Output tables for the test of Multiple comparisons.

February 25, 2023

1 Average rankings of Friedman test

Average ranks obtained by applying the Friedman procedure

$\operatorname{Algorithm}$	Ranking	
MLSTIR	2.1176	
CNN	4.2941	
GRU	5.7059	
m Seq 2Seq	3.1176	
Λ -LSTM	1.7059	
$ ext{S-LSTM}$	7.1176	
CNN-BiLSTM	6.5294	
CNN-LSTM	6.9412	
GRU-BiLSTM	7.4706	

Table 1: Average Rankings of the algorithms

Friedman statistic considering reduction performance (distributed according to chi-square with 8 degrees of freedom: 91.560784.

2 Post hoc comparisons

Results achieved on post hoc comparisons for $\alpha=0.05,~\alpha=0.10$ and adjusted p-values.

2.1 P-values for $\alpha = 0.05$

i	algorithms	$z = (R_0 - R_i)/SE$	p
36	V-LSTM vs. GRU-BiLSTM	6.136998	0
35	V-LSTM vs. S-LSTM	5.761263	0
34	BiLSTM vs. GRU-BiLSTM	5.698641	0
33	V-LSTM vs. CNN-LSTM	5.573396	0
32	BiLSTM vs. S-LSTM	5.322906	0
31	BiLSTM vs. CNN-LSTM	5.135039	0
30	V-LSTM vs. CNN-BiLSTM	5.135039	0
29	Bilstm vs. CNN-Bilstm	4.696682	0.000003
28	Seq2Seq vs. GRU-BiLSTM	4.63406	0.000004
27	GRU vs. V-LSTM	4.258325	0.000021
26	Seq2Seq vs. S-LSTM	4.258325	0.000021
25	Seq2Seq vs. CNN-LSTM	4.070458	0.000047
24	BiLSTM vs. GRU	3.819968	0.000133
23	Seq2Seq vs. CNN-BiLSTM	3.632101	0.000281
22	CNN vs. GRU-BiLSTM	3.381611	0.000721
21	CNN vs. S-LSTM	3.005877	0.002648
20	CNN vs. CNN-LSTM	2.818009	0.004832
19	GRU vs. Seq2Seq	2.755387	0.005862
18	CNN vs. V-LSTM	2.755387	0.005862
17	CNN vs. CNN-BiLSTM	2.379652	0.017329
16	BiLSTM vs. CNN	2.31703	0.020502
15	GRU vs. GRU-BiLSTM	1.878673	0.060289
14	CNN vs. GRU	1.502938	0.132855
13	GRU vs. S-LSTM	1.502938	0.132855
12	Seq2Seq vs. V-LSTM	1.502938	0.132855
11	GRU vs. CNN-LSTM	1.315071	0.188486
10	CNN vs. Seq2Seq	1.252449	0.210406
9	BiLSTM vs. Seq2Seq	1.064581	0.287065
8	CNN-BiLSTM vs. GRU-BiLSTM	1.001959	0.316363
7	GRU vs. CNN-BiLSTM	0.876714	0.380642
6	S-LSTM vs. CNN-BiLSTM	0.626224	0.531168
5	CNN-LSTM vs. GRU-BiLSTM	0.563602	0.573025
4	CNN-BiLSTM vs. CNN-LSTM	0.438357	0.661128
3	BiLSTM vs. V-LSTM	0.438357	0.661128
2	S-LSTM vs. GRU-BiLSTM	0.375735	0.707114
1	S-LSTM vs. CNN-LSTM	0.187867	0.850981

