Wilcoxon Signed Ranks test.

KEEL non-parametric statistical module

February 25, 2016

1 Detailed results for SVRC

1.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVR	175.0	15.0	5.226E-4	0.001197
SVRRC	154.0	36.0	0.015972	0.015574
MORF	179.0	11.0	2.098E-4	0.000673
ST	161.0	29.0	0.00618	0.007448
MTS	140.0	50.0	0.07284	0.067098
MTSC	161.0	29.0	0.00618	0.007448
ERC	162.0	28.0	0.00533	0.006601
ERCC	155.0	35.0	0.014068	0.014906

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

1.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVR	[-0.0108 , -0.0035]	0.90448
SVRRC	[-0.00745 , -0.0014]	0.90448
MORF	[-0.1701 , -0.03135]	0.90448
ST	[-0.117 , -0.0185]	0.90448
MTS	[-0.11935 , -0.0027]	0.90448
MTSC	[-0.10135 , -0.01685]	0.90448
ERC	[-0.0935 , -0.0192]	0.90448
ERCC	[-0.1051 , -0.01385]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVR	[-0.01215 , -0.00315]	0.95064
SVRRC	[-0.00775 , -0.00125]	0.95064
MORF	[-0.1827 , -0.02635]	0.95064
ST	[-0.12265 , -0.0155]	0.95064
MTS	[-0.1299 , 0.00385]	0.95064
MTSC	[-0.11285 , -0.01315]	0.95064
ERC	[-0.1176 , -0.0133]	0.95064
ERCC	[-0.11145 , -0.0106]	0.95064

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

2 Detailed results for SVR

2.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	15.0	175.0	≥ 0.2	1
SVRRC	61.0	129.0	≥ 0.2	1
MORF	175.0	15.0	5.226E-4	0.001197
ST	152.0	38.0	0.02042	0.020672
MTS	134.0	56.0	0.12318	0.111933
MTSC	152.0	38.0	0.02042	0.020672
ERC	151.0	39.0	0.02298	0.022985
ERCC	144.0	46.0	0.04936	0.046372

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

2.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.0035 , 0.0108]	0.90448
SVRRC	[-0.00095 , 0.0095]	0.90448
MORF	[-0.15585 , -0.0261]	0.90448
ST	[-0.09765 , -0.0113]	0.90448
MTS	[-0.09925 , 0.00125]	0.90448
MTSC	[-0.0764 , -0.0094]	0.90448
ERC	[-0.0632 , -0.0101]	0.90448
ERCC	[-0.0812 , -0.00575]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.00315 , 0.01215]	0.95064
SVRRC	[-0.0016 , 0.0103]	0.95064
MORF	[-0.15995 , -0.0208]	0.95064
ST	[-0.10715 , -0.00665]	0.95064
MTS	[-0.11965 , 0.0095]	0.95064
MTSC	[-0.1028 , -0.0049]	0.95064
ERC	[-0.10535 , -0.00535]	0.95064
ERCC	[-0.1008 , -0.00015]	0.95064

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

3 Detailed results for SVRRC

3.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	36.0	154.0	≥ 0.2	1
SVR	129.0	61.0	0.18186	0.165029
MORF	178.0	12.0	2.67E-4	0.000779
ST	154.0	36.0	0.015972	0.016647
MTS	136.0	54.0	0.10416	0.094909
MTSC	150.0	40.0	0.02582	0.02552
ERC	152.0	38.0	0.02042	0.020672
ERCC	148.0	42.0	0.03234	0.031322

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

3.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.0014 , 0.00745]	0.90448
SVR	[-0.0095 , 0.00095]	0.90448
MORF	[-0.1683 , -0.0295]	0.90448
ST	[-0.1147 , -0.0133]	0.90448
MTS	[-0.11735 , 0.0004]	0.90448
MTSC	[-0.09395 , -0.0099]	0.90448
ERC	[-0.0943 , -0.01425]	0.90448
ERCC	[-0.0973 , -0.00865]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.00125 , 0.00775]	0.95064
SVR	[-0.0103 , 0.0016]	0.95064
MORF	[-0.17745 , -0.02065]	0.95064
ST	[-0.11975 , -0.00875]	0.95064
MTS	[-0.1288 , 0.00775]	0.95064
MTSC	[-0.11205 , -0.00825]	0.95064
ERC	[-0.11745 , -0.0084]	0.95064
ERCC	[-0.11155 , -0.0014]	0.95064

