

Total 1138251 words
Pre_processing data done! Used time = 59.84859371185303 second(s)
Load theta? (y/n)
n
Input training mode (manual / auto) : manual
Please input number of epoch : (now : 0)
40
Please input learning rate for theta 0 : (now : 0)
70
Please input learning rate for theta 1 : (now : 0)
70
Please input learning rate for theta 2 : (now : 0)
70
Initial theta 0:
tensor([[0., 0., 0., ..., 0., 0., 0.],
[0., 0., 0., ..., 0., 0., 0.],
[0., 0., 0., ..., 0., 0., 0.]], requires_grad=True)

epoch 0 for theta 0 (Used time = 99.33985352516174 second(s)) :
training loss = 1.1049160957336426
tensor([[1.7145e+01, 3.0974e+00, 2.2566e+00, ..., 8.8155e-03,
 9.5391e-03, 1.1217e-02],
[-8.8222e+00, -1.5038e+00, -1.1144e+00, ..., -4.4077e-03,
 -4.7696e-03, -5.2630e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 18.58407163619995 second(s)) :
loss = 0.8334802389144897
item_cnt = 4328 | predict_cnt = 33 | true_predict_cnt = 33
precision_rate = 1.0 | recall_rate = 0.007624768946395564 | F1_measure = 0.015134143545058473

epoch 1 for theta 0 (Used time = 134.34725069999695 second(s)) :
training loss = 0.853122353553772
tensor([[1.6476e+01, 3.0738e+00, 2.2944e+00, ..., 1.0551e-02,
 1.2086e-02, 1.4160e-02],
[-8.7358e+00, -1.4251e+00, -1.1013e+00, ..., -5.1572e-03,
 -5.8710e-03, -6.2383e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 23.235779523849487 second(s)) :
loss = 0.7927807569503784
item_cnt = 4328 | predict_cnt = 36 | true_predict_cnt = 36
precision_rate = 1.0 | recall_rate = 0.00831792975970425 | F1_measure = 0.016498625114573784

epoch 2 for theta 0 (Used time = 162.14889907836914 second(s)) :
training loss = 0.811657190322876
tensor([[1.5808e+01, 3.0502e+00, 2.3280e+00, ..., 1.2218e-02,
 1.4539e-02, 1.7049e-02],
[-8.6494e+00, -1.3471e+00, -1.0873e+00, ..., -5.8707e-03,
 -6.9239e-03, -7.1842e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 21.726200342178345 second(s)) :
loss = 0.7526605129241943
item_cnt = 4328 | predict_cnt = 78 | true_predict_cnt = 63
precision_rate = 0.8076923076923077 | recall_rate = 0.01455637707948244 | F1_measure = 0.028597367226509306

epoch 3 for theta 0 (Used time = 160.36125445365906 second(s)) :
training loss = 0.7707457542419434
tensor([[1.5139e+01, 3.0269e+00, 2.3582e+00, ..., 1.3825e-02,
 1.6907e-02, 1.9886e-02],
[-8.5629e+00, -1.2698e+00, -1.0726e+00, ..., -6.5532e-03,
 -7.9344e-03, -8.1039e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 22.887903451919556 second(s)) :
loss = 0.7130013108253479
item_cnt = 4328 | predict_cnt = 110 | true_predict_cnt = 83
precision_rate = 0.7545454545454545 | recall_rate = 0.019177449168207024 | F1_measure = 0.03740423614240648

epoch 4 for theta 0 (Used time = 162.991703748703 second(s)) :
training loss = 0.7303082942962646
tensor([[1.4470e+01, 3.0041e+00, 2.3853e+00, ..., 1.5378e-02,
 1.9200e-02, 2.2677e-02],
[-8.4765e+00, -1.1934e+00, -1.0573e+00, ..., -7.2084e-03,
 -8.9076e-03, -9.0002e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 23.35450315475464 second(s)) :
loss = 0.6737557649612427
item_cnt = 4328 | predict_cnt = 135 | true_predict_cnt = 96
precision_rate = 0.7111111111111111 | recall_rate = 0.022181146025878003 | F1_measure = 0.04302038987228322

