	Accuracy	Precision	recall	F1-score
NAS	**0.98**	**0.98**	**0.98**	**0.98**
Lstm(CCFB)	0.97	0.97	0.97	0.97
CNN+LSTM(CCFC)	0.94	0.91	0.94	0.93
Bilstm_attention(CCFC)	0.85	0.98	0.85	0.91

	NAS			Lstm			CNN_LSTM			Bilstm_attention		
	P	R	F1	P	R	F1	P	R	F1	P	R	F1
alexa	**0.99**	**0.98**	**0.98**	0.96	0.96	0.96	0.88	0.96	0.92	0.97	0.80	0.88
banjori	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	0.98	0.99
emotet	**0.99**	**1.00**	**1.00**	0.97	**1.00**	0.98	**0.99**	**1.00**	**1.00**	**0.99**	0.55	0.71
flubot	0.94	**1.00**	**0.97**	0.92	**1.00**	0.96	0.93	0.99	0.96	**1.00**	0.97	0.88
gameover	**1.00**	**1.00**	**1.00**	**1.00**	0.99	0.99	0.92	0.99	0.95	0.00	0.00	0.00
murofet	**0.95**	**0.88**	**0.91**	0.95	0.76	0.84	0.87	0.77	0.81	0.00	0.00	0.00
mydoom	**1.00**	**1.00**	**1.00**	0.97	0.99	0.98	0.00	0.00	0.00	0.98	0.86	0.92
necurs	**0.98**	**0.87**	**0.92**	0.97	0.73	0.83	0.54	0.74	0.62	0.00	0.00	0.00
ngioweb	**0.99**	**0.99**	**0.99**	0.95	0.84	0.89	0.00	0.00	0.00	0.00	0.00	0.00
pykspa	**0.99**	**0.99**	**0.99**	**0.99**	0.98	0.98	0.97	**0.99**	0.98	**0.99**	0.76	0.86
ramnit	**0.87**	**0.84**	**0.85**	0.82	0.78	0.80	0.83	0.75	0.79	0.00	0.00	0.00
ranbyus	**0.96**	**0.89**	**0.92**	0.94	0.87	0.90	0.94	0.87	0.90	0.80	0.48	0.60
rovnix	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	0.91	0.95
shiotob	**0.98**	0.96	**0.97**	0.97	0.91	0.94	0.95	**0.99**	0.93	0.00	0.00	0.00
simda	**1.00**	**1.00**	**1.00**	0.98	**1.00**	0.99	0.99	**1.00**	**1.00**	0.99	0.97	0.98
symmi	**1.00**	**1.00**	**1.00**	0.97	**1.00**	0.98	**1.00**	**1.00**	**1.00**	0.00	0.00	0.00
tinba	0.98	**1.00**	**0.99**	0.97	**1.00**	0.98	0.98	**1.00**	**0.99**	**0.99**	0.92	0.95
viryt	**0.89**	**0.94**	**0.92**	0.86	0.91	0.89	0.82	**0.94**	0.88	0.78	0.91	0.84
total	**0.98**	**0.98**	**0.98**	0.97	0.97	0.97	0.91	0.94	0.93	**0.98**	0.85	0.91

NAS 的结果:

```
03/30 09:11:05 AM train_acc 98.189763
03/30 09:11:05 AM valid  000  0.071004  97.851562  11.553764ms
03/30 09:11:11 AM valid  050  0.060300  97.985600  6.243238ms
03/30 09:11:18 AM valid  100  0.058342  98.060412  9.236550ms
03/30 09:11:30 AM valid  150  0.057493  98.077918  11.396642ms
03/30 09:11:37 AM valid  200  0.057339  98.062422  10.000310ms
              precision    recall  f1-score   support

           0       0.99      0.98      0.98     20005
           1       1.00      1.00      1.00     20009
           2       0.99      1.00      1.00      1160
           3       0.94      1.00      0.97      5994
           4       1.00      1.00      1.00      2433
           5       0.95      0.88      0.91      1760
           6       1.00      1.00      1.00      2010
           7       0.98      0.87      0.92      1640
           8       0.99      0.99      0.99      1023
           9       0.99      0.99      0.99      8958
          10       0.87      0.84      0.85      4044
          11       0.96      0.89      0.92      2256
          12       1.00      1.00      1.00      7449
          13       0.98      0.96      0.97      1606
          14       1.00      1.00      1.00      6017
          15       1.00      1.00      1.00       911
          16       0.98      1.00      0.99     14905
          17       0.89      0.94      0.92      1950

    accuracy                           0.98    104130
   macro avg       0.97      0.96      0.97    104130
weighted avg       0.98      0.98      0.98    104130

03/30 09:11:43 AM valid_acc 98.065879, best_acc 98.078364
```