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

4 Detailed results for MORF

4.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	11.0	179.0	≥ 0.2	1
SVR	15.0	175.0	≥ 0.2	1
SVRRC	12.0	178.0	≥ 0.2	1
ST	23.0	167.0	≥ 0.2	1
MTS	44.0	146.0	≥ 0.2	1
MTSC	38.0	152.0	≥ 0.2	1
ERC	35.0	155.0	≥ 0.2	1
ERCC	20.0	170.0	≥ 0.2	1

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

4.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.03135 , 0.1701]	0.90448
SVR	[0.0261 , 0.15585]	0.90448
SVRRC	[0.0295 , 0.1683]	0.90448
ST	[0.014 , 0.0504]	0.90448
MTS	[0.00345 , 0.0459]	0.90448
MTSC	[0.00925 , 0.0493]	0.90448
ERC	[0.00825 , 0.0512]	0.90448
ERCC	[0.0155 , 0.05255]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.02635 , 0.1827]	0.95064
SVR	[0.0208 , 0.15995]	0.95064
SVRRC	[0.02065 , 0.17745]	0.95064
ST	[0.0108 , 0.0574]	0.95064
MTS	[0.0006 , 0.05725]	0.95064
MTSC	[0.0067 , 0.06045]	0.95064
ERC	[0.0046 , 0.0594]	0.95064
ERCC	[0.0137 , 0.06595]	0.95064

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

5 Detailed results for ST

5.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	29.0	161.0	≥ 0.2	1
SVR	38.0	152.0	≥ 0.2	1
SVRRC	36.0	154.0	≥ 0.2	1
MORF	167.0	23.0	0.0024	0.003528
MTS	92.0	98.0	≥ 0.2	1
MTSC	90.5	99.5	≥ 0.2	1
ERC	112.0	78.0	≥ 0.2	0.47907
ERCC	55.0	135.0	≥ 0.2	1

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

5.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.0185 , 0.117]	0.90448
SVR	[0.0113 , 0.09765]	0.90448
SVRRC	[0.0133 , 0.1147]	0.90448
MORF	[-0.0504 , -0.014]	0.90448
MTS	[-0.0204 , 0.0047]	0.90448
MTSC	[-0.00565 , 0.0055]	0.90448
ERC	[-0.0035 , 0.0025]	0.90448
ERCC	[-0.00035 , 0.0119]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.0155 , 0.12265]	0.95064
SVR	[0.00665 , 0.10715]	0.95064
SVRRC	[0.00875 , 0.11975]	0.95064
MORF	[-0.0574 , -0.0108]	0.95064
MTS	[-0.0218 , 0.0052]	0.95064
MTSC	[-0.00655 , 0.0081]	0.95064
ERC	[-0.00455 , 0.0032]	0.95064
ERCC	[-0.0007 , 0.01545]	0.95064

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

6 Detailed results for MTS

6.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	50.0	140.0	≥ 0.2	1
SVR	56.0	134.0	≥ 0.2	1
SVRRC	54.0	136.0	≥ 0.2	1
MORF	146.0	44.0	0.04014	0.038221
ST	98.0	92.0	≥ 0.2	0.88799
MTSC	73.0	117.0	≥ 0.2	1
ERC	82.5	107.5	≥ 0.2	1
ERCC	62.5	127.5	≥ 0.2	1

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

6.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.0027 , 0.11935]	0.90448
SVR	[-0.00125 , 0.09925]	0.90448
SVRRC	[-0.0004 , 0.11735]	0.90448
MORF	[-0.0459 , -0.00345]	0.90448
ST	[-0.0047 , 0.0204]	0.90448
MTSC	[-0.00305 , 0.0181]	0.90448
ERC	[-0.00485 , 0.0202]	0.90448
ERCC	[-0.001 , 0.0217]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[-0.00385 , 0.1299]	0.95064
SVR	[-0.0095 , 0.11965]	0.95064
SVRRC	[-0.00775 , 0.1288]	0.95064
MORF	[-0.05725 , -0.0006]	0.95064
ST	[-0.0052 , 0.0218]	0.95064
MTSC	[-0.0087 , 0.02115]	0.95064
ERC	[-0.0092 , 0.02265]	0.95064
ERCC	[-0.0027 , 0.0241]	0.95064

