week5 & 6 Experiment

1. Week5

- 运行环境：

- TranseE运行：
  - 数据集：“WN18RR”

2. 代码调整

2.1 Transe

```
def set_interact_args():
    parser = argparse.ArgumentParser()
    parser.add_argument('--margin', default=5.0, type=float, required=False, help='Margin loss中margin值')
    parser.add_argument('--nbatches', default=100, type=int, required=False, help='Batch size')
    parser.add_argument('--dim', default=100, type=int, required=False, help='Embedding size')
    parser.add_argument('--p_norm', default=1, type=int, required=False, help='能量函数为1范数形式')
    parser.add_argument('--train_times', default=1, type=int, required=False, help='epoch-训练轮次')
    parser.add_argument('--alpha', default=1, type=float, required=False, help='学习率')
    return parser.parse_args()
```

2.1.1 原始实验：

```
#脚本命令
Date=`date +%y%m%d`
echo "1.sh back begin at `date +%H:%M:%S`" >> out.log
nohup python -u train_transe_FB15K237.py --margin=5 --nbatches=100 --dim=100 --p_norm=1 --train_times=1000 --alpha=1 > logs/'./result/transe/transe(5,100,100,1,1000,1).log'
echo "1.sh back end at `date +%H:%M:%S`" >> out.log
```

- 效果呈现：

```
2008  Epoch 998 | loss: 0.213130: 100%|          | 998/1000 [10:49<00:01,  1.56it/s]
2009  Epoch 998 | loss: 0.213130: 100%|          | 999/1000 [10:49<00:00,  1.56it/s]
2010  Epoch 999 | loss: 0.210327: 100%|          | 999/1000 [10:50<00:00,  1.56it/s]
2011  Epoch 999 | loss: 0.210327: 100%|          | 1000/1000 [10:50<00:00,  1.56it/s]
2012  Epoch 999 | loss: 0.210327: 100%|          | 1000/1000 [10:50<00:00,  1.54it/s]
```

```
2086  100%|          | 3120/3134 [00:07<00:00, 452.21it/s]
2087  100%|          | 3134/3134 [00:07<00:00, 406.18it/s]
2088  no type constraint results:
2089  metric:       MRR      MR       hit@10    hit@3     hit@1
2090  l(raw):       0.138370    5158.203613   0.419272    0.226548    0.000319
2091  r(raw):       0.159494    3496.497559   0.477026    0.247926    0.006063
2092  averaged(raw):     0.148932    4327.350586   0.448149    0.237237    0.003191
2093
2094  l(filter):     0.193350    5134.768555   0.451181    0.367581    0.001276
2095  r(filter):     0.210217    3491.129883   0.493618    0.384812    0.010530
2096  averaged(filter):  0.201783    4312.949219   0.472399    0.376197    0.005903
2097  0.472399
2098  0.4723994731903076
```

2.1.2 改变margin为4

```
1  Date=`date +%y%m%d`
2  echo "2.sh back begin at `date +%H:%M:%S`" >>
   out.log
3  nohup python -u train_transe_FB15K237.py --
   margin=4 --nbatches=100 --dim=100 --p_norm=1 --
   train_times=1000 --alpha=1 >
   logs/'./result/transe/transe(4,100,100,1,1000,1).l
   og'
4  echo "2.sh back end at `date +%H:%M:%S`" >>
   out.log
```

```
2006  Epoch 997 | loss: 0.065870: 100%|          | 997/1000 [10:54<00:01,  1.52it/s]
2007  Epoch 997 | loss: 0.065870: 100%|          | 998/1000 [10:54<00:01,  1.52it/s]
2008  Epoch 998 | loss: 0.069522: 100%|          | 998/1000 [10:55<00:01,  1.52it/s]
2009  Epoch 998 | loss: 0.069522: 100%|          | 999/1000 [10:55<00:00,  1.53it/s]
2010  Epoch 999 | loss: 0.068871: 100%|          | 999/1000 [10:56<00:00,  1.53it/s]
2011  Epoch 999 | loss: 0.068871: 100%|          | 1000/1000 [10:56<00:00,  1.54it/s]
2012  Epoch 999 | loss: 0.068871: 100%|          | 1000/1000 [10:56<00:00,  1.52it/s]
```

```
100%|██████████| 3134/3134 [00:07<00:00, 395.70it/s]
no type constraint results:
metric:      MRR     MR      hit@10    hit@3     hit@1
l(raw):      0.133139    5983.143555   0.407467    0.220485    0.000000
r(raw):      0.149238    3621.848145   0.458519    0.233567    0.004467
averaged(raw):     0.141189    4802.496094   0.432993    0.227026    0.002234

l(filter):     0.189913    5959.667969   0.434269    0.366305    0.001276
r(filter):     0.199787    3616.461670   0.471602    0.375877    0.005105
averaged(filter):  0.194850    4788.064941   0.452936    0.371091    0.003191
0.452936
0.4529355466365814
```

