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
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