epoch 5 for theta 0 (Used time = 180.2760853767395 second(s)) :
training loss = 0.690331220626831
tensor([[1.3801e+01, 2.9820e+00, 2.4098e+00, ..., 1.6883e-02,
 2.1424e-02, 2.5426e-02],

```
[-8.3900e+00, -1.1178e+00, -1.0414e+00, ..., -7.8395e-03,
-9.8476e-03, -9.8754e-03],
[ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
 0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 26.60402774810791 second(s)) :
loss = 0.634818971157074
item_cnt = 4328 | predict_cnt = 157 | true_predict_cnt = 103
precision_rate = 0.6560509554140127 | recall_rate = 0.023798521256931607 | F1_measure = 0.04593088071348941
-----
epoch 6 for theta 0 (Used time = 178.2893784046173 second(s)) :
training loss = 0.6507247686386108
tensor([[ 1.3133e+01,  2.9606e+00,  2.4320e+00, ...,  1.8345e-02,
          2.3586e-02,  2.8137e-02],
        [-8.3036e+00, -1.0432e+00, -1.0251e+00, ..., -8.4493e-03,
          -1.0758e-02, -1.0732e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 24.382139444351196 second(s)) :
loss = 0.5961815118789673
item_cnt = 4328 | predict_cnt = 200 | true_predict_cnt = 133
precision_rate = 0.665 | recall_rate = 0.030730129390018485 | F1_measure = 0.05874558303886925
-----
epoch 7 for theta 0 (Used time = 176.6589651107788 second(s)) :
training loss = 0.6113607287406921
tensor([[ 1.2464e+01,  2.9401e+00,  2.4523e+00, ...,  1.9767e-02,
          2.5691e-02,  3.0811e-02],
        [-8.2171e+00, -9.6963e-01, -1.0085e+00, ..., -9.0400e-03,
          -1.1642e-02, -1.1571e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 24.7673978805542 second(s)) :
loss = 0.5577638745307922
item_cnt = 4328 | predict_cnt = 241 | true_predict_cnt = 137
precision_rate = 0.5684647302904564 | recall_rate = 0.0316543438077634 | F1_measure = 0.05996935872182096
-----
epoch 8 for theta 0 (Used time = 179.84872484207153 second(s)) :
training loss = 0.5722543001174927
tensor([[ 1.1795e+01,  2.9205e+00,  2.4708e+00, ...,  2.1152e-02,
          2.7744e-02,  3.3452e-02],
        [-8.1307e+00, -8.9718e-01, -9.9154e-01, ..., -9.6136e-03,
          -1.2501e-02, -1.2394e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 25.282011032104492 second(s)) :
loss = 0.5195912718772888
item_cnt = 4328 | predict_cnt = 302 | true_predict_cnt = 189
precision_rate = 0.6258278145695364 | recall_rate = 0.04366913123844732 | F1_measure = 0.0816414686825054
-----
epoch 9 for theta 0 (Used time = 195.49398946762085 second(s)) :
training loss = 0.5333863496780396
tensor([[ 1.1126e+01,  2.9020e+00,  2.4877e+00, ...,  2.2504e-02,
          2.9750e-02,  3.6062e-02],
        [-8.0443e+00, -8.2589e-01, -9.7432e-01, ..., -1.0172e-02,
          -1.3339e-02, -1.3203e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 0 (Used time = 28.5538809299469 second(s)) :
loss = 0.48158711194992065
item_cnt = 4328 | predict_cnt = 312 | true_predict_cnt = 191
precision_rate = 0.6121794871794872 | recall_rate = 0.04413123844731978 | F1_measure = 0.08232758620689655
-----
epoch 10 for theta 0 (Used time = 201.65276980400085 second(s)) :
training loss = 0.49473822116851807
tensor([[10.4576,  2.8846,  2.5033, ...,  0.0238,  0.0317,  0.0386],
        [-7.9578, -0.7558, -0.9569, ..., -0.0107, -0.0142, -0.0140],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 30.115864038467407 second(s)) :
loss = 0.4437657594680786
item_cnt = 4328 | predict_cnt = 333 | true_predict_cnt = 198
precision_rate = 0.5945945945945946 | recall_rate = 0.045748613678373386 | F1_measure = 0.084960308946578
-----
epoch 11 for theta 0 (Used time = 201.20781183242798 second(s)) :
training loss = 0.4562070071697235
tensor([[ 9.7888,  2.8684,  2.5177, ...,  0.0251,  0.0336,  0.0412],
        [-7.8714, -0.6871, -0.9392, ..., -0.0112, -0.0150, -0.0148],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 31.48300313949585 second(s)) :
loss = 0.40613555908203125
item_cnt = 4328 | predict_cnt = 384 | true_predict_cnt = 240
precision_rate = 0.625 | recall_rate = 0.05545286506469501 | F1_measure = 0.10186757215619695
-----
epoch 12 for theta 0 (Used time = 195.98079347610474 second(s)) :
training loss = 0.41795098781585693
tensor([[ 9.1201,  2.8534,  2.5309, ...,  0.0264,  0.0355,  0.0437],
        [-7.7849, -0.6197, -0.9214, ..., -0.0118, -0.0157, -0.0156],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
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requires_grad=True)
Evaluation For theta 0 (Used time = 26.646273612976074 second(s)) :
loss = 0.3688810467720032
item_cnt = 4328 | predict_cnt = 402 | true_predict_cnt = 246
precision_rate = 0.6119402985074627 | recall_rate = 0.05683918669131238 | F1_measure = 0.1040169133192389
-----
epoch 13 for theta 0 (Used time = 206.5073540210724 second(s)) :
training loss = 0.3800075948238373
tensor([[ 8.4514,  2.8398,  2.5434, ...,  0.0276,  0.0374,  0.0462],
        [-7.6985, -0.5536, -0.9035, ..., -0.0123, -0.0165, -0.0163],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.453563928604126 second(s)) :
loss = 0.3323083817958832
item_cnt = 4328 | predict_cnt = 415 | true_predict_cnt = 251
precision_rate = 0.6048192771084338 | recall_rate = 0.05799445471349353 | F1_measure = 0.10584018553658023
-----
epoch 14 for theta 0 (Used time = 203.25751209259033 second(s)) :
training loss = 0.34270888566970825
tensor([[ 7.7830,  2.8279,  2.5553, ...,  0.0289,  0.0392,  0.0488],
        [-7.6120, -0.4891, -0.8854, ..., -0.0128, -0.0173, -0.0171],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.72356367111206 second(s)) :
loss = 0.297098845243454
item_cnt = 4328 | predict_cnt = 430 | true_predict_cnt = 259
precision_rate = 0.6023255813953489 | recall_rate = 0.059842883548983365 | F1_measure = 0.10886927280369904
-----
epoch 15 for theta 0 (Used time = 204.0041379928589 second(s)) :
training loss = 0.30681800842285156
tensor([[ 7.1154,  2.8185,  2.5675, ...,  0.0301,  0.0410,  0.0513],
        [-7.5256, -0.4260, -0.8672, ..., -0.0133, -0.0180, -0.0178],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.434230089187622 second(s)) :
loss = 0.2649979293346405
item_cnt = 4328 | predict_cnt = 437 | true_predict_cnt = 260
precision_rate = 0.5949656750572082 | recall_rate = 0.06007393715341959 | F1_measure = 0.10912906610703044
-----
epoch 16 for theta 0 (Used time = 204.5531632900238 second(s)) :
training loss = 0.274001806974411
tensor([[ 6.4488,  2.8131,  2.5813, ...,  0.0313,  0.0428,  0.0539],
        [-7.4391, -0.3645, -0.8490, ..., -0.0137, -0.0187, -0.0186],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.27295732498169 second(s)) :
loss = 0.23876209557056427
item_cnt = 4328 | predict_cnt = 443 | true_predict_cnt = 263
precision_rate = 0.5936794582392777 | recall_rate = 0.06076709796672828 | F1_measure = 0.11024942360092224
-----
epoch 17 for theta 0 (Used time = 205.71794939041138 second(s)) :
training loss = 0.2468714714050293
tensor([[ 5.7851,  2.8146,  2.5991, ...,  0.0326,  0.0445,  0.0566],
        [-7.3527, -0.3046, -0.8308, ..., -0.0142, -0.0195, -0.0193],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 26.564526081085205 second(s)) :
loss = 0.22013504803180695
item_cnt = 4328 | predict_cnt = 453 | true_predict_cnt = 270
precision_rate = 0.5960264900662252 | recall_rate = 0.062384473197781884 | F1_measure = 0.11294708220037648
-----
epoch 18 for theta 0 (Used time = 213.60128808021545 second(s)) :
training loss = 0.22741864621639252
tensor([[ 5.1279,  2.8248,  2.6219, ...,  0.0340,  0.0463,  0.0595],
        [-7.2663, -0.2467, -0.8127, ..., -0.0147, -0.0202, -0.0200],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.052388668060303 second(s)) :
loss = 0.207516148686409
item_cnt = 4328 | predict_cnt = 451 | true_predict_cnt = 269
precision_rate = 0.5964523281596452 | recall_rate = 0.06215341959334566 | F1_measure = 0.11257585268884705
-----
epoch 19 for theta 0 (Used time = 219.13091850280762 second(s)) :
training loss = 0.21397912502288818
tensor([[ 4.4842,  2.8411,  2.6473, ...,  0.0353,  0.0481,  0.0623],
        [-7.1798, -0.1908, -0.7947, ..., -0.0152, -0.0209, -0.0208],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.507184982299805 second(s)) :
loss = 0.19755281507968903
item_cnt = 4328 | predict_cnt = 490 | true_predict_cnt = 308
precision_rate = 0.6285714285714286 | recall_rate = 0.0711645101663586 | F1_measure = 0.1278538812785388
-----
epoch 20 for theta 0 (Used time = 214.63997769355774 second(s)) :
training loss = 0.20334655046463013
tensor([[ 3.8632,  2.8588,  2.6722, ...,  0.0366,  0.0499,  0.0652],
        [-7.0934, -0.1370, -0.7770, ..., -0.0156, -0.0215, -0.0215],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
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requires_grad=True)
Evaluation For theta 0 (Used time = 28.30453062057495 second(s)) :
loss = 0.18887855112552643
item_cnt = 4328 | predict_cnt = 490 | true_predict_cnt = 308
precision_rate = 0.6285714285714286 | recall_rate = 0.0711645101663586 | F1_measure = 0.1278538812785388
-----
epoch 21 for theta 0 (Used time = 217.42252326011658 second(s)) :
training loss = 0.1939479410648346
tensor([[ 3.2822,  2.8761,  2.6954, ...,  0.0379,  0.0516,  0.0680],
        [-7.0069, -0.0851, -0.7594, ..., -0.0161, -0.0222, -0.0222],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.52252173423767 second(s)) :
loss = 0.18138478696346283
item_cnt = 4328 | predict_cnt = 483 | true_predict_cnt = 302
precision_rate = 0.6252587991718427 | recall_rate = 0.06977818853974121 | F1_measure = 0.12554562461026814
-----
epoch 22 for theta 0 (Used time = 234.27600383758545 second(s)) :
training loss = 0.18579497933387756
tensor([[ 2.7661,  2.8926,  2.7171, ...,  0.0393,  0.0533,  0.0709],
        [-6.9205, -0.0349, -0.7419, ..., -0.0165, -0.0229, -0.0230],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.467198610305786 second(s)) :
loss = 0.17536509037017822