- 虽然loss降得很低，但是测试结果却发生了一定下降，所以该参数条件下造成了过拟合

2.1.3 改变p_norm为2

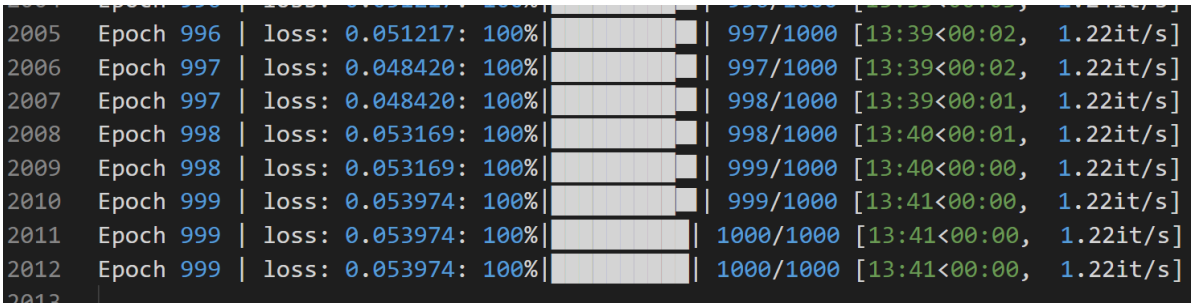
```
Epoch 996 | loss: 400.414801: 100%|          | 996/1000 [10:56<00:02,  1.58it/s]
Epoch 996 | loss: 400.414801: 100%|          | 997/1000 [10:56<00:01,  1.55it/s]
Epoch 997 | loss: 400.444719: 100%|          | 997/1000 [10:56<00:01,  1.55it/s]
Epoch 997 | loss: 400.444719: 100%|          | 998/1000 [10:56<00:01,  1.54it/s]
Epoch 998 | loss: 400.467891: 100%|          | 998/1000 [10:57<00:01,  1.54it/s]
Epoch 998 | loss: 400.467891: 100%|          | 999/1000 [10:57<00:00,  1.53it/s]
Epoch 999 | loss: 400.370608: 100%|          | 999/1000 [10:58<00:00,  1.53it/s]
Epoch 999 | loss: 400.370608: 100%|          | 1000/1000 [10:58<00:00,  1.51it/s]
Epoch 999 | loss: 400.370608: 100%|          | 1000/1000 [10:58<00:00,  1.52it/s]
```

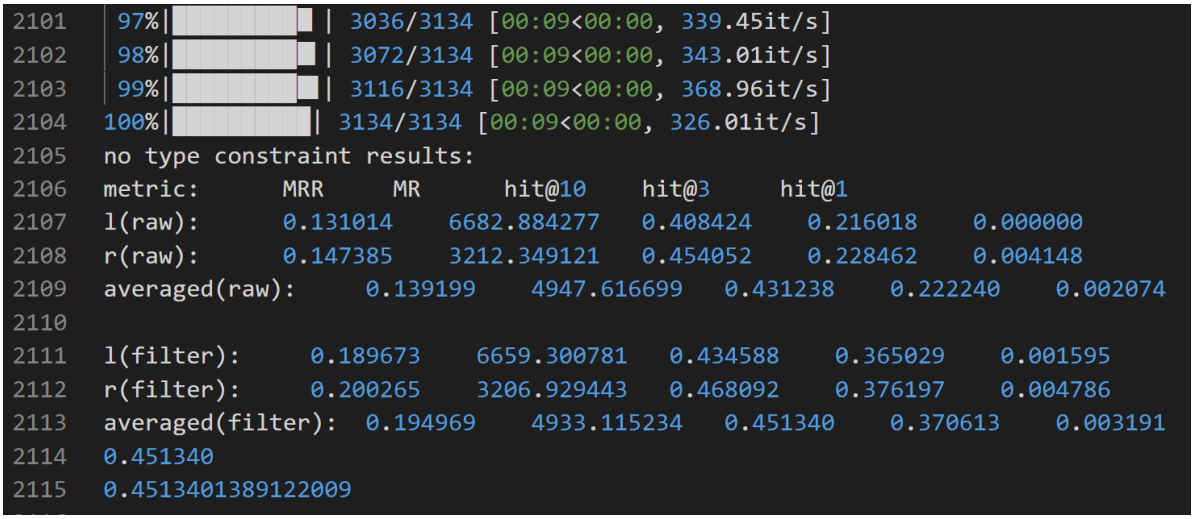
```
 99%|          | 3118/3134 [00:08<00:00, 468.29it/s]
100%|          | 3134/3134 [00:08<00:00, 367.20it/s]
no type constraint results:
metric:      MRR     MR      hit@10    hit@3     hit@1
l(raw):      0.028054    6113.328613   0.057435    0.029036    0.012125
r(raw):      0.064897    4102.169922   0.127632    0.066369    0.034142
averaged(raw):     0.046476    5107.749023   0.092534    0.047703    0.023133

l(filter):     0.042108    6095.167969   0.073389    0.043714    0.024888
r(filter):     0.069423    4098.048340   0.130504    0.069241    0.039566
averaged(filter):  0.055766    5096.608398   0.101946    0.056477    0.032227
0.101946
0.1019463986158371
```

- 用l_2范数发现效果显著下降，这说明l_2范数明显不适合此次实验

2.1.4 改变维数为200

```
Date=`date +%y%m%d`
echo "5.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transe_FB15K237.py --margin=5 --nbatches=200 --dim=100 --p_norm=1 --train_times=1000 --alpha=1 > logs/'./result/transe/transe(5,200,100,1,1000,1).log'
echo "5.sh back end at `date +%H:%M:%S`" >> out.log
```





- 200dim效果并不好，且增加计算开销，所以200 dim不适合

2.1.5 改变n_batches为200

```
Date=`date +%y%m%d`
echo "5.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transe_FB15K237.py --margin=5 --nbatches=200 --dim=100 --p_norm=1 --train_times=1000 --alpha=1 > logs/'./result/transe/transe(5,200,100,1,1000,1).log'
echo "5.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 996 | loss: 0.441036: 100%|██████████| 997/1000 [17:54<00:03,  1.09s/it]
Epoch 997 | loss: 0.441166: 100%|██████████| 997/1000 [17:55<00:03,  1.09s/it]
Epoch 997 | loss: 0.441166: 100%|██████████| 998/1000 [17:55<00:02,  1.08s/it]
Epoch 998 | loss: 0.441047: 100%|██████████| 998/1000 [17:56<00:02,  1.08s/it]
Epoch 998 | loss: 0.441047: 100%|██████████| 999/1000 [17:56<00:01,  1.08s/it]
Epoch 999 | loss: 0.437477: 100%|██████████| 999/1000 [17:57<00:01,  1.08s/it]
Epoch 999 | loss: 0.437477: 100%|██████████| 1000/1000 [17:57<00:00,  1.09s/it]
Epoch 999 | loss: 0.437477: 100%|██████████| 1000/1000 [17:57<00:00,  1.08s/it]
```

```
100%|██████████| 3122/3134 [00:08<00:00, 393.27it/s]
100%|██████████| 3134/3134 [00:08<00:00, 361.24it/s]
no type constraint results:
metric:      MRR      MR      hit@10    hit@3     hit@1
l(raw):      0.138690    5034.560547   0.421506    0.228143    0.000319
r(raw):      0.159422    3353.724365   0.475431    0.248883    0.007658
averaged(raw):     0.149056    4194.142578   0.448468    0.238513    0.003989

l(filter):     0.195667    5011.101562   0.451819    0.372048    0.002553
r(filter):     0.209843    3348.364746   0.488832    0.380664    0.012125
averaged(filter):  0.202755    4179.733398   0.470325    0.376356    0.007339
0.470325
0.4703254699707031
```