Table 2: P-values Table for $\alpha = 0.05$

rithms	$(R_0 - R_i)/SE$ p	0 86	63 0	41 0	0 96	0 90	39 0	39 0	82 0.000003	0.000004	25 0.000021	25 0.000021	58 0.000047	68 0.000133	01 0.000281	11 0.000721	77 0.002648	09 0.004832	87 0.005862	87 0.005862	52 0.017329	0.020502	73 0.060289	38 0.132855	38 0.132855	38 0.132855	71 0.188486	_	81 0.287065	59 0.316363	14 0.380642	24 0.531168	02 0.573025	57 0.661128		
algorithms V-LSTM vs. GRU-BILST V-LSTM vs. GRU-BILST V-LSTM vs. CNN-LSTM BILSTM vs. CNN-LSTM BILSTM vs. CNN-BILST BILSTM vs. CNN-BILST BILSTM vs. CNN-BILST BILSTM vs. CNN-BILST GRU vs. V-LSTM Seq2Seq vs. CNN-LSTM Seq2Seq vs. CNN-LSTM GRU vs. CNN-LSTM CNN vs. GRU-BILST CNN vs. GRU-BILST CNN vs. CNN-LSTM GRU vs. CNN-LSTM GRU vs. CNN-BILST GRU vs. CNN-LSTM GRU vs. CNN-BILSTM S-LSTM vs. GRU-BILST GRU vs. CNN-BILSTM S-LSTM vs. GRU-BILST GRU vs. CNN-LSTM S-LSTM vs. GRU-BILST CNN-BILSTM vs. GRU-BILS CNN-BILSTM vs. CNN-LSTM	II	M 6.136998	5.761263	M 5.698641	1 5.573396	5.322906	I 5.135039	M = 5.135039	M 4.696682	M 4.63406	4.258325	4.258325	1 4.070458	3.819968	M 3.632101	3.381611	3.005877	2.818009	2.755387	2.755387	2.379652	2.31703	1.878673	1.502938	1.502938	1.502938	1.315071	1.252449	1.064581		0.876714	M = 0.626224	TM = 0.563602	TM = 0.438357	0.438357	
	algorithms		V-LSTM vs. S-LSTM		V-LSTM vs. CNN-LSTN					_		Seq2Seq vs. S-LSTM		BiLSTM vs. GRU	Seq2Seq vs. CNN-BiLSTi		ro.	CNN vs. CNN-LSTM						CNN vs. GRU	GRU vs. S-LSTM		GRU vs. CNN-LSTM	CNN vs. Seq2Seq	BiLSTM vs. Seq2Seq	CNN-Bilstm vs. GRU-Bil.	GRU vs. CNN-Bilstm		CNN-LSTM vs. GRU-BiLS	CNN-BiLSTM vs. CNN-LS	Bilstm vs. V-lstm	

Table 3: P-values Table for $\alpha = 0.10$

i	hypothesis	unadjusted p
1	V-LSTM vs .GRU-BiLSTM	0
2	V-LSTM vs .S-LSTM	0
3	BiLSTM vs .GRU-BiLSTM	0
4	V-LSTM vs .CNN-LSTM	0
5	BiLSTM vs .S-LSTM	0
6	BiLSTM vs .CNN-LSTM	0
7	V-LSTM vs .CNN-BiLSTM	0
8	BiLSTM vs .CNN-BiLSTM	0.000003
9	Seq2Seq vs .GRU-BiLSTM	0.000004
10	GRU vs .V-LSTM	0.000021
11	Seq2Seq vs .S-LSTM	0.000021
12	Seq2Seq vs .CNN-LSTM	0.000047
13	BiLSTM vs .GRU	0.000133
14	Seq2Seq vs .CNN-BiLSTM	0.000281
15	CNN vs .GRU-BiLSTM	0.000721
16	CNN vs .S-LSTM	0.002648
17	CNN vs .CNN-LSTM	0.004832
18	GRU vs .Seq2Seq	0.005862
19	CNN vs .V-LSTM	0.005862
20	CNN vs .CNN-BiLSTM	0.017329
21	BiLSTM vs .CNN	0.020502
22	GRU vs .GRU-BiLSTM	0.060289
23	CNN vs .GRU	0.132855
24	GRU vs .S-LSTM	0.132855
25	Seq2Seq vs .V-LSTM	0.132855
26	GRU vs .CNN-LSTM	0.188486
27	CNN vs .Seq2Seq	0.210406
28	BiLSTM vs .Seq2Seq	0.287065
29	CNN-BiLSTM vs .GRU-BiLSTM	0.316363
30	GRU vs .CNN-BiLSTM	0.380642
31	S-LSTM vs .CNN-BiLSTM	0.531168
32	CNN-LSTM vs .GRU-BiLSTM	0.573025
33	CNN-BiLSTM vs .CNN-LSTM	0.661128
34	BiLSTM vs .V-LSTM	0.661128
35	S-LSTM vs .GRU-BiLSTM	0.707114
36	S-LSTM vs .CNN-LSTM	0.850981

Table 4: Adjusted p-values