1. 임베딩 사이즈(256) 재설정 후 실험

1.1. GTN

```
810128 interactions for training
217242 interactions for testing
gowalla Sparsity : 0.0008396216228570436
gowalla is ready to go
========================================CONFIG=====================================================
{'A_n_fold': 100,
 'A_split': False,
 'K': 3,
 'args': Namespace(K=3, a_fold=100, alpha=0.3, alpha1=0.25, alpha2=0.25, avg=0, beta=0.5, bpr_batch=512, comment='gtn', dataset='gowalla'
 'bigdata': False,
 'bpr_batch_size': 512,
 'dataset': 'gowalla',
 'decay': 0.0001,
 'dropout': 0,
 'epochs': 101,
 'keep_prob': 0.6,
 'lambda2': 4.0,
 'latent_dim_rec': 256,
 'lr': 0.001,
 'multicore': 1,
 'pretrain': 0,
 'test_u_batch_size': 100}
cores for test: 24
comment: gtn
tensorboard: 1
LOAD: 0
Weight path: /home/hwiric/Internship/GTN-SIGIR2022/checkpoints_GTN
Test Topks: [20]
using bpr loss
========================================END=====================================================
```

```
Testing EPOCH[81/101]  loss 0.0140  0.0066  0.0073 - |Sample:8.73| | Results Top-k (pre, recall, ndcg): 0.05505, 0.18157, 0.1523

EPOCH[81/101] loss 0.0140  0.0066  0.0073 - |Sample:8.73|  |  08:09mins
EPOCH[82/101] loss 0.0141  0.0068  0.0073 - |Sample:8.88|  |  07:46mins
EPOCH[83/101] loss 0.0140  0.0067  0.0073 - |Sample:8.61|  |  07:45mins
EPOCH[84/101] loss 0.0138  0.0065  0.0074 - |Sample:8.88|  |  07:46mins
EPOCH[85/101] loss 0.0139  0.0065  0.0074 - |Sample:9.10|  |  07:46mins
EPOCH[86/101] loss 0.0138  0.0065  0.0074 - |Sample:8.73|  |  07:46mins
EPOCH[87/101] loss 0.0138  0.0065  0.0074 - |Sample:8.93|  |  07:46mins
EPOCH[88/101] loss 0.0138  0.0064  0.0074 - |Sample:8.60|  |  07:46mins
EPOCH[89/101] loss 0.0137  0.0063  0.0074 - |Sample:9.11|  |  07:46mins
EPOCH[90/101] loss 0.0137  0.0063  0.0074 - |Sample:8.78|  |  07:46mins
##########################
[0;30;43m[TEST][0m

Testing EPOCH[91/101]  loss 0.0137  0.0063  0.0074 - |Sample:8.64| | Results Top-k (pre, recall, ndcg): 0.05529, 0.18173, 0.15254

EPOCH[91/101] loss 0.0137  0.0063  0.0074 - |Sample:8.64|  |  08:09mins
EPOCH[92/101] loss 0.0136  0.0062  0.0074 - |Sample:11.79|  |  07:49mins
EPOCH[93/101] loss 0.0135  0.0061  0.0074 - |Sample:9.07|  |  07:46mins
EPOCH[94/101] loss 0.0136  0.0062  0.0074 - |Sample:8.89|  |  07:46mins
EPOCH[95/101] loss 0.0136  0.0062  0.0074 - |Sample:8.56|  |  07:45mins
EPOCH[96/101] loss 0.0134  0.0060  0.0074 - |Sample:9.05|  |  07:45mins
EPOCH[97/101] loss 0.0135  0.0061  0.0074 - |Sample:8.66|  |  07:45mins
EPOCH[98/101] loss 0.0137  0.0063  0.0074 - |Sample:8.89|  |  07:46mins
EPOCH[99/101] loss 0.0135  0.0060  0.0074 - |Sample:8.84|  |  07:46mins
EPOCH[100/101] loss 0.0137  0.0063  0.0074 - |Sample:8.94|  |  07:46mins
##########################
[0;30;43m[TEST][0m

Testing EPOCH[101/101]  loss 0.0135  0.0060  0.0074 - |Sample:11.61| | Results Top-k (pre, recall, ndcg): 0.05542, 0.18159, 0.15273
```

1.2. LightGCN

```
810128 interactions for training
217242 interactions for testing
gowalla Sparsity : 0.0008396216228570436
gowalla is ready to go
===========config================
{'A_n_fold': 100,
 'A_split': False,
 'bigdata': False,
 'bpr_batch_size': 512,
 'decay': 0.0001,
 'dropout': 0,
 'keep_prob': 0.6,
 'latent_dim_rec': 256,
 'lightGCN_n_layers': 3,
 'lr': 0.001,
 'multicore': 1,
 'pretrain': 0,
 'test_u_batch_size': 100}
cores for test: 24
comment: lgn
tensorboard: 1
LOAD: 0
Weight path: ./checkpoints
Test Topks: [20]
using bpr loss
===========end===================
Model: lgn
```

```
{'precision': array([0.05555295]), 'recall': array([0.18099422]), 'ndcg': array([0.15389557])}
EPOCH[91/101] loss0.011-|Sample:10.76|
EPOCH[92/101] loss0.011-|Sample:10.68|
EPOCH[93/101] loss0.011-|Sample:8.81|
EPOCH[94/101] loss0.011-|Sample:8.60|
EPOCH[95/101] loss0.011-|Sample:10.86|
EPOCH[96/101] loss0.011-|Sample:10.77|
EPOCH[97/101] loss0.011-|Sample:10.78|
EPOCH[98/101] loss0.011-|Sample:9.52|
EPOCH[99/101] loss0.011-|Sample:10.28|
EPOCH[100/101] loss0.011-|Sample:9.52|
[0;30;43m[TEST][0m
{'precision': array([0.05588787]), 'recall': array([0.18174484]), 'ndcg': array([0.15444942])}
EPOCH[101/101] loss0.011-|Sample:8.93|
```

1.3. 결과

모델	성능(ndcg)	비교

GTN	15.273%	- LightGCN 모델의 성능이 GTN 대비 1.11% 높음
		- 논문에서 밝힌 성능
		  - GTN(15.88%) ← 실험 결과와 0.61%p 차이
		  - LightGCN(15.531) ← 실험 결과와 0.08%p 차이

LightGCN	15.445%	