- 200 batch效果有所下降

2.1.6 学习率调为0.5

```
Date=`date +%y%m%d`
echo "6.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transe_FB15K237.py --margin=5 --nbatches=100 --dim=100 --p_norm=1 --train_times=1000 --alpha=0.5 > logs/'./result/transe/transe(5,100,100,1,1000,0.5).log'
echo "6.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 995 | loss: 0.208036: 100%| | 996/1000 [10:12<00:02,  1.64it/s]
Epoch 996 | loss: 0.205459: 100%| | 996/1000 [10:13<00:02,  1.64it/s]
Epoch 996 | loss: 0.205459: 100%| | 997/1000 [10:13<00:01,  1.62it/s]
Epoch 997 | loss: 0.201967: 100%| | 997/1000 [10:14<00:01,  1.62it/s]
Epoch 997 | loss: 0.201967: 100%| | 998/1000 [10:14<00:01,  1.60it/s]
Epoch 998 | loss: 0.209225: 100%| | 998/1000 [10:14<00:01,  1.60it/s]
Epoch 998 | loss: 0.209225: 100%| | 999/1000 [10:14<00:00,  1.61it/s]
Epoch 999 | loss: 0.207769: 100%| | 999/1000 [10:15<00:00,  1.61it/s]
Epoch 999 | loss: 0.207769: 100%| | 1000/1000 [10:15<00:00,  1.63it/s]
Epoch 999 | loss: 0.207769: 100%| | 1000/1000 [10:15<00:00,  1.63it/s]
```

```
 99%| | 3103/3134 [00:07<00:00, 394.64it/s]
100%| | 3134/3134 [00:07<00:00, 398.11it/s]
no type constraint results:
metric:       MRR      MR       hit@10    hit@3     hit@1
l(raw):       0.139823    5140.723145   0.421187    0.230696    0.000000
r(raw):       0.158415    3528.097412   0.479579    0.250479    0.006063
averaged(raw):     0.149119    4334.410156   0.450383    0.240587    0.003031

l(filter):     0.196255    5117.284180   0.454690    0.370134    0.002872
r(filter):     0.210339    3522.729736   0.494576    0.385769    0.011168
averaged(filter):  0.203297    4320.006836   0.474633    0.377952    0.007020
0.474633
0.47463303804397583
```

- 学习率降低后，效果有一定上升

2.1.7 epoch调维500

```
Date=`date +%y%m%d`
echo "7.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transe_FB15K237.py --margin=5 --nbatches=100 --dim=100 --p_norm=1 --train_times=500 --alpha=1 > logs/'./result/transe/transe(5,100,100,1,500,1).log'
echo "7.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 496 | loss: 0.265535:  99%|▉| 497/500 [05:06<00:01,  1.67it/s]
Epoch 497 | loss: 0.271473:  99%|▉| 497/500 [05:07<00:01,  1.67it/s]
Epoch 497 | loss: 0.271473: 100%|▉| 498/500 [05:07<00:01,  1.67it/s]
Epoch 498 | loss: 0.268631: 100%|▉| 498/500 [05:08<00:01,  1.67it/s]
Epoch 498 | loss: 0.268631: 100%|▉| 499/500 [05:08<00:00,  1.67it/s]
Epoch 499 | loss: 0.251173: 100%|▉| 499/500 [05:08<00:00,  1.67it/s]
Epoch 499 | loss: 0.251173: 100%|▉| 500/500 [05:08<00:00,  1.67it/s]
Epoch 499 | loss: 0.251173: 100%|▉| 500/500 [05:08<00:00,  1.62it/s]
```

```
 99%|▉| 3118/3134 [00:07<00:00, 446.40it/s]
100%|▉| 3134/3134 [00:07<00:00, 405.24it/s]
no type constraint results:
metric:       MRR      MR       hit@10    hit@3     hit@1
l(raw):       0.136213    4858.082520    0.421825    0.218571    0.000000
r(raw):       0.155674    3397.925293    0.473197    0.238034    0.007339
averaged(raw):     0.145943    4128.003906    0.447511    0.228302    0.003669

l(filter):     0.192871    4834.606445    0.454052    0.364071    0.001914
r(filter):     0.207637    3392.539551    0.488832    0.378430    0.012125
averaged(filter):  0.200254    4113.573242    0.471442    0.371251    0.007020
0.471442
0.47144225239753723
```

- 发现训练500 epoch的loss降低了一半，且测试结果与原始条件相差甚微，所以预估训练的最佳epoch在500~1000epochs

2.2 Transh

2.2.1 原始条件

```
Date=`date +%y%m%d`
echo "8.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=100 --dim=100 --p_norm=1 --train_times=1000 --alpha=0.5 > logs/'./result/transh/transh(4,100,100,1,1000,0.5).log'
echo "8.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 996 | loss: 0.059751: 100%|          | 997/1000 [15:52<00:02,  1.10it/s]
Epoch 997 | loss: 0.059463: 100%|          | 997/1000 [15:53<00:02,  1.10it/s]
Epoch 997 | loss: 0.059463: 100%|          | 998/1000 [15:53<00:01,  1.13it/s]
Epoch 998 | loss: 0.062854: 100%|          | 998/1000 [15:53<00:01,  1.13it/s]
Epoch 998 | loss: 0.062854: 100%|          | 999/1000 [15:53<00:00,  1.11it/s]
Epoch 999 | loss: 0.063306: 100%|          | 999/1000 [15:54<00:00,  1.11it/s]
Epoch 999 | loss: 0.063306: 100%|          | 1000/1000 [15:54<00:00,  1.10it/s]
Epoch 999 | loss: 0.063306: 100%|          | 1000/1000 [15:54<00:00,  1.05it/s]
```

```
100%|          | 3122/3134 [00:11<00:00, 312.95it/s]
100%|          | 3134/3134 [00:11<00:00, 266.22it/s]
no type constraint results:
metric:       MRR      MR       hit@10    hit@3     hit@1
l(raw):       0.134871    6491.286621   0.409700    0.228143    0.000000
r(raw):       0.149951    3728.079102   0.455967    0.240587    0.005105
averaged(raw):     0.142411    5109.682617   0.432833    0.234365    0.002553

l(filter):     0.192379    6467.757324   0.434269    0.374920    0.001595
r(filter):     0.203356    3722.689453   0.467773    0.380664    0.007020
averaged(filter):  0.197868    5095.223633   0.451021    0.377792    0.004308
0.451021
0.45102107524871826
```

