Recall, Recall rate@k and precision in top-k recommendation

Asked 5 years, 4 months ago   Active 12 months ago   Viewed 23k times

▲

12

▼

🔖

🕓

According to authors in 1, 2, and 3, **Recall** is the percentage of relevant items selected out of all the relevant items in the repository, while **Precision** is the percentage of relevant items out of those items selected by the query.

Therefore, assuming user U gets a top-k recommended list of items, they would be something like:

Recall= (Relevant_Items_Recommended in top-k) **/** (Relevant_Items)

Precision= (Relevant_Items_Recommended in top-k) **/** (k_Items_Recommended)

Until that part everything is clear but I do not understand the difference between them and **Recall rate@k**. How would be the formula to compute **recall rate@k**?
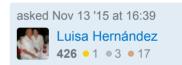
recommendation-engine   evaluation   precision-recall

Share   Improve this question

Follow

edited Mar 12 '16 at 11:58
user2314737
20.7k ● 16 ● 80 ● 92

asked Nov 13 '15 at 16:39
Luisa Hernández
426 ● 1 ● 3 ● 17

---

1   You directly put @K in calculating simple Precision and Recall for rating prediction what may be confusing. The rule is simple - if You try to measure only RATING prediction - use simple Precision and Recall on the whole recommended result. If You are interested in measure RANKING prediction, then You are more interested how well let say top-5 performs (first recommendation carousel screen), then top-10 (second screen) and so on. Because in second case You are more interested in how well Your solution ordered the whole response - ranked results. – Bartłomiej Twardowski Nov 15 '15 at 10:26

Thank you so much @Bartłomiej Twardowski. So, just I was doing that rate@k already? – Luisa Hernández Nov 16 '15 at 11:25 ✎

Yes, if you are truncating to top k item and only calculating p/r on it. – Bartłomiej Twardowski Nov 16 '15 at 13:03

---

1 Answer

| Active | Oldest | Votes |

▲

13

▼

Finally, I received an explanation from Prof. Yuri Malheiros (paper 1). Althougth recall rate@k as cited in papers cited in the questions seemed to be the normal recall metrics but applied into a top-k, they are not the same. This metric is also used in paper 2, paper 3 and paper 3
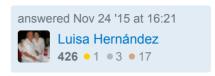
of items for each recommendation), to calculate the recall rate is necessary to look at each of the 50 recommendations. If, for each recommendation, at least one recommended item is correct, you can increment a value, in this case, let us call it *N*. In order to calculate the recall rate@*R*, it is neccesary to make the *N/R*.

Share Improve this answer Follow

6   I think you made a mistake there, you described the precision@k again. Recall@k means you count the relevant documents among the top-k and divide it by the total number of relevant documents in the repository. See ils.unc.edu/courses/2013_spring/inls509_001/lectures/… – Chris Jul 12 '17 at 16:58

1   Agree with Chris. What you're describing sounds like mean precision@k. – halflings Nov 8 '18 at 4:25

Join Stack Overflow to learn, share knowledge, and build your career.

Sign up   ✕