item_cnt = 4328 | predict_cnt = 482 | true_predict_cnt = 301
precision_rate = 0.6244813278008299 | recall_rate = 0.069547134935305 | F1_measure = 0.1251559251559252
-----
epoch 23 for theta 0 (Used time = 220.88012051582336 second(s)) :
training loss = 0.1791972666978836
tensor([[ 2.3438,  2.9083,  2.7371, ...,  0.0407,  0.0551,  0.0738],
        [-6.8342,  0.0136, -0.7245, ..., -0.0170, -0.0235, -0.0237],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.24821162223816 second(s)) :
loss = 0.17075543105602264
item_cnt = 4328 | predict_cnt = 482 | true_predict_cnt = 302
precision_rate = 0.6265560165975104 | recall_rate = 0.06977818853974121 | F1_measure = 0.12557172557172555
-----
epoch 24 for theta 0 (Used time = 222.59052515029907 second(s)) :
training loss = 0.17430514097213745
tensor([[ 2.0361,  2.9230,  2.7556, ...,  0.0421,  0.0568,  0.0767],
        [-6.7479,  0.0604, -0.7073, ..., -0.0174, -0.0242, -0.0244],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.81595492362976 second(s)) :
loss = 0.16746394336223602
item_cnt = 4328 | predict_cnt = 481 | true_predict_cnt = 303
precision_rate = 0.6299376299376299 | recall_rate = 0.07000924214417745 | F1_measure = 0.12601372426699936
-----
epoch 25 for theta 0 (Used time = 220.35994005203247 second(s)) :
training loss = 0.17059575021266937
tensor([[ 1.8376,  2.9369,  2.7726, ...,  0.0435,  0.0586,  0.0796],
        [-6.6618,  0.1056, -0.6902, ..., -0.0179, -0.0248, -0.0251],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.654907941818237 second(s)) :
loss = 0.16490402817726135
item_cnt = 4328 | predict_cnt = 479 | true_predict_cnt = 304
precision_rate = 0.6346555323590815 | recall_rate = 0.07024029574861368 | F1_measure = 0.1264822134387352
-----
epoch 26 for theta 0 (Used time = 225.4732837677002 second(s)) :
training loss = 0.16770833730697632
tensor([[ 1.7200,  2.9499,  2.7881, ...,  0.0450,  0.0604,  0.0826],
        [-6.5757,  0.1493, -0.6731, ..., -0.0183, -0.0255, -0.0259],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.852776765823364 second(s)) :
loss = 0.16280052065849304
item_cnt = 4328 | predict_cnt = 479 | true_predict_cnt = 305
precision_rate = 0.6367432150313153 | recall_rate = 0.07047134935304991 | F1_measure = 0.1268982733513626
-----
epoch 27 for theta 0 (Used time = 235.4158136844635 second(s)) :
training loss = 0.16542714834213257
tensor([[ 1.6506,  2.9624,  2.8025, ...,  0.0465,  0.0622,  0.0855],
        [-6.4898,  0.1915, -0.6562, ..., -0.0188, -0.0261, -0.0266],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 28.621153831481934 second(s)) :
loss = 0.1608845442533493
item_cnt = 4328 | predict_cnt = 479 | true_predict_cnt = 305
precision_rate = 0.6367432150313153 | recall_rate = 0.07047134935304991 | F1_measure = 0.1268982733513626
-----
epoch 28 for theta 0 (Used time = 244.1015224456787 second(s)) :
training loss = 0.163488507270813
tensor([[ 1.6066,  2.9746,  2.8158, ...,  0.0480,  0.0640,  0.0885],
        [-6.4039,  0.2321, -0.6395, ..., -0.0192, -0.0267, -0.0273],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
```

```
requires_grad=True)
Evaluation For theta 0 (Used time = 27.702624320983887 second(s)) :
loss = 0.15913012623786926
item_cnt = 4328 | predict_cnt = 480 | true_predict_cnt = 306
precision_rate = 0.6375 | recall_rate = 0.07070240295748614 | F1_measure = 0.12728785357737107
-----
epoch 29 for theta 0 (Used time = 242.02549529075623 second(s)) :
training loss = 0.16158612072467804
tensor([[ 1.5755,  2.9866,  2.8283, ...,  0.0495,  0.0657,  0.0914],
        [-6.3182,  0.2714, -0.6228, ..., -0.0197, -0.0273, -0.0280],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.60737895965576 second(s)) :
loss = 0.15751294791698456
item_cnt = 4328 | predict_cnt = 482 | true_predict_cnt = 307
precision_rate = 0.6369294605809128 | recall_rate = 0.07093345656192236 | F1_measure = 0.12765072765072763
-----
epoch 30 for theta 0 (Used time = 268.0859520435333 second(s)) :
training loss = 0.15991535782814026
tensor([[ 1.5513,  2.9986,  2.8401, ...,  0.0510,  0.0675,  0.0943],
        [-6.2326,  0.3092, -0.6062, ..., -0.0201, -0.0279, -0.0287],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.44702959060669 second(s)) :
loss = 0.1559741497039795
item_cnt = 4328 | predict_cnt = 480 | true_predict_cnt = 307
precision_rate = 0.6395833333333333 | recall_rate = 0.07093345656192236 | F1_measure = 0.12770382695507487
-----
epoch 31 for theta 0 (Used time = 265.24756383895874 second(s)) :
training loss = 0.1582353115081787
tensor([[ 1.5309,  3.0105,  2.8511, ...,  0.0525,  0.0692,  0.0972],
        [-6.1470,  0.3457, -0.5898, ..., -0.0205, -0.0285, -0.0295],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 32.334073305130005 second(s)) :
loss = 0.1545107364654541
item_cnt = 4328 | predict_cnt = 481 | true_predict_cnt = 307
precision_rate = 0.6382536382536382 | recall_rate = 0.07093345656192236 | F1_measure = 0.12767727178207527
-----
epoch 32 for theta 0 (Used time = 255.49175214767456 second(s)) :
training loss = 0.15677215158939362
tensor([[ 1.5131,  3.0224,  2.8617, ...,  0.0540,  0.0709,  0.1001],
        [-6.0616,  0.3811, -0.5734, ..., -0.0210, -0.0291, -0.0302],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 27.580384492874146 second(s)) :
loss = 0.15310874581336975
item_cnt = 4328 | predict_cnt = 494 | true_predict_cnt = 320
precision_rate = 0.6477732793522267 | recall_rate = 0.07393715341959335 | F1_measure = 0.13272501036914144
-----
epoch 33 for theta 0 (Used time = 237.28831100463867 second(s)) :
training loss = 0.1553216427564621
tensor([[ 1.4973,  3.0343,  2.8716, ...,  0.0554,  0.0726,  0.1030],
        [-5.9762,  0.4153, -0.5571, ..., -0.0214, -0.0297, -0.0309],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 26.47815752029419 second(s)) :
loss = 0.15177153050899506
item_cnt = 4328 | predict_cnt = 499 | true_predict_cnt = 326
precision_rate = 0.6533066132264529 | recall_rate = 0.07532347504621072 | F1_measure = 0.13507354464470686
-----
epoch 34 for theta 0 (Used time = 234.22476291656494 second(s)) :
training loss = 0.15388555824756622
tensor([[ 1.4829,  3.0461,  2.8811, ...,  0.0569,  0.0743,  0.1058],
        [-5.8910,  0.4486, -0.5408, ..., -0.0218, -0.0303, -0.0316],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 24.505183696746826 second(s)) :
loss = 0.15050461888313293
item_cnt = 4328 | predict_cnt = 501 | true_predict_cnt = 328
precision_rate = 0.654690618762475 | recall_rate = 0.07578558225508318 | F1_measure = 0.13584593083454133
-----
epoch 35 for theta 0 (Used time = 230.0509614944458 second(s)) :
training loss = 0.1525515466928482
tensor([[ 1.4697,  3.0579,  2.8902, ...,  0.0583,  0.0759,  0.1086],
        [-5.8058,  0.4808, -0.5246, ..., -0.0222, -0.0309, -0.0322],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 24.73924732208252 second(s)) :
loss = 0.14926499128341675
item_cnt = 4328 | predict_cnt = 500 | true_predict_cnt = 328
precision_rate = 0.656 | recall_rate = 0.07578558225508318 | F1_measure = 0.13587406793703397
-----
epoch 36 for theta 0 (Used time = 223.94239711761475 second(s)) :
training loss = 0.15132346749305725
tensor([[ 1.4576,  3.0697,  2.8988, ...,  0.0597,  0.0776,  0.1114],
        [-5.7208,  0.5121, -0.5085, ..., -0.0226, -0.0314, -0.0329],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
```

```
requires_grad=True)
Evaluation For theta 0 (Used time = 25.920310735702515 second(s)) :
loss = 0.14807195961475372
item_cnt = 4328 | predict_cnt = 497 | true_predict_cnt = 328
precision_rate = 0.6599597585513078 | recall_rate = 0.07578558225508318 | F1_measure = 0.13595854922279793
-----
epoch 37 for theta 0 (Used time = 223.60458755493164 second(s)) :
training loss = 0.1499517261981964
tensor([[ 1.4464,  3.0814,  2.9072, ...,  0.0611,  0.0792,  0.1142],
        [-5.6360,  0.5426, -0.4924, ..., -0.0231, -0.0320, -0.0336],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 24.978151082992554 second(s)) :
loss = 0.1469322144985199
item_cnt = 4328 | predict_cnt = 545 | true_predict_cnt = 377
precision_rate = 0.691743119266055 | recall_rate = 0.08710720887245842 | F1_measure = 0.15473014570080035
-----
epoch 38 for theta 0 (Used time = 216.18058061599731 second(s)) :
training loss = 0.14891424775123596
tensor([[ 1.4360,  3.0930,  2.9151, ...,  0.0625,  0.0808,  0.1170],
        [-5.5513,  0.5722, -0.4764, ..., -0.0235, -0.0325, -0.0343],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 25.58140754699707 second(s)) :
loss = 0.14582061767578125
item_cnt = 4328 | predict_cnt = 546 | true_predict_cnt = 379
precision_rate = 0.6941391941391941 | recall_rate = 0.08756931608133087 | F1_measure = 0.1555190808370948
-----
epoch 39 for theta 0 (Used time = 215.207421541214 second(s)) :
training loss = 0.14763614535331726
tensor([[ 1.4262,  3.1047,  2.9228, ...,  0.0639,  0.0824,  0.1197],
        [-5.4668,  0.6011, -0.4604, ..., -0.0239, -0.0331, -0.0349],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 0 (Used time = 24.26352548599243 second(s)) :
loss = 0.1447203904390335
item_cnt = 4328 | predict_cnt = 551 | true_predict_cnt = 384
precision_rate = 0.6969147005444646 | recall_rate = 0.08872458410351201 | F1_measure = 0.15740930518548882
-----
Initial theta 1:
tensor([[0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 0., 0.],
        [0., 0., 0., ..., 0., 0., 0.]], requires_grad=True)
-----
epoch 0 for theta 1 (Used time = 132.37612533569336 second(s)) :
training loss = 1.1049160957336426
tensor([[ 1.7389e+01,  2.9874e+00,  2.2065e+00, ...,  8.8155e-03,
          9.4404e-03,  1.0921e-02],
        [-8.5617e+00, -1.3937e+00, -1.0643e+00, ..., -4.4077e-03,
          -4.6709e-03, -5.1643e-03],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.924911737442017 second(s)) :
loss = 0.9852822422981262
