```
C:\Users\Wade\Anaconda3\envs\rosetta_GNN\python.exe F:/
volume/paper_code/GCE-GNN/pytorch_code/main.py
Namespace(batchSize=100, dataset='sample', epoch=30,
hiddenSize=128, l2=0.0001, lr=0.001, lr_dc=0.1,
lr_dc_step=3, nonhybrid=False, patience=10, step=1,
valid_portion=0.1, validation=False)
C:\Users\Wade\Anaconda3\envs\rosetta_GNN\lib\site-
packages\torch\optim\lr_scheduler.py:123: UserWarning:
Detected call of `lr_scheduler.step()` before `optimizer
.step()`. In PyTorch 1.1.0 and later, you should call
them in the opposite order: `optimizer.step()` before
lr_scheduler.step()`. Failure to do this will result in
 PyTorch skipping the first value of the learning rate
schedule. See more details at https://pytorch.org/docs/
stable/optim.html#how-to-adjust-learning-rate
  "https://pytorch.org/docs/stable/optim.html#how-to-
adjust-learning-rate", UserWarning)
epoch: 0
start training: 2020-09-01 11:14:09.062020
[0/13] Loss: 5.7461
[3/13] Loss: 5.7286
[6/13] Loss: 5.6720
[9/13] Loss: 5.6752
[12/13] Loss: 5.7115
    Loss: 74.139
start predicting: 2020-09-01 11:14:14.051680
Best Result:
    Recall@20: 5.0505 MMR@20: 2.3527 Epoch: 0, 0
epoch:
start training: 2020-09-01 11:14:14.305003
[0/13] Loss: 5.6159
[3/13] Loss: 5.5104
[6/13] Loss: 5.2983
[9/13] Loss: 5.5094
[12/13] Loss: 5.7504
```

Loss: 71.060 start predicting: 2020-09-01 11:14:18.835889 Best Result: Recall@20: 7.0707 MMR@20: 2.5806 Epoch: 1, 1 epoch: 2 start training: 2020-09-01 11:14:19.072257 [0/13] Loss: 5.1685 [3/13] Loss: 5.2802 [6/13] Loss: 5.2181 [9/13] Loss: 4.9624 [12/13] Loss: 5.0600 Loss: 67.137 start predicting: 2020-09-01 11:14:23.655004 Best Result: Recall@20: 9.0909 MMR@20: 2.7458 Epoch: 2, 2 epoch: 3 start training: 2020-09-01 11:14:23.914311 [0/13] Loss: 5.3033 [3/13] Loss: 5.2818 [6/13] Loss: 5.2220 [9/13] Loss: 5.0203 [12/13] Loss: 5.5395 Loss: 66.752 start predicting: 2020-09-01 11:14:28.546925 Best Result: Recall@20: 9.0909 MMR@20: 2.8072 Epoch: 3, 3 epoch: 4 start training: 2020-09-01 11:14:28.808227 [0/13] Loss: 4.9350 [3/13] Loss: 5.0463 [6/13] Loss: 5.0998 [9/13] Loss: 5.1938 [12/13] Loss: 3.5386 Loss: 64.004

```
start predicting: 2020-09-01 11:14:33.441838
Best Result:
    Recall@20: 11.1111 MMR@20: 3.0920 Epoch: 4, 4
epoch: 5
start training: 2020-09-01 11:14:33.705135
[0/13] Loss: 5.1557
[3/13] Loss: 4.8502
[6/13] Loss: 4.7720
[9/13] Loss: 4.9133
[12/13] Loss: 5.5804
    Loss: 65.372
start predicting: 2020-09-01 11:14:38.387615
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1061 Epoch: 5, 5
epoch: 6
start training: 2020-09-01 11:14:38.646922
[0/13] Loss: 4.8881
[3/13] Loss: 5.0069
[6/13] Loss: 4.9983
[9/13] Loss: 4.9039
[12/13] Loss: 5.3023
    Loss: 65.020
start predicting: 2020-09-01 11:14:43.305467
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1241 Epoch: 6, 6
epoch: 7
start training: 2020-09-01 11:14:43.576742
[0/13] Loss: 5.0363
[3/13] Loss: 5.0918
[6/13] Loss: 5.1149
[9/13] Loss: 4.9323
[12/13] Loss: 5.6062
    Loss: 65.226
start predicting: 2020-09-01 11:14:48.176444
```

```
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 7, 7
epoch: 8
start training: 2020-09-01 11:14:48.457692
[0/13] Loss: 5.1067
[3/13] Loss: 5.0480
[6/13] Loss: 4.8594
[9/13] Loss: 4.9004
[12/13] Loss: 5.2724
    Loss: 64.848
start predicting: 2020-09-01 11:14:53.092301
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 8, 8
epoch: 9
start training: 2020-09-01 11:14:53.326675
[0/13] Loss: 5.0962
[3/13] Loss: 4.8374
[6/13] Loss: 5.1603
[9/13] Loss: 5.2201
[12/13] Loss: 5.2707
   Loss: 64.849
start predicting: 2020-09-01 11:14:58.140803
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 9, 9
epoch: 10
start training: 2020-09-01 11:14:58.384153
[0/13] Loss: 5.1099
[3/13] Loss: 4.9167
[6/13] Loss: 4.9408
[9/13] Loss: 4.8671
[12/13] Loss: 4.7653
   Loss: 64.366
start predicting: 2020-09-01 11:15:03.138948
Best Result:
```

```
Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 10, 10
epoch: 11
start training: 2020-09-01 11:15:03.436152
[0/13] Loss: 5.0509
[3/13] Loss: 4.9617
[6/13] Loss: 4.8826
[9/13] Loss: 5.0244
[12/13] Loss: 4.4807
    Loss: 64.074
start predicting: 2020-09-01 11:15:07.988980
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 11, 11
epoch: 12
start training: 2020-09-01 11:15:08.251278
[0/13] Loss: 5.0806
[3/13] Loss: 4.8643
[6/13] Loss: 4.9589
[9/13] Loss: 4.9789
[12/13] Loss: 5.0856
    Loss: 64.664
start predicting: 2020-09-01 11:15:12.847988
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1782 Epoch: 12, 12
epoch: 13
start training: 2020-09-01 11:15:13.104303
[0/13] Loss: 5.0056
[3/13] Loss: 5.1120
[6/13] Loss: 4.9926
[9/13] Loss: 4.8383
[12/13] Loss: 4.8878
    Loss: 64.454
start predicting: 2020-09-01 11:15:17.691040
Best Result:
    Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 13, 13
```

