Towards a Group Recommender Process Model for ad-hoc Groups and On-Demand Recommendations

Christoph Beckmann, Tom Gross
Faculty of Media
Bauhaus-University Weimar
Bauhausstr. 11 , 99423 Weimar, Germany
<firstname.lastname>(at)medien.uni-weimar.de

ABSTRACT
Movie recommender systems simplify the movie selection by providing movie suggestions based on the respective user’s personal taste. Most of the current systems address individual users, support stationary use, and require pre-configuration. In this paper we present an approach for group recommendations for movies based on a novel group recommender process model for ad-hoc groups with on-demand recommendations.

Categories and Subject Descriptors
H.5.3: Group and Organisation Interfaces – Computer-Supported Cooperative Work.

General Terms
Algorithms, Performance, Experimentation, Human Factors.

Keywords

1. INTRODUCTION
Recommender systems provide users personalised suggestions of choices to make that facilitate their decision-making especially in situations where they lack the personal experience of the alternatives [10]. They ‘create recommendations tailored to individual users rather than universal recommendations for, well, everyone’ [5, p. 15]. Early related work focused on individual users in work settings with stationary use. Many use collaborative filtering of user ratings for email recommendations based on users’ annotations (e.g., Tapestry [2]) and for Usenet News recommendations based on users’ ratings (e.g., GroupLens [9]). More recent systems still mostly target at single users, but in leisure and mobile scenarios. Some use preferences and locations of users to make real-time suggestions of places (e.g., Restaurant Recommendation [8]); others synchronise recommendations from personal computers to mobile devices to provide later offline recommendations on the spot (e.g., MovieLens Unplugged [4]). Only few aim to support groups to find a compromise. For instance, PolyLens [7] provides group recommendations as single movies fitting the group members’ taste best.

In this paper we present a novel group recommender process model for ad-hoc groups with on-demand recommendations and its instantiation in an interaction concept implemented in the Ad-hoc Group Recommendations Mobile (AGReMo) app. Ad-hoc groups can spontaneously form and start a recommender process. On-demand recommendations allow to use the mobile app anyplace and anytime without pre-configuration.

In the following we introduce the process model and the derived interaction concept of AGReMo as well as the AGReMo implementation, and summarise the paper.

2. PROCESS MODEL
The AGReMo group recommender process model for ad-hoc groups with on-demand recommendations specifies a comprehensive sequence of steps for the efficient interaction of groups seeking a shared movie recommendation. The process model departs from a thorough understanding of the decision process [cf. 3] as well as user interaction and comfort [cf. 1, 6]. It has three phases: Preparation, Decision, and Action (cf. Figure 1).

We provide details of the sequence of steps and individual steps as we introduce the AGReMo group interaction concept below.

Figure 1. AGReMo Process Model.
3. GROUP INTERACTION CONCEPT

The AGReMo group interaction concept leverages on the group process model and was designed to facilitate the interaction of the group with the AGReMo app. It combines the theoretical concepts of the process model with the practical insight gained from low-fidelity and high-fidelity prototyping of the AGReMo app. The AGReMo group interaction concept follows the above phases and was implemented in the AGReMo app for the Apple iPhone. Subsequently we describe the concept from the perspective of the users using the AGReMo app.

The users start with the Preparation Phase. The group meets and specifies its preferences. As personal preferences, individual users rate movies they already watched. The system then generates individual profiles based on each user’s ratings.

After login the main view of the AGReMo app (cf. Figure 2) allows starting a recommendation process and shows recent group recommendations. The agent, on which the group members agree, specifies the group’s preferences, and enters the essential and optional attributes on one view.

Essential attributes are group members, vote weights of the group members, and date and time to watch the movie. The agent selects group members from a friend list. In the AGReMo system, by default all group members have the same vote weight, but it can be doubled or tripled for privileged group members. A drop-down list presents the selection for date and time.

Optional attributes are a pre-selection of cinemas and movies. A list of cinemas (with details on each cinema on demand) is generated automatically according to the current position. The agent can deselect cinemas to exclude. A list of movies is automatically populated through the selected cinemas and show time. The agent can also deselect movies that the group does not want. The agent then sends a request for movie recommendations.

In the Decision Phase the system merges the predictions to movie recommendations by maximising the minimal frustration among the group members. It presents the top recommendation along with short explanations. On demand, alternative group recommendations can be obtained.

The final Action Phase is where the group either finds an agreement or dissolves. Later, the individual group members can rate the watched movie.

4. IMPLEMENTATION

The AGReMo implementation bases on a distributed software architecture. The AGReMo app is as a mobile GroupRecoMobileClient. The GroupRecoServer system is responsible for generating group recommendations. The SingleUserRecoService encapsulates an existing single-user system.

5. CONCLUSIONS

We introduced a process model for group recommendations and its application in the AGReMo system. The capabilities of the process model as well as the user interaction with the mobile system are currently investigated in a group study. Future work should consider its findings and extend the mobile approach supporting multiple agents per group.

Acknowledgements

We thank the members of the CML (esp. Maximilian Schirmer), and moviepilot. Part of the work has been funded by the German Research Foundation (DFG GR 2055/2-1).

References