item_cnt = 4650 | predict_cnt = 164 | true_predict_cnt = 163
precision_rate = 0.9939024390243902 | recall_rate = 0.03505376344086022 | F1_measure = 0.0677191524719568
-----
epoch 1 for theta 1 (Used time = 213.78375935554504 second(s)) :
training loss = 1.044768214225769
tensor([[ 1.6962e+01,  2.8625e+00,  2.1982e+00, ...,  1.0564e-02,
          1.1906e-02,  1.3594e-02],
        [-8.2165e+00, -1.2077e+00, -1.0026e+00, ..., -5.1643e-03,
          -5.6859e-03, -6.0554e-03],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 24.00076651573181 second(s)) :
loss = 0.914023756980896
item_cnt = 4650 | predict_cnt = 228 | true_predict_cnt = 219
precision_rate = 0.9605263157894737 | recall_rate = 0.04709677419354839 | F1_measure = 0.08979089790897908
-----
epoch 2 for theta 1 (Used time = 212.84979820251465 second(s)) :
training loss = 0.9693620204925537
tensor([[ 1.6536e+01,  2.7475e+00,  2.1891e+00, ...,  1.2257e-02,
          1.4292e-02,  1.6237e-02],
        [-7.8713e+00, -1.0260e+00, -9.4152e-01, ..., -5.8918e-03,
          -6.6645e-03, -6.9317e-03],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 24.104496717453003 second(s)) :
loss = 0.843370258808136
item_cnt = 4650 | predict_cnt = 307 | true_predict_cnt = 293
precision_rate = 0.9543973941368078 | recall_rate = 0.06301075268817204 | F1_measure = 0.11821666330441798
-----
epoch 3 for theta 1 (Used time = 213.58407330513 second(s)) :
training loss = 0.8945273756980896
tensor([[ 1.6109e+01,  2.6433e+00,  2.1796e+00, ...,  1.3902e-02,
          1.6607e-02,  1.8854e-02],
        [-7.5262e+00, -8.4959e-01, -8.8104e-01, ..., -6.5949e-03,
```

```
-7.6123e-03, -7.7970e-03],
[ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
 0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 24.311327934265137 second(s)) :
loss = 0.7732442021369934
item_cnt = 4650 | predict_cnt = 349 | true_predict_cnt = 333
precision_rate = 0.9541547277936963 | recall_rate = 0.07161290322580645 | F1_measure = 0.13322664532906578
-----
epoch 4 for theta 1 (Used time = 219.07213592529297 second(s)) :
training loss = 0.8202611207962036
tensor([[ 1.5682e+01,  2.5509e+00,  2.1700e+00,  ...,  1.5504e-02,
          1.8860e-02,  2.1449e-02],
        [-7.1810e+00, -6.7985e-01, -8.2131e-01,  ..., -7.2775e-03,
         -8.5341e-03, -8.6547e-03],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 27.207338094711304 second(s)) :
loss = 0.7036019563674927
item_cnt = 4650 | predict_cnt = 363 | true_predict_cnt = 344
precision_rate = 0.9476584022038568 | recall_rate = 0.07397849462365591 | F1_measure = 0.13724316776381407
-----
epoch 5 for theta 1 (Used time = 215.7189905643463 second(s)) :
training loss = 0.7465087175369263
tensor([[ 1.5255e+01,  2.4710e+00,  2.1603e+00,  ...,  1.7070e-02,
          2.1056e-02,  2.4025e-02],
        [-6.8358e+00, -5.1803e-01, -7.6243e-01,  ..., -7.9433e-03,
         -9.4335e-03, -9.5079e-03],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.83488368988037 second(s)) :
loss = 0.6343874931335449
item_cnt = 4650 | predict_cnt = 382 | true_predict_cnt = 363
precision_rate = 0.9502617801047121 | recall_rate = 0.07806451612903226 | F1_measure = 0.14427662957074724
-----
epoch 6 for theta 1 (Used time = 216.5994839668274 second(s)) :
training loss = 0.6731610894203186
tensor([[ 1.4829e+01,  2.4041e+00,  2.1508e+00,  ...,  1.8603e-02,
          2.3201e-02,  2.6586e-02],
        [-6.4906e+00, -3.6537e-01, -7.0450e-01,  ..., -8.5951e-03,
         -1.0314e-02, -1.0359e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.30704426765442 second(s)) :
loss = 0.5655343532562256
item_cnt = 4650 | predict_cnt = 402 | true_predict_cnt = 367
precision_rate = 0.9129353233830846 | recall_rate = 0.0789247311827957 | F1_measure = 0.14528899445764054
-----
epoch 7 for theta 1 (Used time = 217.0805389881134 second(s)) :
training loss = 0.6001386046409607
tensor([[ 1.4402e+01,  2.3501e+00,  2.1416e+00,  ...,  2.0107e-02,
          2.5298e-02,  2.9133e-02],
        [-6.1454e+00, -2.2284e-01, -6.4758e-01,  ..., -9.2355e-03,
         -1.1177e-02, -1.1211e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.979852437973022 second(s)) :
loss = 0.4970608651638031
item_cnt = 4650 | predict_cnt = 473 | true_predict_cnt = 398
precision_rate = 0.8414376321353065 | recall_rate = 0.08559139784946236 | F1_measure = 0.1553777083739996
-----
epoch 8 for theta 1 (Used time = 216.9141387939453 second(s)) :
training loss = 0.5276391506195068
tensor([[ 1.3975e+01,  2.3087e+00,  2.1329e+00,  ...,  2.1585e-02,
          2.7352e-02,  3.1668e-02],
        [-5.8002e+00, -9.0994e-02, -5.9176e-01,  ..., -9.8669e-03,
         -1.2025e-02, -1.2066e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 24.24343514442444 second(s)) :
loss = 0.4291817545890808
item_cnt = 4650 | predict_cnt = 566 | true_predict_cnt = 434
precision_rate = 0.7667844522968198 | recall_rate = 0.09333333333333334 | F1_measure = 0.16641104294478526
-----
epoch 9 for theta 1 (Used time = 217.510737657547 second(s)) :
training loss = 0.4556368887424469
tensor([[ 1.3549e+01,  2.2791e+00,  2.1247e+00,  ...,  2.3042e-02,
          2.9368e-02,  3.4201e-02],
        [-5.4550e+00,  2.9860e-02, -5.3721e-01,  ..., -1.0494e-02,
         -1.2862e-02, -1.2932e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00,  ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.523536443710327 second(s)) :
loss = 0.3642371892929077
item_cnt = 4650 | predict_cnt = 611 | true_predict_cnt = 443
precision_rate = 0.7250409165302782 | recall_rate = 0.09526881720430108 | F1_measure = 0.16840904770956092
-----
epoch 10 for theta 1 (Used time = 220.0726442337036 second(s)) :
training loss = 0.3865485191345215
```

```
tensor([[ 1.3122e+01,  2.2631e+00,  2.1188e+00, ...,  2.4514e-02,
          3.1364e-02,  3.6818e-02],
        [-5.1099e+00,  1.3715e-01, -4.8537e-01, ..., -1.1148e-02,
          -1.3703e-02, -1.3893e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 26.57707381248474 second(s)) :
loss = 0.3179995119571686
item_cnt = 4650 | predict_cnt = 762 | true_predict_cnt = 570
precision_rate = 0.7480314960629921 | recall_rate = 0.12258064516129032 | F1_measure = 0.2106430155210643
-----
epoch 11 for theta 1 (Used time = 218.81615591049194 second(s)) :
training loss = 0.3361962139606476
tensor([[ 1.2695e+01,  2.2830e+00,  2.1264e+00, ...,  2.6179e-02,
          3.3431e-02,  3.9989e-02],
        [-4.7647e+00,  2.0771e-01, -4.4733e-01, ..., -1.2007e-02,
          -1.4638e-02, -1.5414e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 23.888519287109375 second(s)) :
loss = 0.2895579934120178
item_cnt = 4650 | predict_cnt = 726 | true_predict_cnt = 570
precision_rate = 0.7851239669421488 | recall_rate = 0.12258064516129032 | F1_measure = 0.21205357142857142
-----
epoch 12 for theta 1 (Used time = 221.5524446964264 second(s)) :
training loss = 0.3065163195133209
tensor([[12.2686,  2.3104,  2.1364, ...,  0.0279,  0.0355,  0.0432],
        [-4.4195,  0.2671, -0.4130, ..., -0.0129, -0.0156, -0.0170],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 23.817530155181885 second(s)) :
loss = 0.26218441128730774
item_cnt = 4650 | predict_cnt = 681 | true_predict_cnt = 569
precision_rate = 0.8355359765051396 | recall_rate = 0.12236559139784946 | F1_measure = 0.2134683924216845
-----
epoch 13 for theta 1 (Used time = 221.18845987319946 second(s)) :
training loss = 0.2782798409461975
tensor([[11.8419,  2.3343,  2.1441, ...,  0.0295,  0.0375,  0.0463],
        [-4.0743,  0.3259, -0.3777, ..., -0.0137, -0.0165, -0.0185],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 23.59265112876892 second(s)) :
loss = 0.24057689309120178
item_cnt = 4650 | predict_cnt = 844 | true_predict_cnt = 750
precision_rate = 0.8886255924170616 | recall_rate = 0.16129032258064516 | F1_measure = 0.27302511831088455
-----
epoch 14 for theta 1 (Used time = 217.39048433303833 second(s)) :
training loss = 0.255169153213501
tensor([[11.4152,  2.3741,  2.1572, ...,  0.0311,  0.0394,  0.0495],
        [-3.7291,  0.3655, -0.3489, ..., -0.0146, -0.0174, -0.0201],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 23.219324588775635 second(s)) :
loss = 0.22852741181850433
item_cnt = 4650 | predict_cnt = 875 | true_predict_cnt = 816
precision_rate = 0.9325714285714286 | recall_rate = 0.17548387096774193 | F1_measure = 0.29538461538461536
-----
epoch 15 for theta 1 (Used time = 216.96445965766907 second(s)) :
training loss = 0.2421875
tensor([[10.9885,  2.4198,  2.1720, ...,  0.0326,  0.0413,  0.0524],
        [-3.3839,  0.3949, -0.3231, ..., -0.0154, -0.0182, -0.0214],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 23.133522987365723 second(s)) :
loss = 0.22194035351276398
item_cnt = 4650 | predict_cnt = 936 | true_predict_cnt = 888
precision_rate = 0.9487179487179487 | recall_rate = 0.19096774193548388 | F1_measure = 0.317937701396348
-----
epoch 16 for theta 1 (Used time = 219.8585398197174 second(s)) :
training loss = 0.23490488529205322
tensor([[10.5618,  2.4640,  2.1878, ...,  0.0341,  0.0432,  0.0553],
        [-3.0388,  0.4216, -0.2995, ..., -0.0162, -0.0191, -0.0228],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 23.663206815719604 second(s)) :
loss = 0.21534039080142975
item_cnt = 4650 | predict_cnt = 928 | true_predict_cnt = 893
precision_rate = 0.9622844827586207 | recall_rate = 0.19204301075268818 | F1_measure = 0.3201864467551094
-----
epoch 17 for theta 1 (Used time = 227.11667346954346 second(s)) :
training loss = 0.22788190841674805
tensor([[10.1351,  2.4972,  2.2012, ...,  0.0356,  0.0450,  0.0581],
        [-2.6936,  0.4551, -0.2747, ..., -0.0169, -0.0199, -0.0241],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 25.391072750091553 second(s)) :
loss = 0.2093411237001419
item_cnt = 4650 | predict_cnt = 939 | true_predict_cnt = 905
```


