

Group Recommender Systems*

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ABSTRACT

Group recommender systems provide suggestions in contexts in which people operate in groups. The goal of this tutorial is to provide the RecSys audience with an overview on group recommendation. We will first formally introduce the problem of producing recommendations to groups, then present a survey based on the tasks performed by these systems. We will also analyze challenging topics like their evaluation, and present emerging aspects and techniques in this area. The tutorial will end with a summary that highlights open issues and research challenges.

CCS Concepts

•Information systems → Recommender systems;

Keywords

Group Recommendation; Algorithms; Research Challenges

1. INTRODUCTION

While recommender systems suggest items that the individual users might like, *group recommender systems* are designed to operate in contexts in which more than one person is involved in the recommendation process [7]. The goal of this tutorial is to provide the RecSys audience with an overview on group recommendation, by analyzing the aspects that characterize these systems, the evaluation methods (evaluating the accuracy for a group is not trivial [10]), the emerging aspects, and the current challenges.

2. TUTORIAL OUTLINE

In detail, the outline of the tutorial is the following.

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1. Group recommendation introduction

- *Definition and application domains*
- *Problem statement*

2. Tasks and state of the art survey

- *Types of groups.* In [2], we highlighted that the type of group handled by a system is one of the characterizing aspects of a group recommender system and we provided a classification of the different types of groups.
- *Preference acquisition.* A group recommender system might acquire the preferences by considering only those expressed by the individual users, or by allowing the groups to express them.
- *Group modeling* [9] is the process adopted to combine the individual preferences in a unique model that represents the group.
- *Rating prediction* is the most characterizing aspect in all the types of recommender systems, and also plays an important role when working with groups, since the ratings might be predicted for the individual users or specifically for the groups [7].
- *Help the members to achieve consensus.* This task is adopted in order to find an agreement on what should be proposed to the group.
- *Explanation of the recommendations*, i.e., the task performed by some of the systems to justify why an item has been suggested to the group.

3. Evaluation methods

- *Offline methods*, which evaluate a system on existing datasets.
- *User surveys* that test the effectiveness of a system by asking users to answer questionnaires.
- *Live systems* that work in real-world domains, like the social networks.

4. Emerging aspects and techniques

- *Advanced recommendation techniques applied to group recommendation.* The last advances in recommendation techniques, such as matrix factorization and graph-based techniques, have recently been employed in group recommender systems too [8, 11].

- *Temporal aspects in group recommendation.* Recently, the temporal factor has been considered in the recommendation process [1, 5].
- *Social group recommender systems.* The widespread relevance of social media has recently had an impact also on this research area [6, 8].
- *Group recommendation with automatic detection of groups.* There are scenarios in which groups do not exist, but the recommendations have to be proposed to groups because of limitations on the number of recommendation lists that can be produced (i.e., it is not possible to suggest a different list of items to each user), so a clustering of the users specifically designed for recommendation purposes has to be performed [3].

5. Summary

- *Open issues*
- *Research challenges*

3. PRESENTER

Ludovico Boratto is a research assistant at the University of Cagliari (Italy). His main research area are Recommender Systems, with special focus on those that work with groups of users and in social environments. In 2010 and 2014, he spent 10 months at the Yahoo! Lab in Barcelona as a visiting researcher.

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