Group Recommendation for Multiple Users

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Group recommendation is presently an interesting research area. There are several activities, which we are doing in a social rather than an individual manner. In this situation individual recommender system cannot be applied. TV watching, going to a cinema, a restaurant or a pub are only some examples. These activities are usually attended after some agreement in a group. We also distinguish situations, where we cannot choose such as music played in a gym or in public transport vehicles.

The user model or some user preference representation is an inherent part of recommendation. In the case of the group recommendation three types of group modeling are used – individual user's preference aggregation, single recommendation aggregation and group profile construction. The individual user's preference aggregation is the most used and studied approach, because of several advantages (e.g., the group can change during the recommendation process)

Various approaches for the data acquisition have been used. Standard implicit and explicit feedback is often used in single recommendation approaches. Also new approaches as sharing preferences and negative feedback were proposed for group preference modeling.

When recommending to a group as a whole, several aspects should be considered. We distinguish between active and passive groups. When recommending to active groups, we can delegate some tasks to users themselves as they can achieve some level of consensus [1]. Group homogeneity and size are also important factors, which have great influence on the recommendation process and user satisfaction. Group homogeneity refers to the group structure (students of informatics in PhD. degree, or visitors of a gym) [3].

The group recommendation task can be extended for not only one item recommendation, but the recommendation sequences (ordered sets) of items [2]. This is very useful in order to satisfy more users and there is no content which is suitable for the whole group. Then we can partially satisfy every user separately (other users on a lower level).

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There is a difference in how recommendations are presented. A recommender system can generate only some kind of "suggestions" - the final decision is still on the group. On the other hand, the recommended items can be experienced by users immediately (TV program) [2].

Sequence recommendation is an interesting task, especially in group recommendation, where we have to consider not only the order of the sequence for individual users but also its influence on other group members. This is strongly connected to designing satisfaction functions, which should model the satisfaction level of the group.

As we try to model real life group characteristics, it is important to incorporate user personality since it was shown that a user's mood and personality could have a significant influence on other group members' feelings. In other words, when a respected extrovert is unsatisfied, other members will probably share her feelings, even if they were partially satisfied before.

Group recommendation can also be used for solving problems of standard single recommendation. Using multiple criteria usually complicates recommendation since several attributes must be evaluated. Merging strategies can be used for overcome the multiple criteria problem, while only some modifications are needed (e.g., not considering fairness) [1]. Most of the today's recommenders suffer from the cold start problem - the state when new users come and want to interact with a system and there is not yet enough information about them. In this case, group recommenders (the group consisting of new users and all or several representative old system users) to solve this problem.

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