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

7 Detailed results for MTSC

7.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	29.0	161.0	≥ 0.2	1
SVR	38.0	152.0	≥ 0.2	1
SVRRC	40.0	150.0	≥ 0.2	1
MORF	152.0	38.0	0.02042	0.020672
ST	99.5	90.5	≥ 0.2	0.839738
MTS	117.0	73.0	≥ 0.2	0.365228
ERC	76.5	113.5	≥ 0.2	1
ERCC	57.0	133.0	≥ 0.2	1

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

7.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.01685 , 0.10135]	0.90448
SVR	[0.0094 , 0.0764]	0.90448
SVRRC	[0.0099 , 0.09395]	0.90448
MORF	[-0.0493 , -0.00925]	0.90448
ST	[-0.0055 , 0.00565]	0.90448
MTS	[-0.0181 , 0.00305]	0.90448
ERC	[-0.0016 , 0.003]	0.90448
ERCC	[-0.0002 , 0.006]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.01315 , 0.11285]	0.95064
SVR	[0.0049 , 0.1028]	0.95064
SVRRC	[0.00825 , 0.11205]	0.95064
MORF	[-0.06045 , -0.0067]	0.95064
ST	[-0.0081 , 0.00655]	0.95064
MTS	[-0.02115 , 0.0087]	0.95064
ERC	[-0.00235 , 0.00415]	0.95064
ERCC	[-0.0007 , 0.007]	0.95064

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

8 Detailed results for ERC

8.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	28.0	162.0	≥ 0.2	1
SVR	39.0	151.0	≥ 0.2	1
SVRRC	38.0	152.0	≥ 0.2	1
MORF	155.0	35.0	0.014068	0.014906
ST	78.0	112.0	≥ 0.2	1
MTS	107.5	82.5	≥ 0.2	0.599032
MTSC	113.5	76.5	≥ 0.2	0.44221
ERCC	66.5	123.5	≥ 0.2	1

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

8.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.0192 , 0.0935]	0.90448
SVR	[0.0101 , 0.0632]	0.90448
SVRRC	[0.01425 , 0.0943]	0.90448
MORF	[-0.0512 , -0.00825]	0.90448
ST	[-0.0025 , 0.0035]	0.90448
MTS	[-0.0202 , 0.00485]	0.90448
MTSC	[-0.003 , 0.0016]	0.90448
ERCC	[-0.0006 , 0.00655]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.0133 , 0.1176]	0.95064
SVR	[0.00535 , 0.10535]	0.95064
SVRRC	[0.0084 , 0.11745]	0.95064
MORF	[-0.0594 , -0.0046]	0.95064
ST	[-0.0032 , 0.00455]	0.95064
MTS	[-0.02265 , 0.0092]	0.95064
MTSC	[-0.00415 , 0.00235]	0.95064
ERCC	[-0.0009 , 0.01035]	0.95064

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

9 Detailed results for ERCC

9.1 Results

VS	R^+	R^-	Exact P-value	Asymptotic P-value
SVRC	35.0	155.0	≥ 0.2	1
SVR	46.0	144.0	≥ 0.2	1
SVRRC	42.0	148.0	≥ 0.2	1
MORF	170.0	20.0	0.0014114	0.002261
ST	135.0	55.0	0.11338	0.101412
MTS	127.5	62.5	0.59782	0.181973
MTSC	133.0	57.0	0.13362	0.121304
ERC	123.5	66.5	≥ 0.2	0.240827

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

9.2 Confidence intervals for Median of diferences

α=0.90	Confidence interval	Exact confidence
SVRC	[0.01385 , 0.1051]	0.90448
SVR	[0.00575 , 0.0812]	0.90448
SVRRC	[0.00865 , 0.0973]	0.90448
MORF	[-0.05255 , -0.0155]	0.90448
ST	[-0.0119 , 0.00035]	0.90448
MTS	[-0.0217 , 0.001]	0.90448
MTSC	[-0.006 , 0.0002]	0.90448
ERC	[-0.00655 , 0.0006]	0.90448

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

α=0.95	Confidence interval	Exact confidence
SVRC	[0.0106 , 0.11145]	0.95064
SVR	[0.00015 , 0.1008]	0.95064
SVRRC	[0.0014 , 0.11155]	0.95064
MORF	[-0.06595 , -0.0137]	0.95064
ST	[-0.01545 , 0.0007]	0.95064
MTS	[-0.0241 , 0.0027]	0.95064
MTSC	[-0.007 , 0.0007]	0.95064
ERC	[-0.01035 , 0.0009]	0.95064

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