Ml-1m

User-split(default)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 | time |
| UserCF | 0.8352 | 0.2764 | 0.5048 | 0.1658 | 0.9122 | 0.2798 | 0.5103 | 0.2496 | 430.69s |
| ItemCF | 0.7785 | 0.2535 | 0.4699 | 0.1417 | 0.8700 | 0.2516 | 0.4764 | 0.2157 | 291.47s |
| SVD | 0.4815 | 0.0950 | 0.2177 | 0.0498 | 0.6197 | 0.0968 | 0.2273 | 0.0831 | 101.10s |
| NGCN | 0.6273 | 0.1582 | 0.3151 | 0.0832 | 0.7596 | 0.1615 | 0.3244 | 0.1395 | 337.55s |
| NGCN | 0.6801 | 0.1870 | 0.3638 | 0.1007 | 0.7973 | 0.1882 | 0.3721 | 0.1601 | 367.61s |
| LightGCN | 0.6122 | 0.1571 | 0.3111 | 0.0829 | 0.7442 | 0.1585 | 0.3205 | 0.1366 | 256.67s |
| Content-base | 0.2286 | 0.0261 | 0.0589 | 0.0115 | 0.4116 | 0.0337 | 0.0713 | 0.0286 | 1359.9s |
| Random | 0.0580 | 0.0062 | 0.0163 | 0.0030 | 0.1014 | 0.0067 | 0.0193 | 0.0058 | 37.85s |
| Popularity | 0.6111 | 0.1565 | 0.3106 | 0.0827 | 0.7512 | 0.1597 | 0.3204 | 0.1406 | 35.87s |

Time-split

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 | time |
| UserCF | 0.7729 | 0.3507 | 0.5527 | 0.0475 | 0.8503 | 0.3246 | 0.5581 | 0.0803 | 331.87s |
| ItemCF | 0.7176 | 0.2793 | 0.4596 | 0.0565 | 0.7978 | 0.2625 | 0.4652 | 0.0956 | 261.44s |
| SVD | 0.6594 | 0.2323 | 0.4011 | 0.0452 | 0.7602 | 0.2176 | 0.4082 | 0.0771 | 90.65s |
| NGCN | 0.7762 | 0.3476 | 0.5421 | 0.0432 | 0.8486 | 0.3240 | 0.5471 | 0.0775 | 341.60s |
| NGCN | 0.7919 | 0.3638 | 0.5617 | 0.0479 | 0.8592 | 0.3362 | 0.5666 | 0.0813 | 401.96s |
| LightGCN | 0.7622 | 0.3444 | 0.5336 | 0.0414 | 0.8362 | 0.3216 | 0.5387 | 0.0743 | 261.10s |
| Content-base | 0.4633 | 0.1922 | 0.3039 | 0.0206 | 0.5648 | 0.1815 | 0.3108 | 0.0384 | 364.01s |
| Random | 0.1602 | 0.0200 | 0.0534 | 0.0033 | 0.2689 | 0.0202 | 0.0608 | 0.0067 | 25.83s |
| Popularity | 0.7059 | 0.2726 | 0.4481 | 0.0535 | 0.8017 | 0.2562 | 0.4547 | 0.0917 | 24.94s |

random-split

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 | Time |
| UserCF | 0.8177 | 0.2786 | 0.5010 | 0.1683 | 0.8997 | 0.2799 | 0.5067 | 0.2547 | 433.95s |
| ItemCF | 0.7670 | 0.2557 | 0.4798 | 0.1414 | 0.8510 | 0.2522 | 0.4857 | 0.2179 | 285.64s |
| SVD | 0.4659 | 0.0935 | 0.2107 | 0.0509 | 0.5978 | 0.0950 | 0.2199 | 0.0831 | 123.31s |
| NGCN | 0.6207 | 0.1625 | 0.3116 | 0.0878 | 0.7399 | 0.1639 | 0.3200 | 0.1441 | 239.12s |
| LightGCN | 0.5955 | 0.1548 | 0.3072 | 0.0826 | 0.7243 | 0.1564 | 0.3163 | 0.1354 | 99.26s |
| Content-base | 0.2272 | 0.0278 | 0.0640 | 0.0120 | 0.4016 | 0.0344 | 0.0759 | 0.0280 | 1349.7s |
| Random | 0.0547 | 0.0060 | 0.0164 | 0.0029 | 0.1023 | 0.0068 | 0.0196 | 0.0058 | 27.64s |
| Popularity | 0.5982 | 0.1547 | 0.3075 | 0.0832 | 0.7261 | 0.1559 | 0.3163 | 0.1353 | 25.68s |

lasfm

User-split

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 | time |
| UserCF | 0.5534 | 0.1861 | 0.2713 | 0.2357 | 0.6696 | 0.2124 | 0.2794 | 0.3034 | 97.22s |
| ItemCF | 0.3957 | 0.1365 | 0.2022 | 0.1696 | 0.4831 | 0.1567 | 0.2082 | 0.2258 | 178.50s |
| SVD | 0.4947 | 0.1685 | 0.2512 | 0.2096 | 0.6187 | 0.1985 | 0.2600 | 0.2893 | 16.09s |
| NGCN | 0.4073 | 0.1312 | 0.1889 | 0.1696 | 0.5208 | 0.1528 | 0.1967 | 0.2296 | 19.80s |
| NGCN | 0.3652 | 0.1190 | 0.1652 | 0.1627 | 0.4682 | 0.1385 | 0.1724 | 0.2159 | 16.02s |
| LightGCN | 0.3619 | 0.1274 | 0.1735 | 0.1692 | 0.4859 | 0.1486 | 0.1823 | 0.2291 | 14.61s |
| Friend-base | 0.2302 | 0.0608 | 0.0894 | 0.0878 | 0.3547 | 0.0787 | 0.0981 | 0.1385 | 57.26s |
| Random | 0.0055 | 0.0007 | 0.0015 | 0.0009 | 0.0072 | 0.0009 | 0.0016 | 0.0015 | 8.16s |
| Popularity | 0.3116 | 0.0921 | 0.1142 | 0.1417 | 0.4228 | 0.1117 | 0.1213 | 0.1988 | 6.49s |