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precision_rate = 0.9637912673056444 | recall_rate = 0.19462365591397848 | F1_measure = 0.32385042046877793

epoch 18 for theta 1 (Used time = 229.13387298583984 second(s)) :
training loss = 0.22109441459178925
tensor([[9.7085, 2.5330, 2.2166, ..., 0.0371, 0.0468, 0.0609],
 [-2.3484, 0.4830, -0.2531, ..., -0.0177, -0.0207, -0.0254],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 26.753280878067017 second(s)) :
loss = 0.20296470820903778
item_cnt = 4650 | predict_cnt = 940 | true_predict_cnt = 907
precision_rate = 0.9648936170212766 | recall_rate = 0.19505376344086023 | F1_measure = 0.3245080500894455

epoch 19 for theta 1 (Used time = 249.17433333396912 second(s)) :
training loss = 0.2144201695919037
tensor([[9.2818, 2.5571, 2.2281, ..., 0.0385, 0.0485, 0.0636],
 [-2.0032, 0.5195, -0.2287, ..., -0.0184, -0.0215, -0.0266],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 31.074796676635742 second(s)) :
loss = 0.1974629908800125
item_cnt = 4650 | predict_cnt = 953 | true_predict_cnt = 919
precision_rate = 0.9643231899265478 | recall_rate = 0.19763440860215054 | F1_measure = 0.3280385507763698

epoch 20 for theta 1 (Used time = 263.2884306907654 second(s)) :
training loss = 0.20798133313655853
tensor([[8.8553, 2.5907, 2.2440, ..., 0.0399, 0.0502, 0.0663],
 [-1.6581, 0.5443, -0.2095, ..., -0.0192, -0.0223, -0.0279],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 28.980506658554077 second(s)) :
loss = 0.19117940962314606
item_cnt = 4650 | predict_cnt = 956 | true_predict_cnt = 924
precision_rate = 0.9665271966527197 | recall_rate = 0.19870967741935483 | F1_measure = 0.32964680699250803

epoch 21 for theta 1 (Used time = 257.4906919002533 second(s)) :
training loss = 0.20160986483097076
tensor([[8.4290, 2.6066, 2.2531, ..., 0.0412, 0.0519, 0.0689],
 [-1.3130, 0.5839, -0.1847, ..., -0.0199, -0.0230, -0.0290],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 27.875744342803955 second(s)) :
loss = 0.18631842732429504
item_cnt = 4650 | predict_cnt = 982 | true_predict_cnt = 948
precision_rate = 0.9653767820773931 | recall_rate = 0.20387096774193547 | F1_measure = 0.33664772727272724

epoch 22 for theta 1 (Used time = 258.93439531326294 second(s)) :
training loss = 0.1954767107963562
tensor([[8.0030, 2.6428, 2.2707, ..., 0.0426, 0.0536, 0.0716],
 [-0.9680, 0.6018, -0.1689, ..., -0.0206, -0.0238, -0.0303],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 29.89302897453308 second(s)) :
loss = 0.18003883957862854
item_cnt = 4650 | predict_cnt = 972 | true_predict_cnt = 942
precision_rate = 0.9691358024691358 | recall_rate = 0.20258064516129032 | F1_measure = 0.33511205976520814

epoch 23 for theta 1 (Used time = 250.420307636261 second(s)) :
training loss = 0.18961471319198608
tensor([[7.5777, 2.6489, 2.2762, ..., 0.0439, 0.0552, 0.0741],
 [-0.6233, 0.6471, -0.1422, ..., -0.0213, -0.0245, -0.0314],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 30.37416386604309 second(s)) :
loss = 0.17612142860889435
item_cnt = 4650 | predict_cnt = 1010 | true_predict_cnt = 976
precision_rate = 0.9663366336633663 | recall_rate = 0.20989247311827958 | F1_measure = 0.3448763250883392

epoch 24 for theta 1 (Used time = 261.5141558647156 second(s)) :
training loss = 0.18380221724510193
tensor([[7.1541, 2.6934, 2.2975, ..., 0.0452, 0.0568, 0.0768],
 [-0.2799, 0.6530, -0.1318, ..., -0.0220, -0.0253, -0.0327],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 28.778440237045288 second(s)) :
loss = 0.17013658583164215
item_cnt = 4650 | predict_cnt = 975 | true_predict_cnt = 948
precision_rate = 0.9723076923076923 | recall_rate = 0.20387096774193547 | F1_measure = 0.3370666666666667

epoch 25 for theta 1 (Used time = 264.7657186985016 second(s)) :
training loss = 0.17902444303035736
tensor([[6.7326, 2.6856, 2.2976, ..., 0.0465, 0.0583, 0.0791],
 [0.0620, 0.7084, -0.1014, ..., -0.0226, -0.0259, -0.0336],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 30.247025966644287 second(s)) :
loss = 0.16730380058288574
item_cnt = 4650 | predict_cnt = 1034 | true_predict_cnt = 1000

```
precision_rate = 0.9671179883945842 | recall_rate = 0.21505376344086022 | F1_measure = 0.3518648838845883
-----
epoch 26 for theta 1 (Used time = 255.08168935775757 second(s)) :
training loss = 0.17343837022781372
tensor([[ 6.3187,  2.7451,  2.3254, ...,  0.0478,  0.0599,  0.0818],
        [ 0.3974,  0.6964, -0.0986, ..., -0.0234, -0.0267, -0.0350],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 27.863855361938477 second(s)) :
loss = 0.16277852654457092
item_cnt = 4650 | predict_cnt = 961 | true_predict_cnt = 935
precision_rate = 0.9729448491155047 | recall_rate = 0.2010752688172043 | F1_measure = 0.33327392621636076
-----
epoch 27 for theta 1 (Used time = 260.2558584213257 second(s)) :
training loss = 0.1712401658296585
tensor([[ 5.9099,  2.7200,  2.3186, ...,  0.0490,  0.0614,  0.0840],
        [ 0.7291,  0.7654, -0.0631, ..., -0.0240, -0.0273, -0.0358],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 33.28470587730408 second(s)) :
loss = 0.15923964977264404
item_cnt = 4650 | predict_cnt = 1091 | true_predict_cnt = 1056
precision_rate = 0.9679193400549955 | recall_rate = 0.2270967741935484 | F1_measure = 0.3678801602508274
-----
epoch 28 for theta 1 (Used time = 261.1032347679138 second(s)) :
training loss = 0.16390758752822876
tensor([[ 5.5304,  2.7919,  2.3516, ...,  0.0504,  0.0630,  0.0868],
        [ 1.0337,  0.7384, -0.0668, ..., -0.0248, -0.0281, -0.0373],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 34.398916482925415 second(s)) :
loss = 0.15710975229740143
item_cnt = 4650 | predict_cnt = 986 | true_predict_cnt = 963
precision_rate = 0.9766734279918864 | recall_rate = 0.20709677419354838 | F1_measure = 0.34173172462739526
-----
epoch 29 for theta 1 (Used time = 290.7333331108093 second(s)) :
training loss = 0.16507381200790405
tensor([[ 5.1547,  2.7547,  2.3401, ...,  0.0515,  0.0644,  0.0889],
        [ 1.3372,  0.8166, -0.0278, ..., -0.0253, -0.0287, -0.0381],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 30.24304437637329 second(s)) :
loss = 0.15104418992996216
item_cnt = 4650 | predict_cnt = 1150 | true_predict_cnt = 1115
precision_rate = 0.9695652173913043 | recall_rate = 0.23978494623655913 | F1_measure = 0.38448275862068965
-----
epoch 30 for theta 1 (Used time = 279.1278967857361 second(s)) :
training loss = 0.15487860143184662
tensor([[ 4.8706,  2.8244,  2.3720, ...,  0.0529,  0.0660,  0.0917],
        [ 1.5533,  0.7893, -0.0316, ..., -0.0261, -0.0294, -0.0395],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 28.79572319984436 second(s)) :
loss = 0.1502918154001236
item_cnt = 4650 | predict_cnt = 1043 | true_predict_cnt = 1020
precision_rate = 0.9779482262703739 | recall_rate = 0.21935483870967742 | F1_measure = 0.35833479711926924
-----
epoch 31 for theta 1 (Used time = 247.63383173942566 second(s)) :
training loss = 0.157485693693161
tensor([[ 4.5680,  2.7851,  2.3593, ...,  0.0540,  0.0674,  0.0938],
        [ 1.7915,  0.8674,  0.0073, ..., -0.0266, -0.0301, -0.0404],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 26.30964159965515 second(s)) :
loss = 0.14614850282669067
item_cnt = 4650 | predict_cnt = 1170 | true_predict_cnt = 1136
precision_rate = 0.9709401709401709 | recall_rate = 0.2443010752688172 | F1_measure = 0.39037800687285223
-----
epoch 32 for theta 1 (Used time = 275.4039008617401 second(s)) :
training loss = 0.1491941511631012
tensor([[ 4.4809e+00,  2.8527e+00,  2.3901e+00, ...,  5.5420e-02,
          6.9010e-02,  9.6680e-02],
        [ 1.8201e+00,  8.3994e-01,  3.6328e-03, ..., -2.7524e-02,
          -3.0868e-02, -4.1875e-02],
        [ 0.0000e+00,  0.0000e+00,  0.0000e+00, ...,  0.0000e+00,
          0.0000e+00,  0.0000e+00]], requires_grad=True)
Evaluation For theta 1 (Used time = 32.55026435852051 second(s)) :
loss = 0.14760009944438934
item_cnt = 4650 | predict_cnt = 1056 | true_predict_cnt = 1033
precision_rate = 0.978219696969697 | recall_rate = 0.2221505376344086 | F1_measure = 0.36207500876270593
-----
epoch 33 for theta 1 (Used time = 292.5494542121887 second(s)) :
training loss = 0.15460145473480225
tensor([[ 4.2563,  2.8097,  2.3755, ...,  0.0566,  0.0704,  0.0988],
        [ 1.9872,  0.9197,  0.0435, ..., -0.0281, -0.0315, -0.0427],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
        requires_grad=True)
Evaluation For theta 1 (Used time = 29.02236843109131 second(s)) :
```

loss = 0.14324375987052917
item_cnt = 4650 | predict_cnt = 1197 | true_predict_cnt = 1165
precision_rate = 0.9732664995822891 | recall_rate = 0.25053763440860216 | F1_measure = 0.3984949546776125

epoch 34 for theta 1 (Used time = 257.59164690971375 second(s)) :
training loss = 0.14594678580760956
tensor([[4.3409, 2.8737, 2.4039, ..., 0.0580, 0.0720, 0.1016],
 [1.8511, 0.8941, 0.0411, ..., -0.0290, -0.0323, -0.0442],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 30.078388452529907 second(s)) :
loss = 0.14536039531230927
item_cnt = 4650 | predict_cnt = 1067 | true_predict_cnt = 1044
precision_rate = 0.9784442361761949 | recall_rate = 0.22451612903225807 | F1_measure = 0.365226517404233