2.2.2 margin改为5

```
Date=`date +%y%m%d`
echo "9.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=5 --nbatches=100 --dim=100 --p_norm=1 --train_times=1000 --alpha=0.5 > logs/'./result/transh/transh(5,100,100,1,1000,0.5).log'
echo "9.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 995 | loss: 0.187397: 100%|          | 996/1000 [16:19<00:03,  1.12it/s]
Epoch 996 | loss: 0.178820: 100%|          | 996/1000 [16:20<00:03,  1.12it/s]
Epoch 996 | loss: 0.178820: 100%|          | 997/1000 [16:20<00:02,  1.13it/s]
Epoch 997 | loss: 0.178085: 100%|          | 997/1000 [16:21<00:02,  1.13it/s]
Epoch 997 | loss: 0.178085: 100%|          | 998/1000 [16:21<00:01,  1.09it/s]
Epoch 998 | loss: 0.183935: 100%|          | 998/1000 [16:22<00:01,  1.09it/s]
Epoch 998 | loss: 0.183935: 100%|          | 999/1000 [16:22<00:00,  1.09it/s]
Epoch 999 | loss: 0.183669: 100%|          | 999/1000 [16:23<00:00,  1.09it/s]
Epoch 999 | loss: 0.183669: 100%|          | 1000/1000 [16:23<00:00,  1.11it/s]
Epoch 999 | loss: 0.183669: 100%|          | 1000/1000 [16:23<00:00,  1.02it/s]
```

```
 99%|          | 3113/3134 [00:11<00:00, 261.95it/s]
100%|          | 3134/3134 [00:11<00:00, 263.24it/s]
no type constraint results:
metric:      MRR     MR      hit@10    hit@3     hit@1
l(raw):      0.138006    5210.297852   0.422463    0.228462    0.000000
r(raw):      0.159668    3527.291260   0.477664    0.249840    0.007339
averaged(raw):     0.148837    4368.794434   0.450064    0.239151    0.003669

l(filter):     0.195326    5186.865234   0.451819    0.371729    0.002234
r(filter):     0.212261    3521.917725   0.492342    0.386088    0.012125
averaged(filter):  0.203794    4354.391602   0.472080    0.378909    0.007179
0.472080
0.47208040952682495
```

- 效果强于原始条件，有较大提升

2.2.3 n_batches改为200

```
Date=`date +%y%m%d`
echo "10.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=200 --dim=100 --p_norm=1 --train_times=1000 --alpha=0.5 > logs/'./result/transh/transh(4,200,100,1,1000,0.5).log'
echo "10.sh back end at `date +%H:%M:%S`" >> out.log
```

```
2007  Epoch 997 | loss: 0.124270: 100%|██████████| 998/1000 [27:44<00:04,  2.47s/it]
2008  Epoch 998 | loss: 0.120987: 100%|██████████| 998/1000 [27:46<00:04,  2.47s/it]
2009  Epoch 998 | loss: 0.120987: 100%|██████████| 999/1000 [27:46<00:02,  2.35s/it]
2010  Epoch 999 | loss: 0.121911: 100%|██████████| 999/1000 [27:48<00:02,  2.35s/it]
2011  Epoch 999 | loss: 0.121911: 100%|██████████| 1000/1000 [27:48<00:00,  2.24s/it]
2012  Epoch 999 | loss: 0.121911: 100%|██████████| 1000/1000 [27:48<00:00,  1.67s/it]
```

```
2130  100%|██████████| 3134/3134 [00:13<00:00, 228.13it/s]
2131  no type constraint results:
2132  metric:       MRR      MR       hit@10    hit@3     hit@1
2133  l(raw):       0.133892    6120.731445   0.406509    0.224633    0.000000
2134  r(raw):       0.150489    3729.130615   0.447990    0.244097    0.005424
2135  averaged(raw):     0.142190    4924.931152   0.427250    0.234365    0.002712
2136
2137  l(filter):     0.190570    6097.273926   0.431078    0.370453    0.001914
2138  r(filter):     0.202768    3723.750488   0.461391    0.381940    0.007020
2139  averaged(filter):  0.196669    4910.512207   0.446235    0.376197    0.004467
2140  0.446235
2141  0.4462348222732544
```

- 无显著提升，但至少没有过拟合

2.2.4 dim改为200

```
Date=`date +%y%m%d`
echo "11.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=100 --dim=200 --p_norm=1 --train_times=1000 --alpha=0.5 > logs/'./result/transh/transh(4,100,200,1,1000,0.5).log'
echo "11.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 996 | loss: 0.030468: 100%|▉| 997/1000 [20:40<00:03,  1.11s/it]
Epoch 997 | loss: 0.029040: 100%|▉| 997/1000 [20:41<00:03,  1.11s/it]
Epoch 997 | loss: 0.029040: 100%|▉| 998/1000 [20:41<00:02,  1.10s/it]
Epoch 998 | loss: 0.031466: 100%|▉| 998/1000 [20:42<00:02,  1.10s/it]
Epoch 998 | loss: 0.031466: 100%|▉| 999/1000 [20:42<00:01,  1.09s/it]
Epoch 999 | loss: 0.031822: 100%|▉| 999/1000 [20:43<00:01,  1.09s/it]
Epoch 999 | loss: 0.031822: 100%|█| 1000/1000 [20:43<00:00,  1.09s/it]
Epoch 999 | loss: 0.031822: 100%|█| 1000/1000 [20:43<00:00,  1.24s/it]
```

```
100%|▉| 3133/3134 [00:24<00:00, 91.52it/s]
100%|█| 3134/3134 [00:24<00:00, 125.39it/s]
no type constraint results:
metric:       MRR      MR       hit@10    hit@3     hit@1
l(raw):       0.125150    7965.114258    0.391512    0.206126    0.000000
r(raw):       0.139344    3804.763184    0.432355    0.223676    0.001595
averaged(raw):     0.132247    5884.938477    0.411934    0.214901    0.000798

l(filter):     0.182157    7941.565918    0.409381    0.355456    0.000957
r(filter):     0.192034    3799.331543    0.441927    0.368220    0.001914
averaged(filter):  0.187096    5870.448730    0.425654    0.361838    0.001436
0.425654
0.4256541132926941
```