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epoch: 14
start training: 2020-09-01 11:15:17.958326
[0/13] Loss: 5.1177
[3/13] Loss: 4.7298
[6/13] Loss: 4.7771
[9/13] Loss: 5.1641
[12/13] Loss: 5.3028
    Loss: 64.869
start predicting: 2020-09-01 11:15:22.571498
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 14, 14
epoch: 15
start training: 2020-09-01 11:15:22.800885
[0/13] Loss: 4.8917
[3/13] Loss: 4.8320
[6/13] Loss: 4.8953
[9/13] Loss: 4.7806
[12/13] Loss: 4.8930
   Loss: 64.483
start predicting: 2020-09-01 11:15:27.487355
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 15, 15
epoch: 16
start training: 2020-09-01 11:15:27.733696
[0/13] Loss: 4.9656
[3/13] Loss: 5.0461
[6/13] Loss: 5.1236
[9/13] Loss: 4.9433
[12/13] Loss: 5.2827
   Loss: 64.833
start predicting: 2020-09-01 11:15:32.294502
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 16, 16
```

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epoch: 17
start training: 2020-09-01 11:15:32.528876
[0/13] Loss: 4.9322
[3/13] Loss: 5.1095
[6/13] Loss: 5.0673
[9/13] Loss: 4.9663
[12/13] Loss: 5.5083
   Loss: 65.062
start predicting: 2020-09-01 11:15:37.130573
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 17, 17
epoch: 18
start training: 2020-09-01 11:15:37.386888
[0/13] Loss: 4.9907
[3/13] Loss: 4.7761
[6/13] Loss: 4.9942
[9/13] Loss: 5.0643
[12/13] Loss: 5.0767
  Loss: 64.645
start predicting: 2020-09-01 11:15:42.054408
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 18, 18
epoch: 19
start training: 2020-09-01 11:15:42.302745
[0/13] Loss: 4.9809
[3/13] Loss: 4.9282
[6/13] Loss: 5.0884
[9/13] Loss: 4.7303
[12/13] Loss: 5.2099
   Loss: 64.766
start predicting: 2020-09-01 11:15:46.907433
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 19, 19
epoch: 20
```

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start training: 2020-09-01 11:15:47.157764
[0/13] Loss: 4.8410
[3/13] Loss: 5.0159
[6/13] Loss: 5.1878
[9/13] Loss: 4.8913
[12/13] Loss: 4.5227
   Loss: 64.127
start predicting: 2020-09-01 11:15:51.744501
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 20, 20
epoch: 21
start training: 2020-09-01 11:15:51.969898
[0/13] Loss: 4.8177
[3/13] Loss: 4.8787
[6/13] Loss: 5.1092
[9/13] Loss: 4.8964
[12/13] Loss: 3.9331
    Loss: 63.548
start predicting: 2020-09-01 11:15:56.459894
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 21, 21
epoch: 22
start training: 2020-09-01 11:15:56.710225
[0/13] Loss: 4.9344
[3/13] Loss: 5.0994
[6/13] Loss: 4.9846
[9/13] Loss: 4.8509
[12/13] Loss: 4.0428
    Loss: 63.642
start predicting: 2020-09-01 11:16:01.272028
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 22, 22
epoch: 23
start training: 2020-09-01 11:16:01.496428
```

Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 25, 25

epoch: 26

start training: 2020-09-01 11:16:15.986187

[0/13] Loss: 4.9018

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[3/13] Loss: 5.0904
[6/13] Loss: 4.9753
[9/13] Loss: 5.1130
[12/13] Loss: 5.2775
    Loss: 64.847
start predicting: 2020-09-01 11:16:20.603841
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 26, 26
epoch: 27
start training: 2020-09-01 11:16:20.863148
[0/13] Loss: 4.9360
[3/13] Loss: 5.0683
[6/13] Loss: 5.0411
[9/13] Loss: 4.9065
[12/13] Loss: 4.7447
    Loss: 64.324
start predicting: 2020-09-01 11:16:25.536605
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 27, 27
epoch: 28
start training: 2020-09-01 11:16:25.792920
[0/13] Loss: 4.8531
[3/13] Loss: 5.0276
[6/13] Loss: 5.1122
[9/13] Loss: 4.8127
[12/13] Loss: 4.8168
    Loss: 64.399
start predicting: 2020-09-01 11:16:30.467422
Best Result:
   Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 28, 28
epoch: 29
start training: 2020-09-01 11:16:30.721742
[0/13] Loss: 5.0422
[3/13] Loss: 4.8079
```

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[6/13] Loss: 5.0105 [9/13] Loss: 5.0603

[12/13] Loss: 3.0205

Loss: 62.688

start predicting: 2020-09-01 11:16:35.376297

Best Result:

Recall@20: 11.1111 MMR@20: 3.1815 Epoch: 29, 29

Run time: 146.571589 s

Process finished with exit code 0