 , 0.4681]	0.95094
MORF	[-0.10425 , 0.0912]	0.95094
ST	[-0.0104 , 0.0236]	0.95094
MTS	[-0.0347 , 0.07215]	0.95094
MTSC	[-0.0104 , 0.0669]	0.95094
RC	[-0.0473 , -0.0017]	0.95094
ERCC	[0.0006 , 0.0781]	0.95094
SVR	[-0.008 , 0.3991]	0.95094
SVRRC	[0.0196 , 0.4524]	0.95094

Table 21: Confidence intervals for algorithm ERC (α=0.95)

8 Detailed results for ERCC

8.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	76.0	224.0	≥ 0.2	1
MORF	183.0	117.0	≥ 0.2	0.338495
ST	220.0	80.0	0.04568	0.04398
MTS	178.0	122.0	≥ 0.2	0.415481
MTSC	225.0	75.0	0.03148	0.030995
RC	270.5	29.5	2.2219999999999998E-4	0.000521
ERC	221.0	79.0	0.04248	0.041067
SVR	101.0	199.0	≥ 0.2	1
SVRRC	86.0	214.0	≥ 0.2	1

Table 22: Results obtained by the Wilcoxon test for algorithm ERCC

8.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.02165 , 0.35335]	0.9049
MORF	[-0.1136 , 0.03185]	0.9049
ST	[-0.038 , -0.0016]	0.9049
MTS	[-0.0563 , 0.01315]	0.9049
MTSC	[-0.03125 , -0.0034]	0.9049
RC	[-0.09155 , -0.0138]	0.9049
ERC	[-0.0686 , -0.00305]	0.9049
SVR	[-0.01995 , 0.3225]	0.9049
SVRRC	[0.0147 , 0.3416]	0.9049

Table 23: Confidence intervals for algorithm ERCC (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.0092 , 0.36935]	0.95094
MORF	[-0.13145 , 0.03705]	0.95094
ST	[-0.04705 , -0.00015]	0.95094
MTS	[-0.0686 , 0.01725]	0.95094
MTSC	[-0.03435 , -0.0014]	0.95094
RC	[-0.1007 , -0.01105]	0.95094
ERC	[-0.0781 , -0.0006]	0.95094
SVR	[-0.039 , 0.35035]	0.95094
SVRRC	[-0.0138 , 0.371]	0.95094

Table 24: Confidence intervals for algorithm ERCC (α=0.95)

9 Detailed results for SVR

9.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	38.0	262.0	≥ 0.2	1
MORF	242.0	58.0	0.00719	0.008221
ST	211.0	89.0	0.08392	0.078893
MTS	195.0	105.0	≥ 0.2	0.193601
MTSC	205.0	95.0	0.12084	0.112804
RC	242.0	58.0	0.00719	0.008221
ERC	214.0	86.0	0.0691	0.06535
ERCC	199.0	101.0	0.1688	0.157278
SVRRC	54.0	246.0	≥ 0.2	1

Table 25: Results obtained by the Wilcoxon test for algorithm SVR

9.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.02525 , 0.08015]	0.9049
MORF	[-0.4195 , -0.04855]	0.9049
ST	[-0.3492 , -0.0086]	0.9049
MTS	[-0.37975 , 0.02525]	0.9049
MTSC	[-0.33825 , 0.0082]	0.9049
RC	[-0.4076 , -0.0499]	0.9049
ERC	[-0.3764 , -0.00835]	0.9049
ERCC	[-0.3225 , 0.01995]	0.9049
SVRRC	[0.01475 , 0.0531]	0.9049

Table 26: Confidence intervals for algorithm SVR (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.02 , 0.0867]	0.95094
MORF	[-0.445 , -0.0374]	0.95094
ST	[-0.3708 , 0.01295]	0.95094
MTS	[-0.4217 , 0.04595]	0.95094
MTSC	[-0.3644 , 0.02945]	0.95094
RC	[-0.44055 , -0.03705]	0.95094
ERC	[-0.3991 , 0.008]	0.95094
ERCC	[-0.35035 , 0.039]	0.95094
SVRRC	[0.0119 , 0.0593]	0.95094

Table 27: Confidence intervals for algorithm SVR (α=0.95)

10 Detailed results for SVRRC

10.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRCC	55.0	245.0	≥ 0.2	1
MORF	267.0	33.0	3.728E-4	0.000788
ST	231.0	69.0	0.019442	0.019882
MTS	218.0	82.0	0.05264	0.050331
MTSC	221.0	79.0	0.04248	0.041067
RC	254.0	46.0	0.002	0.002829
ERC	226.0	74.0	0.02914	0.028837
ERCC	214.0	86.0	0.0691	0.06535
SVR	246.0	54.0	0.00481	0.005831

Table 28: Results obtained by the Wilcoxon test for algorithm SVRRC

10.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRCC	[0.00795 , 0.03535]	0.9049
MORF	[-0.4444 , -0.0722]	0.9049
ST	[-0.40225 , -0.03155]	0.9049
MTS	[-0.4018 , -0.0244]	0.9049
MTSC	[-0.3618 , -0.02465]	0.9049
RC	[-0.4531 , -0.08325]	0.9049
ERC	[-0.4146 , -0.0285]	0.9049
ERCC	[-0.3416 , -0.0147]	0.9049
SVR	[-0.0531 , -0.01475]	0.9049

Table 29: Confidence intervals for algorithm SVRRC (α=0.90)

α=0.95	Confidence interval	Exact confidence
SVRCC	[0.0061 , 0.039]	0.95094
MORF	[-0.4619 , -0.06615]	0.95094
ST	[-0.4281 , -0.01895]	0.95094
MTS	[-0.4597 , 0.00285]	0.95094
MTSC	[-0.39155 , -0.00545]	0.95094
RC	[-0.50335 , -0.06395]	0.95094
ERC	[-0.4524 , -0.0196]	0.95094
ERCC	[-0.371 , 0.0138]	0.95094
SVR	[-0.0593 , -0.0119]	0.95094

Table 30: Confidence intervals for algorithm SVRRC (α=0.95)