- 发生了严重过拟合

2.2.5 p_norm改为2

```
Date=`date +%y%m%d`
echo "12.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=100 --dim=100 --p_norm=2 --train_times=1000 --alpha=0.5 > logs/'./result/transh/transh(4,100,100,2,1000,0.5).log'
echo "12.sh back end at `date +%H:%M:%S`" >> out.log
```

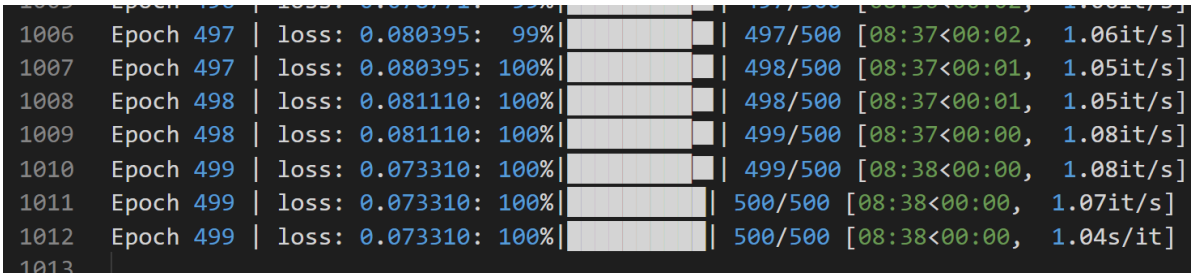
```
Epoch 996 | loss: 290.810003: 100%|          | 997/1000 [16:26<00:02,  1.15it/s]
Epoch 997 | loss: 290.803325: 100%|          | 997/1000 [16:27<00:02,  1.15it/s]
Epoch 997 | loss: 290.803325: 100%|          | 998/1000 [16:27<00:01,  1.15it/s]
Epoch 998 | loss: 291.046695: 100%|          | 998/1000 [16:27<00:01,  1.15it/s]
Epoch 998 | loss: 291.046695: 100%|          | 999/1000 [16:27<00:00,  1.13it/s]
Epoch 999 | loss: 290.985742: 100%|          | 999/1000 [16:28<00:00,  1.13it/s]
Epoch 999 | loss: 290.985742: 100%|          | 1000/1000 [16:28<00:00,  1.14it/s]
Epoch 999 | loss: 290.985742: 100%|          | 1000/1000 [16:28<00:00,  1.01it/s]
```

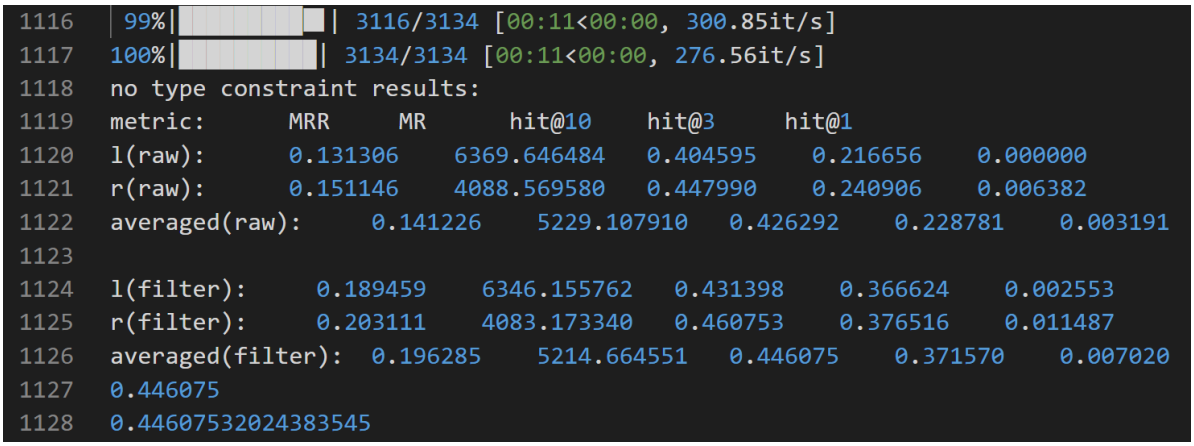
```
100%|          | 3134/3134 [00:12<00:00, 258.03it/s]
no type constraint results:
metric:      MRR      MR      hit@10    hit@3     hit@1
l(raw):      0.012927    7268.114746    0.030632    0.012125    0.002553
r(raw):      0.043794    6866.465820    0.082642    0.046586    0.021378
averaged(raw):     0.028360    7067.290039    0.056637    0.029355    0.011966

l(filter):     0.021719    7247.605469    0.042119    0.022655    0.009572
r(filter):     0.046703    6861.593262    0.083599    0.048500    0.025207
averaged(filter):  0.034211    7054.599609    0.062859    0.035578    0.017390
0.062859
0.06285896897315979
```

- 整个模型都坏掉，实在不适合

2.2.6 epoch改为500

```
Date=`date +%y%m%d`
echo "13.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=100 --dim=100 --p_norm=1 --train_times=500 --alpha=0.5 > logs/'./result/transh/transh(4,100,100,1,500,0.5).log'
echo "13.sh back end at `date +%H:%M:%S`" >> out.log
```