LSTM 的任务

```
测试次数: 3200 , loss :0.1995752602815628
整体测试集上的loss为351.10504150390625
              precision    recall  f1-score   support

         0.0       0.96      0.96      0.96     19950
         1.0       1.00      1.00      1.00     19932
         2.0       0.97      1.00      0.98      1238
         3.0       0.92      1.00      0.96      6019
         4.0       1.00      0.99      0.99      2383
         5.0       0.95      0.76      0.84      1665
         6.0       0.97      0.99      0.98      2001
         7.0       0.97      0.73      0.83      1669
         8.0       0.95      0.84      0.89      1062
         9.0       0.99      0.98      0.98      9117
        10.0       0.82      0.78      0.80      4034
        11.0       0.94      0.87      0.90      2218
        12.0       1.00      1.00      1.00      7407
        13.0       0.97      0.91      0.94      1615
        14.0       0.98      1.00      0.99      5969
        15.0       0.97      1.00      0.98       875
        16.0       0.97      1.00      0.98     15010
        17.0       0.86      0.91      0.89      1964

    accuracy                           0.97    104128
   macro avg       0.95      0.93      0.94    104128
weighted avg       0.97      0.97      0.97    104128
```

CNN+LSTM

```
  _warn_prf(average, modifier, msg_start, len(result))
              precision    recall  f1-score   support

         0.0       0.88      0.96      0.92     19877
         1.0       1.00      1.00      1.00     20094
         2.0       0.99      1.00      1.00      1155
         3.0       0.93      0.99      0.96      6069
         4.0       0.92      0.99      0.95      2459
         5.0       0.87      0.77      0.81      1749
         6.0       0.00      0.00      0.00      2008
         7.0       0.54      0.74      0.62      1694
         8.0       0.00      0.00      0.00       997
         9.0       0.97      0.99      0.98      9231
        10.0       0.83      0.75      0.79      3953
        11.0       0.94      0.87      0.90      2215
        12.0       1.00      1.00      1.00      7324
        13.0       0.95      0.90      0.93      1547
        14.0       0.99      1.00      1.00      6021
        15.0       1.00      1.00      1.00       817
        16.0       0.98      1.00      0.99     14996
        17.0       0.82      0.94      0.88      1922

    accuracy                           0.94    104128
   macro avg       0.81      0.83      0.82    104128
weighted avg       0.91      0.94      0.93    104128
```

Bilstm_attention

```
整体测试集上的loss为3461.47119140625
/home/jishengpeng/anaconda3/lib/python3.9/site-packages/sklearn/metrics/_classification.
ed and being set to 0.0 in labels with no true samples. Use `zero_division` parameter to
  _warn_prf(average, modifier, msg_start, len(result))
/home/jishengpeng/anaconda3/lib/python3.9/site-packages/sklearn/metrics/_classification.
ed and being set to 0.0 in labels with no true samples. Use `zero_division` parameter to
  _warn_prf(average, modifier, msg_start, len(result))
/home/jishengpeng/anaconda3/lib/python3.9/site-packages/sklearn/metrics/_classification.
ed and being set to 0.0 in labels with no true samples. Use `zero_division` parameter to
  _warn_prf(average, modifier, msg_start, len(result))
              precision    recall  f1-score   support

         0.0       0.97      0.80      0.88     24197
         1.0       1.00      0.98      0.99     20282
         2.0       0.99      0.55      0.71      2188
         3.0       1.00      0.79      0.88      7495
         4.0       0.00      0.00      0.00         0
         5.0       0.00      0.00      0.00         0
         6.0       0.98      0.86      0.92      2322
         7.0       0.00      0.00      0.00         0
         8.0       0.00      0.00      0.00         0
         9.0       0.99      0.76      0.86     11866
        10.0       0.00      0.00      0.00         0
        11.0       0.80      0.48      0.60      3513
        12.0       1.00      0.91      0.95      7953
        13.0       0.00      0.00      0.00         0
        14.0       0.99      0.97      0.98      6331
        15.0       0.00      0.00      0.00         0
        16.0       0.99      0.92      0.95     16278
        17.0       0.78      0.91      0.84      1703

    accuracy                           0.85    104128
   macro avg       0.58      0.50      0.53    104128
weighted avg       0.98      0.85      0.91    104128
```