epoch 35 for theta 1 (Used time = 294.14281272888184 second(s)) :
training loss = 0.15222176909446716
tensor([[4.1420, 2.8301, 2.3886, ..., 0.0592, 0.0734, 0.1037],
 [1.9953, 0.9728, 0.0808, ..., -0.0296, -0.0330, -0.0451],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 33.30882024765015 second(s)) :
loss = 0.14099028706550598
item_cnt = 4650 | predict_cnt = 1235 | true_predict_cnt = 1203
precision_rate = 0.974089068825911 | recall_rate = 0.25870967741935486 | F1_measure = 0.4088360237892948

epoch 36 for theta 1 (Used time = 280.77864933013916 second(s)) :
training loss = 0.14376577734947205
tensor([[4.2760, 2.8956, 2.4169, ..., 0.0607, 0.0750, 0.1065],
 [1.8123, 0.9442, 0.0777, ..., -0.0305, -0.0338, -0.0466],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 31.702901124954224 second(s)) :
loss = 0.14324577152729034
item_cnt = 4650 | predict_cnt = 1087 | true_predict_cnt = 1064
precision_rate = 0.9788408463661453 | recall_rate = 0.22881720430107527 | F1_measure = 0.37092557085584804

epoch 37 for theta 1 (Used time = 256.823575258255 second(s)) :
training loss = 0.14999616146087646
tensor([[4.0788, 2.8515, 2.4011, ..., 0.0618, 0.0764, 0.1085],
 [1.9560, 1.0218, 0.1171, ..., -0.0311, -0.0344, -0.0474],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 27.42533802986145 second(s)) :
loss = 0.13886398077011108
item_cnt = 4650 | predict_cnt = 1257 | true_predict_cnt = 1221
precision_rate = 0.9713603818615751 | recall_rate = 0.2625806451612903 | F1_measure = 0.41340782122905023

epoch 38 for theta 1 (Used time = 244.48444533348083 second(s)) :
training loss = 0.14152739942073822
tensor([[4.2211, 2.9193, 2.4301, ..., 0.0632, 0.0780, 0.1113],
 [1.7660, 0.9893, 0.1126, ..., -0.0320, -0.0353, -0.0489],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 27.95373249053955 second(s)) :
loss = 0.14128418266773224
item_cnt = 4650 | predict_cnt = 1112 | true_predict_cnt = 1089
precision_rate = 0.97931654676259 | recall_rate = 0.23419354838709677 | F1_measure = 0.37799375216938563

epoch 39 for theta 1 (Used time = 271.9508955478668 second(s)) :
training loss = 0.14803476631641388
tensor([[4.0226, 2.8744, 2.4137, ..., 0.0643, 0.0793, 0.1133],
 [1.9118, 1.0664, 0.1517, ..., -0.0326, -0.0359, -0.0497],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 1 (Used time = 32.63332533836365 second(s)) :
loss = 0.1368771195411682
item_cnt = 4650 | predict_cnt = 1273 | true_predict_cnt = 1236
precision_rate = 0.9709347996857817 | recall_rate = 0.2658064516129032 | F1_measure = 0.41735606955934496

Initial theta 2:
tensor([[0., 0., 0., ..., 0., 0., 0.],
 [0., 0., 0., ..., 0., 0., 0.],
 [0., 0., 0., ..., 0., 0., 0.]], requires_grad=True)

epoch 0 for theta 2 (Used time = 169.76303887367249 second(s)) :
training loss = 1.1049160957336426
tensor([[1.7178e+01, 3.0879e+00, 2.2512e+00, ..., 8.8155e-03,
 9.4404e-03, 1.1907e-02],
 [-8.6574e+00, -1.4955e+00, -1.1091e+00, ..., -4.4077e-03,
 -4.7696e-03, -5.9537e-03],
 [0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 29.739378929138184 second(s)) :
loss = 1.9970593452453613
item_cnt = 9578 | predict_cnt = 63 | true_predict_cnt = 62
precision_rate = 0.9841269841269841 | recall_rate = 0.006473167675923992 | F1_measure = 0.012861736334405145

epoch 1 for theta 2 (Used time = 255.59080624580383 second(s)) :
training loss = 1.0841035842895508
tensor([[1.6541e+01, 3.0553e+00, 2.2840e+00, ..., 1.0556e-02,
1.1889e-02, 1.5545e-02],
[-8.4073e+00, -1.4087e+00, -1.0908e+00, ..., -5.1606e-03,
-5.8707e-03, -7.6217e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 26.857120275497437 second(s)) :
loss = 1.8554531335830688
item_cnt = 9578 | predict_cnt = 101 | true_predict_cnt = 99
precision_rate = 0.9801980198019802 | recall_rate = 0.01033618709542702 | F1_measure = 0.020456658745738196

epoch 2 for theta 2 (Used time = 272.3969347476959 second(s)) :
training loss = 1.0103864669799805
tensor([[1.5904e+01, 3.0234e+00, 2.3130e+00, ..., 1.2233e-02,
1.4242e-02, 1.9130e-02],
[-8.1571e+00, -1.3228e+00, -1.0717e+00, ..., -5.8805e-03,
-6.9226e-03, -9.2620e-03],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 28.799263954162598 second(s)) :
loss = 1.7145273685455322
item_cnt = 9578 | predict_cnt = 136 | true_predict_cnt = 123
precision_rate = 0.9044117647058824 | recall_rate = 0.012841929421591146 | F1_measure = 0.0253242742433601

epoch 3 for theta 2 (Used time = 281.2812328338623 second(s)) :
training loss = 0.9372208118438721
tensor([[1.5267e+01, 2.9925e+00, 2.3387e+00, ..., 1.3854e-02,
1.6510e-02, 2.2666e-02],
[-7.9070e+00, -1.2378e+00, -1.0521e+00, ..., -6.5718e-03,
-7.9315e-03, -1.0878e-02],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 27.955901622772217 second(s)) :
loss = 1.5741766691207886
item_cnt = 9578 | predict_cnt = 181 | true_predict_cnt = 133
precision_rate = 0.7348066298342542 | recall_rate = 0.013885988724159533 | F1_measure = 0.027256891074905216

epoch 4 for theta 2 (Used time = 264.5281603336334 second(s)) :
training loss = 0.8645499348640442
tensor([[1.4630e+01, 2.9627e+00, 2.3617e+00, ..., 1.5424e-02,
1.8701e-02, 2.6157e-02],
[-7.6568e+00, -1.1539e+00, -1.0318e+00, ..., -7.2380e-03,
-8.9021e-03, -1.2472e-02],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 29.238382816314697 second(s)) :
loss = 1.4343851804733276
item_cnt = 9578 | predict_cnt = 188 | true_predict_cnt = 138
precision_rate = 0.7340425531914894 | recall_rate = 0.014408018375443725 | F1_measure = 0.028261314765513003

epoch 5 for theta 2 (Used time = 276.60064005851746 second(s)) :
training loss = 0.7923775315284729
tensor([[1.3994e+01, 2.9340e+00, 2.3822e+00, ..., 1.6948e-02,
2.0822e-02, 2.9606e-02],
[-7.4067e+00, -1.0711e+00, -1.0112e+00, ..., -7.8821e-03,
-9.8386e-03, -1.4047e-02],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 31.31295156478882 second(s)) :
loss = 1.294925570487976
item_cnt = 9578 | predict_cnt = 204 | true_predict_cnt = 147
precision_rate = 0.7205882352941176 | recall_rate = 0.015347671747755273 | F1_measure = 0.03005520343488039

epoch 6 for theta 2 (Used time = 283.6715929508209 second(s)) :
training loss = 0.7204305529594421
tensor([[1.3357e+01, 2.9067e+00, 2.4007e+00, ..., 1.8431e-02,
2.2880e-02, 3.3018e-02],
[-7.1565e+00, -9.8959e-01, -9.9018e-01, ..., -8.5068e-03,
-1.0745e-02, -1.5605e-02],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 28.784046173095703 second(s)) :
loss = 1.1559491157531738
item_cnt = 9578 | predict_cnt = 214 | true_predict_cnt = 152
precision_rate = 0.7102803738317757 | recall_rate = 0.015869701399039465 | F1_measure = 0.03104575163398693

epoch 7 for theta 2 (Used time = 260.04584217071533 second(s)) :
training loss = 0.6488891839981079
tensor([[1.2720e+01, 2.8808e+00, 2.4174e+00, ..., 1.9877e-02,
2.4880e-02, 3.6393e-02],
[-6.9063e+00, -9.0935e-01, -9.6887e-01, ..., -9.1141e-03,
-1.1623e-02, -1.7147e-02],
[0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 30.618345260620117 second(s)) :
loss = 1.0172820091247559