- 效果一般，感觉有点欠拟合

2.2.7 学习率改为1

```
Date=`date +%y%m%d`
echo "14.sh back begin at `date +%H:%M:%S`" >> out.log

nohup python -u train_transh_FB15K237.py --margin=4 --nbatches=100 --dim=100 --p_norm=1 --train_times=1000 --alpha=1 > logs/'./result/transh/transh(4,100,100,1,1000,1).log'
echo "14.sh back end at `date +%H:%M:%S`" >> out.log
```

```
Epoch 996 | loss: 0.062057: 100%|██████████| 997/1000 [16:34<00:02,  1.11it/s]
Epoch 997 | loss: 0.060758: 100%|██████████| 997/1000 [16:35<00:02,  1.11it/s]
Epoch 997 | loss: 0.060758: 100%|██████████| 998/1000 [16:35<00:01,  1.12it/s]
Epoch 998 | loss: 0.064736: 100%|██████████| 998/1000 [16:35<00:01,  1.12it/s]
Epoch 998 | loss: 0.064736: 100%|██████████| 999/1000 [16:35<00:00,  1.13it/s]
Epoch 999 | loss: 0.065083: 100%|██████████| 999/1000 [16:36<00:00,  1.13it/s]
Epoch 999 | loss: 0.065083: 100%|██████████| 1000/1000 [16:36<00:00,  1.15it/s]
Epoch 999 | loss: 0.065083: 100%|██████████| 1000/1000 [16:36<00:00,  1.00it/s]
```

```
100%|██████████| 3126/3134 [00:10<00:00, 272.02it/s]
100%|██████████| 3134/3134 [00:10<00:00, 287.48it/s]
no type constraint results:
metric:       MRR     MR      hit@10    hit@3     hit@1
l(raw):       0.135098    6139.355469   0.408743    0.228781    0.000000
r(raw):       0.147974    3716.475830   0.449585    0.230696    0.004467
averaged(raw):      0.141536    4927.915527   0.429164    0.229738    0.002234

l(filter):      0.191477    6115.862305   0.432036    0.371729    0.001276
r(filter):      0.199862    3711.073486   0.462029    0.373325    0.005105
averaged(filter):   0.195670    4913.467773   0.447033    0.372527    0.003191
0.447033
0.4470325708389282
```

