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

Algorithm	Ranking
BiLSTM	7.8824
CNN	5.7059
GRU	4.2941
Seq2Seq	6.8824
V-LSTM	8.2941
S-LSTM	2.8824
CNN-BiLSTM	3.4706
CNN-LSTM	3.0588
GRU-BiLSTM	2.5294

Table 1: Average Rankings of the algorithms

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

P-value computed by Friedman Test: 6.617117964680119E-11.

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	Seq2Seq vs. V-LSTM	1.502938	0.132855
12	GRU vs. S-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 $\alpha = 0.05$

2.2 P-values for $\alpha = 0.10$

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	Seq2Seq vs. V-LSTM	1.502938	0.132855
12	GRU vs. S-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 3: P-values Table for $\alpha = 0.10$

2.3 Adjusted p-values

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	Seq2Seq vs .V-LSTM	0.132855
25	GRU vs .S-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