件main
item_cnt = 9578 | predict_cnt = 220 | true_predict_cnt = 155
precision_rate = 0.7045454545454546 | recall_rate = 0.01618291918980998 | F1_measure = 0.031639110022453565

epoch 8 for theta 2 (Used time = 263.65212988853455 second(s)) :
training loss = 0.5776454210281372
tensor([[1.2083e+01, 2.8563e+00, 2.4326e+00, ..., 2.1289e-02,
 2.6828e-02, 3.9736e-02],
 [-6.6562e+00, -8.3052e-01, -9.4730e-01, ..., -9.7059e-03,
 -1.2477e-02, -1.8675e-02],
 [0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 30.166563987731934 second(s)) :
loss = 0.8792572617530823
item_cnt = 9578 | predict_cnt = 555 | true_predict_cnt = 182
precision_rate = 0.3279279279279279 | recall_rate = 0.019001879306744622 | F1_measure = 0.0359222342840225

epoch 9 for theta 2 (Used time = 278.9441931247711 second(s)) :
training loss = 0.5068246126174927
tensor([[1.1446e+01, 2.8336e+00, 2.4464e+00, ..., 2.2671e-02,
 2.8727e-02, 4.3053e-02],
 [-6.4060e+00, -7.5317e-01, -9.2552e-01, ..., -1.0284e-02,
 -1.3308e-02, -2.0190e-02],
 [0.0000e+00, 0.0000e+00, 0.0000e+00, ..., 0.0000e+00,
 0.0000e+00, 0.0000e+00]], requires_grad=True)
Evaluation For theta 2 (Used time = 32.668736934661865 second(s)) :
loss = 0.7426062822341919
item_cnt = 9578 | predict_cnt = 566 | true_predict_cnt = 187
precision_rate = 0.3303886925795053 | recall_rate = 0.019523908958028816 | F1_measure = 0.03686908517350158

epoch 10 for theta 2 (Used time = 263.08151173591614 second(s)) :
training loss = 0.4369361102581024
tensor([[10.8097, 2.8130, 2.4596, ..., 0.0240, 0.0306, 0.0464],
 [-6.1559, -0.6774, -0.9036, ..., -0.0109, -0.0141, -0.0217],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 2 (Used time = 27.04271936416626 second(s)) :
loss = 0.6106961965560913
item_cnt = 9578 | predict_cnt = 611 | true_predict_cnt = 194
precision_rate = 0.31751227495908346 | recall_rate = 0.020254750469826686 | F1_measure = 0.03808028265776819

epoch 11 for theta 2 (Used time = 254.67931175231934 second(s)) :
training loss = 0.3703800439834595
tensor([[10.1729, 2.7962, 2.4739, ..., 0.0254, 0.0324, 0.0497],
 [-5.9057, -0.6035, -0.8817, ..., -0.0114, -0.0149, -0.0232],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 2 (Used time = 27.79633355140686 second(s)) :
loss = 0.4949367344379425
item_cnt = 9578 | predict_cnt = 650 | true_predict_cnt = 194
precision_rate = 0.29846153846153844 | recall_rate = 0.020254750469826686 | F1_measure = 0.037935080172076655

epoch 12 for theta 2 (Used time = 268.813871383667 second(s)) :
training loss = 0.31445688009262085
tensor([[9.5362, 2.7883, 2.4943, ..., 0.0269, 0.0343, 0.0534],
 [-5.6556, -0.5328, -0.8607, ..., -0.0120, -0.0157, -0.0248],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 2 (Used time = 28.781143188476562 second(s)) :
loss = 0.4169236123561859
item_cnt = 9578 | predict_cnt = 809 | true_predict_cnt = 340
precision_rate = 0.42027194066749074 | recall_rate = 0.03549801628732512 | F1_measure = 0.06546644844517185

epoch 13 for theta 2 (Used time = 238.79808688163757 second(s)) :
training loss = 0.27960166335105896
tensor([[8.8994, 2.7945, 2.5240, ..., 0.0285, 0.0362, 0.0573],
 [-5.4054, -0.4695, -0.8428, ..., -0.0126, -0.0165, -0.0265],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 2 (Used time = 25.74439024925232 second(s)) :
loss = 0.3857366442680359
item_cnt = 9578 | predict_cnt = 1004 | true_predict_cnt = 578
precision_rate = 0.5756972111553785 | recall_rate = 0.060346627688452704 | F1_measure = 0.10924210924210924

epoch 14 for theta 2 (Used time = 238.63837933540344 second(s)) :
training loss = 0.26376816630363464
tensor([[8.2628, 2.8072, 2.5535, ..., 0.0300, 0.0380, 0.0612],
 [-5.1553, -0.4151, -0.8277, ..., -0.0133, -0.0173, -0.0282],
 [0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
 requires_grad=True)
Evaluation For theta 2 (Used time = 26.25037717819214 second(s)) :
loss = 0.3758035898208618
item_cnt = 9578 | predict_cnt = 968 | true_predict_cnt = 551
precision_rate = 0.5692148760330579 | recall_rate = 0.05752766757151806 | F1_measure = 0.10449459510714962

epoch 15 for theta 2 (Used time = 227.57622289657593 second(s)) :
training loss = 0.25336724519729614
tensor([[7.6266, 2.8153, 2.5775, ..., 0.0315, 0.0397, 0.0649],
 [-4.9051, -0.3599, -0.8112, ..., -0.0139, -0.0181, -0.0298],

```
[ 0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 25.413736581802368 second(s)) :
loss = 0.3578311502933502
item_cnt = 9578 | predict_cnt = 698 | true_predict_cnt = 586
precision_rate = 0.839541547277937 | recall_rate = 0.061181875130507414 | F1_measure = 0.11405216037368625
-----
epoch 16 for theta 2 (Used time = 228.62103390693665 second(s)) :
training loss = 0.24334445595741272
tensor([[ 6.9914,  2.8270,  2.6020, ...,  0.0329,  0.0415,  0.0686],
        [-4.6549, -0.3090, -0.7957, ..., -0.0145, -0.0188, -0.0315],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 25.131959199905396 second(s)) :
loss = 0.3462233245372772
item_cnt = 9578 | predict_cnt = 689 | true_predict_cnt = 577
precision_rate = 0.8374455732946299 | recall_rate = 0.060242221758195866 | F1_measure = 0.11239894808610111
-----
epoch 17 for theta 2 (Used time = 230.1924705505371 second(s)) :
training loss = 0.2335473895072937
tensor([[ 6.3575,  2.8355,  2.6231, ...,  0.0343,  0.0432,  0.0721],
        [-4.4048, -0.2574, -0.7790, ..., -0.0150, -0.0195, -0.0330],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 26.21764898300171 second(s)) :
loss = 0.3293652832508087
item_cnt = 9578 | predict_cnt = 731 | true_predict_cnt = 621
precision_rate = 0.8495212038303693 | recall_rate = 0.06483608268949677 | F1_measure = 0.12047725288582792
-----
epoch 18 for theta 2 (Used time = 230.40411639213562 second(s)) :
training loss = 0.2240557074546814
tensor([[ 5.7270,  2.8472,  2.6444, ...,  0.0357,  0.0448,  0.0757],
        [-4.1546, -0.2097, -0.7631, ..., -0.0156, -0.0202, -0.0346],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 25.130116939544678 second(s)) :
loss = 0.31726449728012085
item_cnt = 9578 | predict_cnt = 728 | true_predict_cnt = 618
precision_rate = 0.8489010989010989 | recall_rate = 0.06452286489872625 | F1_measure = 0.11993013778381524
-----
epoch 19 for theta 2 (Used time = 227.28232765197754 second(s)) :
training loss = 0.2148582935333252
tensor([[ 5.1016,  2.8565,  2.6631, ...,  0.0371,  0.0465,  0.0792],
        [-3.9045, -0.1616, -0.7464, ..., -0.0162, -0.0209, -0.0362],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.729698657989502 second(s)) :
loss = 0.3013277053833008
item_cnt = 9578 | predict_cnt = 745 | true_predict_cnt = 635
precision_rate = 0.8523489932885906 | recall_rate = 0.06629776571309251 | F1_measure = 0.12302625205851013
-----
epoch 20 for theta 2 (Used time = 240.0606141090393 second(s)) :
training loss = 0.20594841241836548
tensor([[ 4.4865,  2.8684,  2.6819, ...,  0.0385,  0.0481,  0.0827],
        [-3.6546, -0.1169, -0.7302, ..., -0.0167, -0.0216, -0.0377],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 26.346376419067383 second(s)) :
loss = 0.2893119752407074
item_cnt = 9578 | predict_cnt = 753 | true_predict_cnt = 643
precision_rate = 0.8539176626826029 | recall_rate = 0.0671330131551472 | F1_measure = 0.12447972122737391
-----
epoch 21 for theta 2 (Used time = 232.87420296669006 second(s)) :
training loss = 0.19732153415679932
tensor([[ 3.8897,  2.8783,  2.6986, ...,  0.0398,  0.0496,  0.0862],
        [-3.4053, -0.0720, -0.7133, ..., -0.0173, -0.0223, -0.0392],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.516937494277954 second(s)) :
loss = 0.2747400403022766
item_cnt = 9578 | predict_cnt = 916 | true_predict_cnt = 795
precision_rate = 0.8679039301310044 | recall_rate = 0.08300271455418667 | F1_measure = 0.15151515151515152
-----
epoch 22 for theta 2 (Used time = 225.4127550125122 second(s)) :
training loss = 0.1892523467540741
tensor([[ 3.3260,  2.8906,  2.7154, ...,  0.0412,  0.0512,  0.0896],
        [-3.1574, -0.0302, -0.6970, ..., -0.0178, -0.0229, -0.0407],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.20680809020996 second(s)) :
loss = 0.2640322148799896
item_cnt = 9578 | predict_cnt = 915 | true_predict_cnt = 794
precision_rate = 0.8677595628415301 | recall_rate = 0.08289830862392984 | F1_measure = 0.15133898789669303
-----
epoch 23 for theta 2 (Used time = 226.25502228736877 second(s)) :
training loss = 0.18180710077285767
tensor([[ 2.8159,  2.9010,  2.7304, ...,  0.0425,  0.0527,  0.0930],
        [-2.9124,  0.0119, -0.6800, ..., -0.0183, -0.0236, -0.0421],
```