random-split

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 | time |
| UserCF | 0.5302 | 0.1885 | 0.2924 | 0.2214 | 0.6255 | 0.2124 | 0.2991 | 0.2859 | 89.10s |
| ItemCF | 0.3604 | 0.1357 | 0.2104 | 0.1570 | 0.4380 | 0.1510 | 0.2159 | 0.1999 | 181.25s |
| SVD | 0.4801 | 0.1653 | 0.2579 | 0.1957 | 0.5913 | 0.1913 | 0.2658 | 0.2678 | 13.40s |
| NGCN | 0.3818 | 0.1272 | 0.1873 | 0.1633 | 0.4930 | 0.1496 | 0.1951 | 0.2240 | 17.13s |
| NGCN | 0.3476 | 0.1157 | 0.1713 | 0.1484 | 0.4490 | 0.1351 | 0.1783 | 0.2012 | 16.79s |
| LightGCN | 0.3464 | 0.1213 | 0.1806 | 0.1523 | 0.4539 | 0.1390 | 0.1879 | 0.2014 | 12.04s |
| Friend-base | 0.2376 | 0.0636 | 0.0956 | 0.0878 | 0.3482 | 0.0804 | 0.1033 | 0.1349 | 48.43s |
| Random | 0.0031 | 0.0004 | 0.0012 | 0.0004 | 0.0061 | 0.0008 | 0.0014 | 0.0016 | 5.36s |
| Popularity | 0.2877 | 0.0838 | 0.1184 | 0.1181 | 0.3818 | 0.1004 | 0.1249 | 0.1648 | 3.73s |

超参数 用的ml-1m default-split

NGCN

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 |
| embed\_dim=64, n\_layers=2 | 0.6251 | 0.1620 | 0.3137 | 0.0856 | 0.7593 | 0.1645 | 0.3230 | 0.1432 |
| embed\_dim=64, n\_layers=3 | 0.6308 | 0.1641 | 0.3190 | 0.0869 | 0.7606 | 0.1665 | 0.3280 | 0.1442 |
| embed\_dim=64, n\_layers=4 | 0.6298 | 0.1634 | 0.3117 | 0.0874 | 0.7654 | 0.1662 | 0.3212 | 0.1453 |
| embed\_dim=64, n\_layers=5 | 0.6250 | 0.1597 | 0.3098 | 0.0843 | 0.7615 | 0.1635 | 0.3194 | 0.1433 |
| embed\_dim=32, n\_layers=3 | 0.5928 | 0.1357 | 0.2780 | 0.0730 | 0.7393 | 0.1396 | 0.2882 | 0.1234 |
| embed\_dim=64, n\_layers=3 | 0.6308 | 0.1641 | 0.3190 | 0.0869 | 0.7606 | 0.1665 | 0.3280 | 0.1442 |
| embed\_dim=128, n\_layers=3 | 0.6286 | 0.1646 | 0.3198 | 0.0864 | 0.7633 | 0.1666 | 0.3292 | 0.1440 |
| embed\_dim=256, n\_layers=3 | 0.6806 | 0.1940 | 0.3767 | 0.1032 | 0.8035 | 0.1939 | 0.3853 | 0.1648 |

LightGCN

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | HR@10 | NDCG@10 | MRR@10 | Recall@10 | HR@20 | NDCG@20 | MRR@20 | Recall@20 |
| embed\_dim=64, n\_layers=2 | 0.6149 | 0.1578 | 0.3114 | 0.0835 | 0.7429 | 0.1589 | 0.3205 | 0.1368 |
| embed\_dim=64, n\_layers=3 | 0.6135 | 0.1574 | 0.3112 | 0.0833 | 0.7444 | 0.1590 | 0.3205 | 0.1372 |
| embed\_dim=64, n\_layers=4 | 0.6134 | 0.1571 | 0.3113 | 0.0829 | 0.7469 | 0.1592 | 0.3207 | 0.1380 |
| embed\_dim=64, n\_layers=5 | 0.6144 | 0.1572 | 0.3113 | 0.0833 | 0.7461 | 0.1590 | 0.3206 | 0.1377 |
| embed\_dim=32, n\_layers=3 | 0.6137 | 0.1573 | 0.3113 | 0.0833 | 0.7444 | 0.1589 | 0.3206 | 0.1371 |
| embed\_dim=64, n\_layers=3 | 0.6135 | 0.1574 | 0.3112 | 0.0833 | 0.7444 | 0.1590 | 0.3205 | 0.1372 |
| embed\_dim=128, n\_layers=3 | 0.6144 | 0.1576 | 0.3124 | 0.0830 | 0.7431 | 0.1589 | 0.3216 | 0.1366 |
| embed\_dim=256, n\_layers=3 | 0.6142 | 0.1578 | 0.3121 | 0.0834 | 0.7426 | 0.1587 | 0.3213 | 0.1364 |