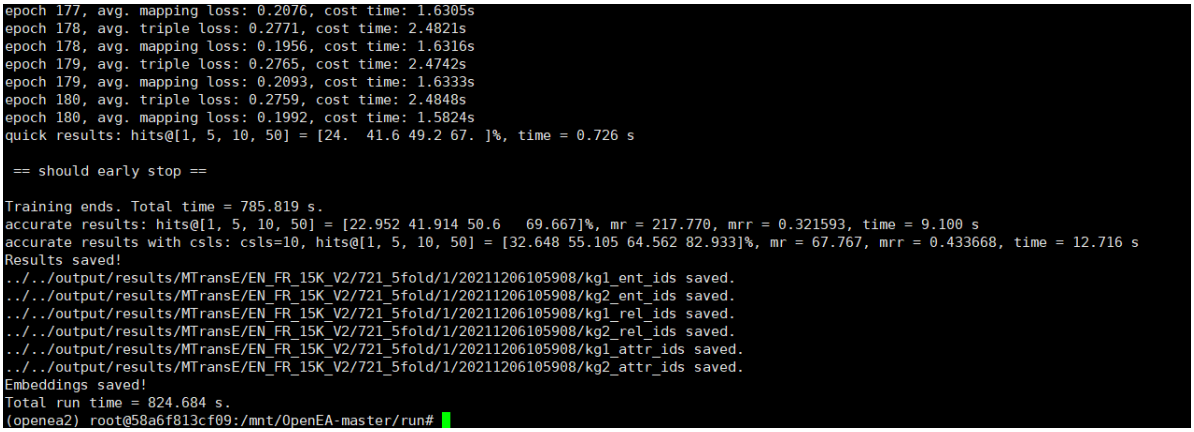
- 过拟合

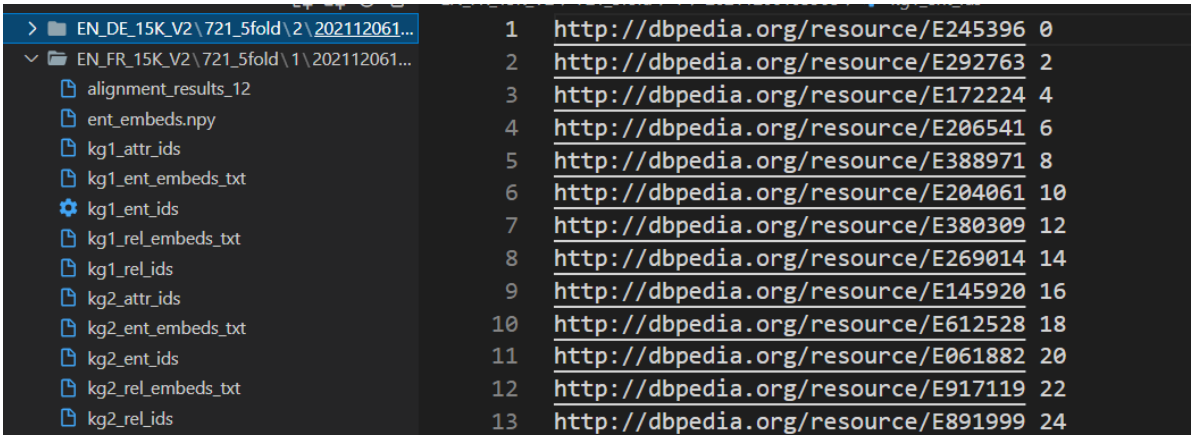
2. week6

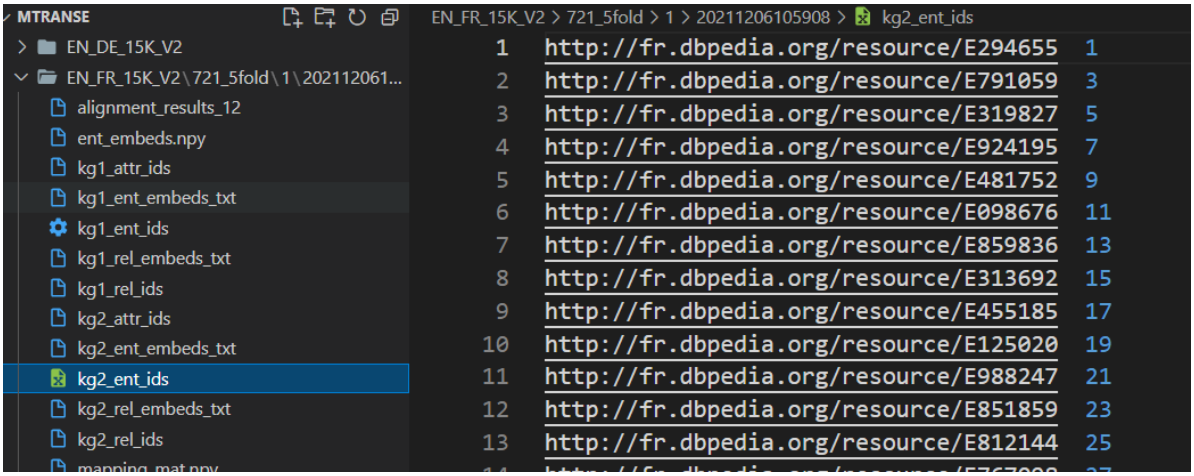
2.1 分别使用EN_FR_15K_V2的split1和EN_DE_15K_V2的split2来运行MTransE，记录使用的命令和结果