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[ 0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.175909519195557 second(s)) :
loss = 0.25230249762535095
item_cnt = 9578 | predict_cnt = 936 | true_predict_cnt = 815
precision_rate = 0.8707264957264957 | recall_rate = 0.08509083315932345 | F1_measure = 0.15503138672246528
-----
epoch 24 for theta 2 (Used time = 223.95983052253723 second(s)) :
training loss = 0.1754738837480545
tensor([[ 2.3889,  2.9133,  2.7453, ...,  0.0439,  0.0543,  0.0965],
        [-2.6733,  0.0512, -0.6634, ..., -0.0188, -0.0242, -0.0436],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.009287118911743 second(s)) :
loss = 0.24488843977451324
item_cnt = 9578 | predict_cnt = 937 | true_predict_cnt = 816
precision_rate = 0.8708644610458911 | recall_rate = 0.0851952390895803 | F1_measure = 0.155206847360913
-----
epoch 25 for theta 2 (Used time = 229.3823173046112 second(s)) :
training loss = 0.17034223675727844
tensor([[ 2.0668,  2.9236,  2.7586, ...,  0.0453,  0.0559,  0.0999],
        [-2.4441,  0.0907, -0.6464, ..., -0.0194, -0.0248, -0.0450],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 25.15581512451172 second(s)) :
loss = 0.23753874003887177
item_cnt = 9578 | predict_cnt = 1241 | true_predict_cnt = 1120
precision_rate = 0.9024979854955681 | recall_rate = 0.11693464188765922 | F1_measure = 0.207043164802662
-----
epoch 26 for theta 2 (Used time = 228.00635623931885 second(s)) :
training loss = 0.1664402335882187
tensor([[ 1.8612,  2.9353,  2.7715, ...,  0.0468,  0.0575,  0.1034],
        [-2.2301,  0.1279, -0.6296, ..., -0.0199, -0.0255, -0.0464],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.500643253326416 second(s)) :
loss = 0.2339038848876953
item_cnt = 9578 | predict_cnt = 1239 | true_predict_cnt = 1120
precision_rate = 0.903954802259887 | recall_rate = 0.11693464188765922 | F1_measure = 0.20708144587223815
-----
epoch 27 for theta 2 (Used time = 230.69050216674805 second(s)) :
training loss = 0.16356520354747772
tensor([[ 1.7448,  2.9451,  2.7829, ...,  0.0483,  0.0592,  0.1069],
        [-2.0327,  0.1654, -0.6123, ..., -0.0204, -0.0261, -0.0478],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.43948483467102 second(s)) :
loss = 0.22958609461784363
item_cnt = 9578 | predict_cnt = 1271 | true_predict_cnt = 1152
precision_rate = 0.9063729346970889 | recall_rate = 0.12027563165587805 | F1_measure = 0.21236980366854089
-----
epoch 28 for theta 2 (Used time = 228.52041482925415 second(s)) :
training loss = 0.1611270159482956
tensor([[ 1.6951,  2.9561,  2.7940, ...,  0.0499,  0.0608,  0.1104],
        [-1.8548,  0.2007, -0.5954, ..., -0.0209, -0.0267, -0.0492],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.437395334243774 second(s)) :
loss = 0.22758986055850983
item_cnt = 9578 | predict_cnt = 1288 | true_predict_cnt = 1169
precision_rate = 0.907608695652174 | recall_rate = 0.1220505324702443 | F1_measure = 0.21516657463648076
-----
epoch 29 for theta 2 (Used time = 227.6145088672638 second(s)) :
training loss = 0.15877123177051544
tensor([[ 1.6735,  2.9656,  2.8039, ...,  0.0514,  0.0624,  0.1139],
        [-1.6923,  0.2361, -0.5781, ..., -0.0214, -0.0273, -0.0506],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.309701681137085 second(s)) :
loss = 0.22434961795806885
item_cnt = 9578 | predict_cnt = 1309 | true_predict_cnt = 1190
precision_rate = 0.9090909090909091 | recall_rate = 0.12424305700563792 | F1_measure = 0.21860935060163497
-----
epoch 30 for theta 2 (Used time = 227.81940507888794 second(s)) :
training loss = 0.1567331999540329
tensor([[ 1.6754,  2.9764,  2.8137, ...,  0.0530,  0.0641,  0.1173],
        [-1.5482,  0.2694, -0.5611, ..., -0.0220, -0.0279, -0.0520],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.16957402229309 second(s)) :
loss = 0.22279497981071472
item_cnt = 9578 | predict_cnt = 1348 | true_predict_cnt = 1230
precision_rate = 0.9124629080118695 | recall_rate = 0.12841929421591147 | F1_measure = 0.22515101592531575
-----
epoch 31 for theta 2 (Used time = 229.38828468322754 second(s)) :
training loss = 0.1547950655221939
tensor([[ 1.6797,  2.9859,  2.8225, ...,  0.0545,  0.0657,  0.1207],
        [-1.4170,  0.3027, -0.5439, ..., -0.0225, -0.0285, -0.0534],
```

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件 main
[ 0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.41119885444641 second(s)) :
loss = 0.2200048565864563
item_cnt = 9578 | predict_cnt = 1359 | true_predict_cnt = 1241
precision_rate = 0.9131714495952906 | recall_rate = 0.1295677594487367 | F1_measure = 0.2269360885069032
-----
epoch 32 for theta 2 (Used time = 227.6180613040924 second(s)) :
training loss = 0.15284687280654907
tensor([[ 1.6947,  2.9967,  2.8314, ...,  0.0560,  0.0672,  0.1241],
        [-1.3026,  0.3341, -0.5270, ..., -0.0230, -0.0291, -0.0548],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 43.14884328842163 second(s)) :
loss = 0.21868054568767548
item_cnt = 9578 | predict_cnt = 1485 | true_predict_cnt = 1367
precision_rate = 0.9205387205387205 | recall_rate = 0.14272290666109835 | F1_measure = 0.2471300732170297
-----
epoch 33 for theta 2 (Used time = 233.50642347335815 second(s)) :
training loss = 0.1512562334537506
tensor([[ 1.7052,  3.0064,  2.8395, ...,  0.0575,  0.0688,  0.1275],
        [-1.1986,  0.3656, -0.5099, ..., -0.0235, -0.0297, -0.0561],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.63692569732666 second(s)) :
loss = 0.21615159511566162
item_cnt = 9578 | predict_cnt = 1539 | true_predict_cnt = 1421
precision_rate = 0.9233268356075374 | recall_rate = 0.14836082689496763 | F1_measure = 0.2556445084105424
-----
epoch 34 for theta 2 (Used time = 230.75806140899658 second(s)) :
training loss = 0.14973804354667664
tensor([[ 1.7230,  3.0173,  2.8476, ...,  0.0590,  0.0703,  0.1308],
        [-1.1098,  0.3952, -0.4931, ..., -0.0241, -0.0303, -0.0575],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.56205129623413 second(s)) :
loss = 0.21496696770191193
item_cnt = 9578 | predict_cnt = 1543 | true_predict_cnt = 1425
precision_rate = 0.9235255994815295 | recall_rate = 0.14877845061599498 | F1_measure = 0.2562719179929862
-----
epoch 35 for theta 2 (Used time = 231.00510454177856 second(s)) :
training loss = 0.14822280406951904
tensor([[ 1.7339,  3.0270,  2.8550, ...,  0.0604,  0.0719,  0.1341],
        [-1.0287,  0.4249, -0.4760, ..., -0.0246, -0.0309, -0.0588],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.701122999191284 second(s)) :
loss = 0.21264097094535828
item_cnt = 9578 | predict_cnt = 1571 | true_predict_cnt = 1452
precision_rate = 0.9242520687460216 | recall_rate = 0.15159741073292962 | F1_measure = 0.2604717911920351
-----
epoch 36 for theta 2 (Used time = 229.68808937072754 second(s)) :
training loss = 0.146799236536026
tensor([[ 1.7510,  3.0380,  2.8626, ...,  0.0619,  0.0734,  0.1374],
        [-0.9610,  0.4530, -0.4593, ..., -0.0252, -0.0315, -0.0602],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.49880290031433 second(s)) :
loss = 0.21156956255435944
item_cnt = 9578 | predict_cnt = 1572 | true_predict_cnt = 1453
precision_rate = 0.9243002544529262 | recall_rate = 0.15170181666318647 | F1_measure = 0.26062780269058294
-----
epoch 37 for theta 2 (Used time = 230.21913528442383 second(s)) :
training loss = 0.14535248279571533
tensor([[ 1.7601,  3.0479,  2.8696, ...,  0.0633,  0.0749,  0.1406],
        [-0.8983,  0.4812, -0.4424, ..., -0.0257, -0.0321, -0.0615],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.510789155960083 second(s)) :
loss = 0.209358349442482
item_cnt = 9578 | predict_cnt = 1629 | true_predict_cnt = 1506
precision_rate = 0.9244935543278084 | recall_rate = 0.15723533096679893 | F1_measure = 0.2687605960560364
-----
epoch 38 for theta 2 (Used time = 232.34406876564026 second(s)) :
training loss = 0.14406536519527435
tensor([[ 1.7752,  3.0589,  2.8767, ...,  0.0648,  0.0763,  0.1438],
        [-0.8472,  0.5077, -0.4259, ..., -0.0262, -0.0326, -0.0628],
        [ 0.0000,  0.0000,  0.0000, ...,  0.0000,  0.0000,  0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 25.803139686584473 second(s)) :
loss = 0.2083798199892044
item_cnt = 9578 | predict_cnt = 1629 | true_predict_cnt = 1506
precision_rate = 0.9244935543278084 | recall_rate = 0.15723533096679893 | F1_measure = 0.2687605960560364
-----
epoch 39 for theta 2 (Used time = 231.62113428115845 second(s)) :
training loss = 0.14282093942165375
tensor([[ 1.7817,  3.0688,  2.8833, ...,  0.0662,  0.0778,  0.1470],
        [-0.7989,  0.5345, -0.4091, ..., -0.0268, -0.0332, -0.0641],
```



```
[ 0.0000, 0.0000, 0.0000, ..., 0.0000, 0.0000, 0.0000]],
requires_grad=True)
Evaluation For theta 2 (Used time = 24.487229347229004 second(s)) :
loss = 0.20628544688224792
item_cnt = 9578 | predict_cnt = 1643 | true_predict_cnt = 1519
precision_rate = 0.9245283018867925 | recall_rate = 0.1585926080601378 | F1_measure = 0.2707423580786026
-----
Want to continue? (y/n)
n
loss = 0.14972548186779022
loss = 0.14280815422534943
loss = 0.14407549798488617
```

进程结束退出