2nd Workshop on Recommendation in Complex Scenarios (ComplexRec 2018)

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ABSTRACT

Over the past decade, recommendation algorithms for ratings prediction and item ranking have steadily matured. However, these state-of-the-art algorithms are typically applied in relatively straightforward scenarios. In reality, recommendation is often a more complex problem: it is usually just a single step in the user's more complex background need. These background needs can often place a variety of constraints on which recommendations are interesting to the user and when they are appropriate. However, relatively little research has been done on these complex recommendation scenarios. The ComplexRec 2018 workshop addresses this by providing an interactive venue for discussing approaches to recommendation in complex scenarios that have no simple one-size-fits-all solution.

KEYWORDS

Complex recommendation; task-based recommendation; feature-driven recommendation; constraint-based recommendation; query-driven recommendation; context-aware recommendation

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1 INTRODUCTION

Over the past decade, recommendation algorithms for ratings prediction and item ranking have steadily matured, spurred on in part by the success of data mining competitions such as the Netflix Prize, the 2011 Yahoo! Music KDD Cup, and the RecSys Challenges. Matrix factorization and other latent factor models emerged from these competitions as the state-of-the-art algorithms to apply in both existing and new domains. However, these state-of-the-art algorithms are typically applied in relatively straightforward and static scenarios: given information about a user's past item preferences in isolation, can we predict whether they will like a new item or rank all unseen items based on predicted interests?

In reality, recommendation is often a more complex problem: the evaluation of a list of recommended items never takes place in a vacuum, and it is often only a single step in the user's more complex background task or need. These background needs can often place a variety of constraints on which recommendations are interesting to the user and when they are appropriate. However, relatively little research has been done on how to elicit rich information about these complex background needs or how to incorporate it into the recommendation process. Furthermore, while state-of-the-art algorithms typically work with user preferences aggregated at the item level, real users may prefer some of an item's features more than others or attach more weight in general to certain features. Finally, providing accurate and appropriate recommendations in such complex scenarios comes with a whole new set of evaluation and validation challenges.

The current generation of recommender systems and algorithms are good at addressing straightforward recommendation scenarios, yet more complex scenarios as described above have been underserved. The **ComplexRec 2018** workshop addresses this by providing an interactive venue for discussing approaches to recommendation in complex scenarios that have no simple one-size-fits-all solution. It is the second edition of this workshop, after a successful first edition in 2017 [5]. In addition to this first edition, other workshops have also been organized on related topics in recent years. Examples include the CARS (Context-aware Recommender Systems) workshop series (2009-2012) organized in conjunction with RecSys [1–4], the CARR (Context-aware Retrieval and Recommendation) workshop series (2011-2015) organized in conjunction with IUI, WSDM, and ECIR [6–9, 12], as well as the SCST (Supporting Complex Search Tasks) workshop series (2015, 2017) organized in conjunction with ECIR and CHIIR [10, 11].

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2 FORMAT & TOPICS

ComplexRec 2018 will be organized as an interactive, half-day workshop. The workshop will start with two paper sessions, for which short papers and position papers of 2-4 pages in length were solicited. Accepted submissions will be invited for short 10-minute presentations with equal time for discussion. Evaluation criteria for acceptance include novelty, diversity, significance for theory/practice, quality of presentation, and the potential for sparking interesting discussion at the workshop. All submitted papers were reviewed by the program committee.

The second half of the workshop is planned to feature an industry panel, dealing with the issues of recommendation in complex real-world scenarios. Finally, the workshop will also feature a keynote presentation, to be shared with the related KARS 2018 workshop on knowledge-aware and conversational recommender systems workshop, which takes over after the ComplexRec workshop ends.

2.1 Topics of interest

Relevant topics for the ComplexRec workshop included:

- **Task-based recommendation** (Approaches that take the user's background tasks and needs into account when generating recommendations)
- **Feature-driven recommendation** (Techniques for eliciting, capturing and integrating rich information about user preferences for specific product features)
- **Constraint-based recommendation** (Approaches that successfully combine state-of-the-art recommendation algorithms with complex knowledge-based or constraint-based optimization)
- **Query-driven recommendation** (Techniques for eliciting and incorporating rich information about the user's recommendation need (e.g., need for accessibility, engagement, socio-cultural values, familiarity, etc.) in addition to the standard user preference information)
- **Interactive recommendation** (Techniques for successfully capturing, weighting, and integrating continuous user feedback into recommender systems, both in situations of sparse and rich user interaction)
- **Context-aware recommendation** (Methods for the extraction and integration of complex contextual signals for recommendation)
- **Complex data sources** (Approaches to dealing with complex data sources and how to infer user preferences from these sources)
- **Evaluation & validation** (Approaches to the evaluation and validation of recommendation in complex scenarios)

3 WORKSHOP SUBMISSIONS

A total of 14 papers were submitted to the workshop, which were all reviewed by a program committee of international experts in the field. These papers focused on a variety of complex recommendation problems. Some submissions introduced recommendation algorithms for domains, such as recommending football games to bet on, suggesting personalized running routes, and recommending real estate. Others investigated how recommender systems can be a successful part of completing larger, real-world tasks, for instance by offering help to users in completing their reports in SAP or by investigating how teachers can locate resources for use in classroom instruction using recommendations and information retrieval technology.

Several submissions focused on other complex aspects of recommendation, such as session-based recommendation for music, while another investigated how personality can be used to improve diversity in a music recommender system. Finally, several submissions tried to explore complex recommendation needs that go beyond traditional recommendation, such as generating successful recommendations for repeat consumption and recommender systems for self-actualization: helping users in developing their preferences rather than only suggesting accurate items.

4 WEBSITE & PROCEEDINGS

The workshop material (list of accepted papers, invited talk, and the workshop schedule) can be found on the ComplexRec workshop website at http://complexrec2018.aau.dk/. The proceedings will be made available online and linked to from the workshop website. A summary of the workshop will appear in SIGIR Forum to increase cross-disciplinary awareness of recommender systems research.

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