2.1.1 EN_FR_15K_V2的split1

```
python main_from_args.py ./args/mtranse_args_15K.json EN_FR_15K_V2 721_5fold/1/
```

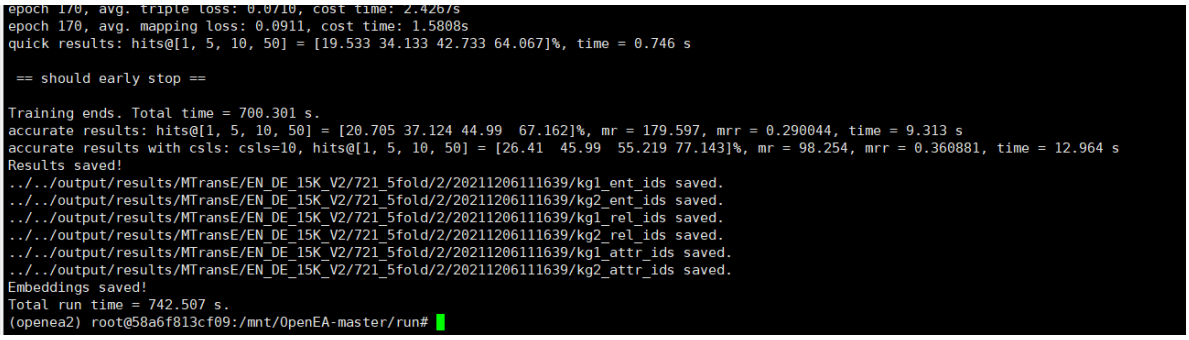


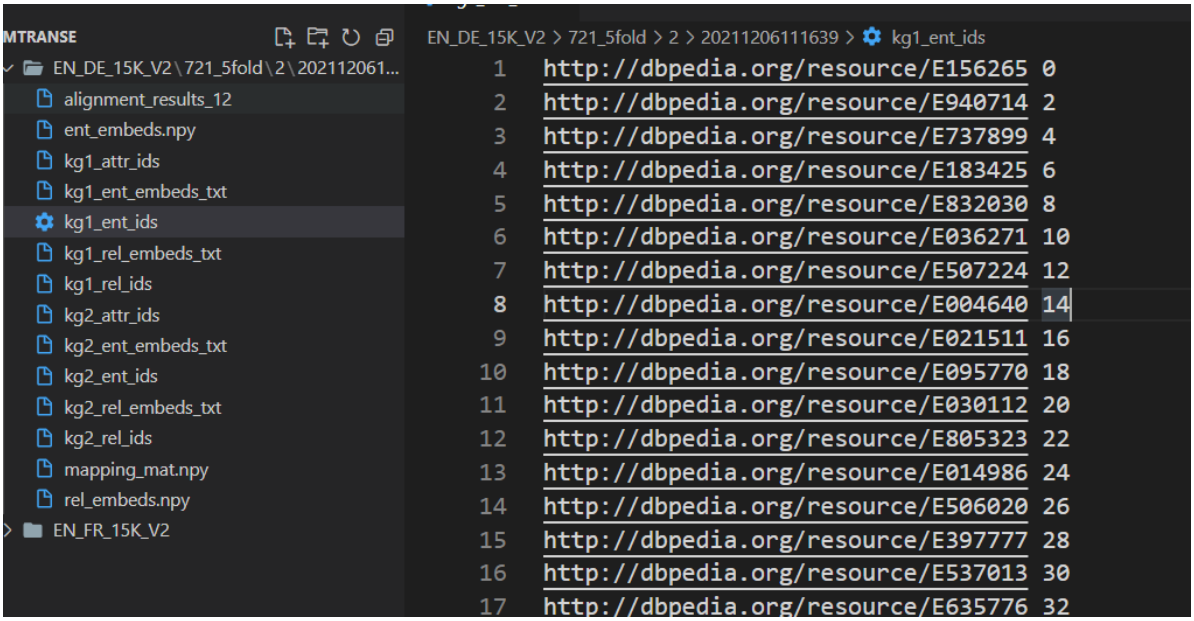


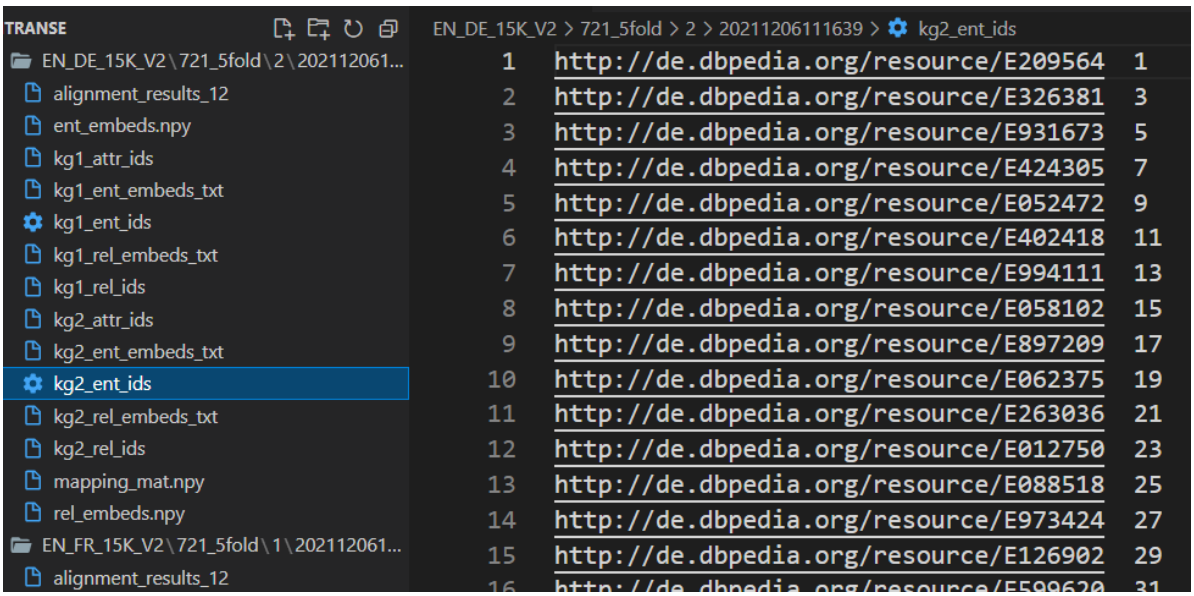


2.1.2 EN_DE_15K_V2的split2

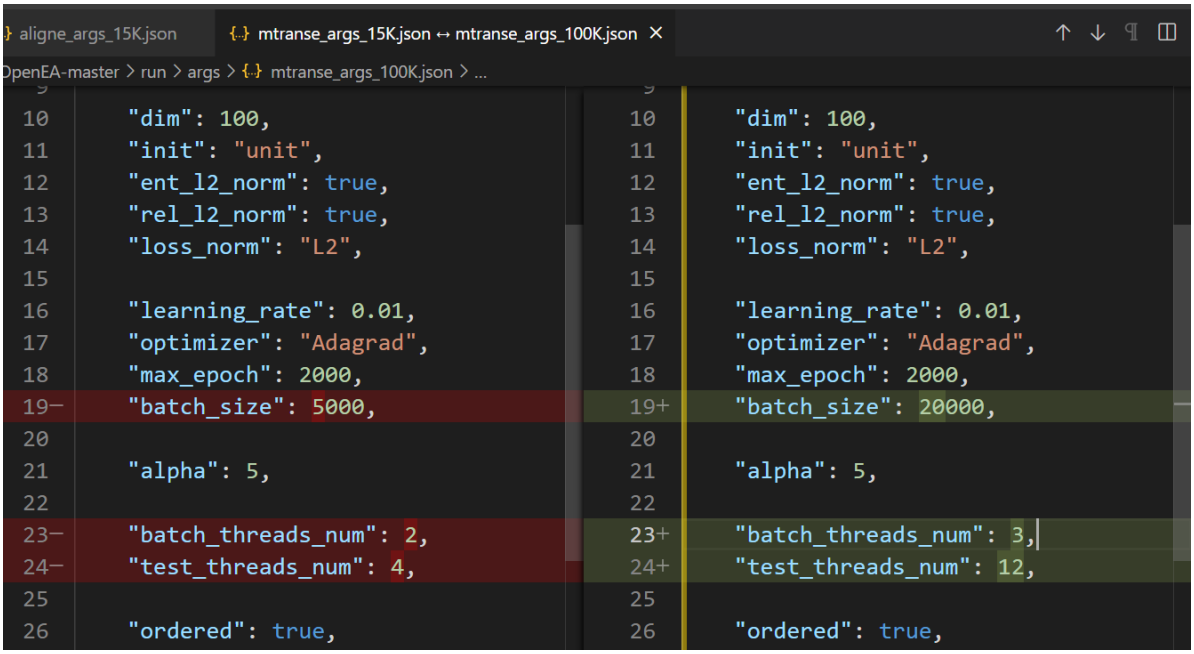
```
python main_from_args.py
./args/mtranse_args_15K.json EN_DE_15K_V2
721_5fold/2/]
```





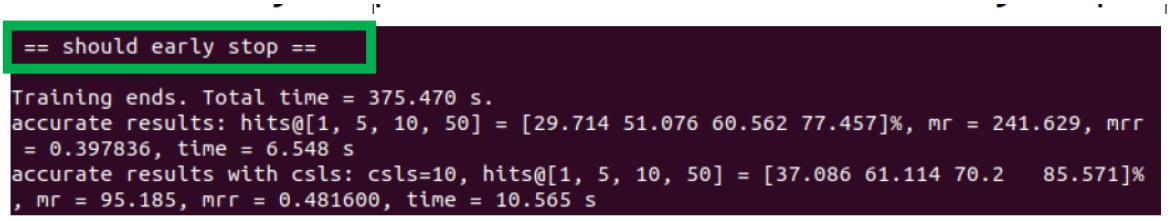


2.2 mtranse_args_15K.json和mtranse_args_100K.json有何区别，为什么要设置这种区别，而不是直接写一个mtranse_args.json?



- 我们发现这两个文件对应训练的规模不同，mtranse_args_15K.json训练的batch_size比较小，所以对应的阈值也设置比较小；mtranse_args_100K.json训练的batch_size比较大，所以对应的阈值也设置比较大

2.3 什么是earlystop？这个实例中为什么需要earlystop?



- earlystop指的是在跑完所有epoch前停止训练；
- 在实例中，由于为防止训练过拟合，当我们发现测试的准确率发生明显下降，我们应该停止迭代