

Group Recommendation Based on Voting

Ján TREBUĽA*

*Slovak University of Technology in Bratislava
Faculty of Informatics and Information Technologies
Ilkovičova 3, 842 16 Bratislava, Slovakia
trebulaj@gmail.com*

Personalized recommendation is very helpful for individuals, but there are many activities, which individuals perform in the group. Satisfaction of the individual group member depends on several factors as group size, its composition and type of the group (Established group, Occasional group, Random group or Automatically generated group) [1]. However, each recommendation requires knowledge about the preferences of individual group members. We are able to gather users' preferences based on their ratings of a set of items. This set consists of items that are going to be used for recommendation generation. While gaining the preferences we have to consider the weight of particular rating of an item based on user's group status.

In our work we propose voting method which explores several approaches how to process acquired users' preferences. We verify this method by implementation of software prototype that will be intent on the area of movie recommendations as a web application, which is accessed through a social network. Social network environment provides sufficient set of users, which are able to join the group or create their own groups and invite their friends to these groups. After generating the recommendation users' satisfaction is observed and evaluated.

The proposed method consists of two parts (Figure 1) - the initial part is the users' ratings processing and the generation of the groups' recommendations.

For users' ratings pre-processing our method uses a form of normalizing. We let each user a_j to submit a numerical vote $score(s_i, a_j)$ for each items s_i that reflects preference of an item. These votes are given as ratings, for example 3 out of 5 stars, and normalized so that the scores given by each user sum to 1:

$$score(s_i, a_j) = \frac{rating(s_i, a_j)}{\sum_i rating(s_i, a_j)}$$

* Supervisor: Michal Kompan, Institute of Informatics and Software Engineering

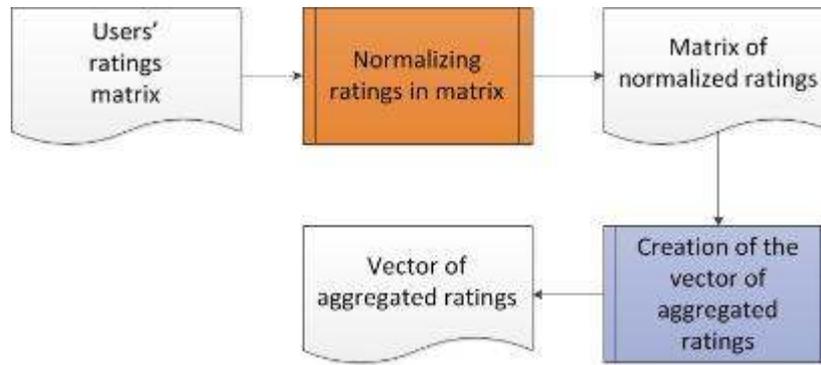


Figure 1. Sequence of steps describing proposed method.

While generating groups recommendations we use a two aggregations strategies [2]:

- Average aggregation strategy
- Multiplicative aggregation strategy

The average aggregation strategy is based on averaging individual ratings. While, the multiplicative aggregation strategy is based on multiplies individual ratings. Both these strategies return a vector of aggregated ratings of items. Items with the highest score will be recommended to group. After the process of recommendation generation we want to get feedback by questioning users about their satisfaction with the results of different strategies.

The proposed method will be verified through several iterations by the web application aimed to movie recommendation for groups of users which want to watch movie together. Application is set-in directly into the social network Facebook [1]. After logging in user is able to join already existing groups, create his own group and invite his friends to the groups. Each group member is able to rate a list of movies or add a new movie as well. The possibility to rate a movie is time limited. During the process of the rating movies preliminary results are visible to the user. After a timeout, possibility of voting is encased and final recommendation is generated for given group. Based on explicit feedback we will find out level of satisfaction with recommendations using the particular strategies of aggregation.

Acknowledgement. This work was partially supported by the Scientific Grant Agency of Slovak Republic, grant No. VG1/0675/11.

References

- [1] Boratto L., Carta S. State-of-the-Art in Group Recommendation and New Approaches for Automatic Identification of Groups, 1-20, 2010.
- [2] Ricci F., Rokach L., Shapira B., Kantor P. B., editors. *Recommender Systems Handbook*. Springer, 2011.