
gRecs: A collaborative filtering framework for group recommendations

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Abstract. Recommendation systems provide suggestions to users about a variety of items, such as movies and restaurants. The large majority of these systems are designed to make recommendations for individual users. However, there are cases in which the items to be suggested are intended for a group of users, e.g., a group of friends planning to watch a movie or visit a restaurant. Recent approaches try to satisfy the preferences of all group members either by creating a joint profile for the group and suggesting items w.r.t. this profile or by aggregating the single user recommendations into group recommendations [3]. We opt for the second approach, since it is more flexible and offers opportunities for efficiency improvements.

We propose a framework for group recommendations following the collaborative filtering approach. The most prominent items for each user of the group are identified based on items that similar users liked in the past. We efficiently aggregate the single user recommendations into group recommendations by leveraging the power of a top- k algorithm. We employ three different aggregation designs: *least misery*, where strong user preferences act as a veto, *most optimistic*, where the most satisfied member is the most influential one and *fair*, for more democratic cases. The main bottleneck in collaborative filtering is to locate the most similar users for a given user. We model the user-item interactions in terms of clustering and use the extracted clusters for predictions [1,2]. To deal with the high dimensionality and sparsity of ratings, we envision subspace clustering to find clusters of similar users and subsets of items where these users have similar ratings for the items.

References

- 1 NTOUTSI, E., STEFANIDIS, K., NORVAG, K. and KRIEGEL, H-P. (2012): Fast Group Recommendations by Applying User Clustering. In: *ER*.
- 2 NTOUTSI, E., STEFANIDIS, K., NORVAG, K. and KRIEGEL, H-P. (2012): gRecs: A Group Recommendation System based on User Clustering (demo paper). In: *DASFAA*.
- 3 ROY, S.B., AMER-YAHIA, S., CHAWLA, A., DAS, G. and YU, C. (2010): Space Efficiency in Group Recommendation. *VLDBJ 19(6)*, 877–900.

Keywords

GROUP RECOMMENDATIONS, COLLABORATIVE FILTERING, USER CLUSTERING