|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Metrics  Models | **Ubuntu data** | | | **Douban data** | | | **E-commerce data** | | |
| R2@1 | R10@1 | R10@2 | MAP | MRR | P@1 | R10@1 | R10@2 | R10@5 |
| IoI | 0.947 | 0.796 | 0.894 | 0.573 | 0.621 | 0.444 | 0.563 | 0.768 | 0.947 |
| IoI-*E* | 0.947 | 0.794 | 0.891 | 0.568 | 0.616 | 0.438 | 0.559 | 0.762 | 0.943 |
| IoI-*E*ˆ | 0.946 | 0.790 | 0.888 | 0.565 | 0.613 | 0.433 | 0.557 | 0.749 | 0.941 |
| IoI-*E* | 0.947 | 0.793 | 0.890 | 0.566 | 0.613 | 0.439 | 0.560 | 0.754 | 0.943 |
| IoI-*E*˜ | 0.947 | 0.795 | 0.891 | 0.571 | 0.616 | 0.441 | 0.562 | 0.740 | 0.944 |
| IoI-*M*1 | 0.946 | 0.793 | 0.890 | 0.568 | 0.611 | 0.436 | 0.557 | 0.743 | 0.943 |
| IoI-*M*2 | 0.944 | 0.788 | 0.886 | 0.562 | 0.605 | 0.427 | 0.551 | 0.739 | 0.942 |
| IoI-*M*3 | 0.946 | 0.793 | 0.889 | 0.567 | 0.615 | 0.438 | 0.558 | 0.748 | 0.946 |