

Third Workshop on Recommendation in Complex Scenarios (ComplexRec 2019)

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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 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 interest? 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 a single step in the user's more complex background task or need. The goal of the ComplexRec 2019 workshop is to offer an interactive venue for discussing approaches to recommendation in complex scenarios that have no simple one-size-fits-all solution.

CCS CONCEPTS

• Information systems → Recommender systems.

KEYWORDS

Complex 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,

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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 interest?

In reality, recommendation is often a more complex problem: the evaluation of a list of recommended items never takes place in a vacuum. It is often a single step in the user's more complex underlying task or need and these additional factors often place a variety of constraints on the recommendation task. For example, standard algorithms typically work with user preferences aggregated at the item level, but real users may prefer certain features of items more than others or attach more weight to those features. Furthermore, a user's interest in an item may vary under different conditions or subject to the peculiarities of the underlying domain. Users may want combinations of multiple items, or recommendations on the sequence of consumption. Moreover, different users may want different information about items, so beyond ranking the system needs to decide which information best to display to each user. In addition, 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, but recommendation under more complex scenarios as described above has not been fully explored. The **ComplexRec 2019** workshop addressed this by providing a interactive venue for discussing approaches to recommendation in complex scenarios that have no simple one-size-fits-all solution.

ComplexRec 2019 was the third edition of the workshop on recommendation in complex scenarios [5, 6]. The first two editions were held at RecSys 2017¹ and RecSys 2018². In recent years, other workshops have also been organized on topics related to our workshop's focus. Examples include the CARS (Context-aware

¹Workshop website and proceedings available at <http://complexrec2017.aau.dk/>.

²Workshop website and proceedings available at <http://complexrec2018.aau.dk/>

Recommender Systems) workshop series (2009–2012) organized in conjunction with RecSys [1–4], the CARR (Context-aware Retrieval and Recommendation) workshop series (2011–2014) organized in conjunction with IUI, WSDM, and ECIR [7–10, 13], as well as the SCST (Supporting Complex Search Tasks) workshop series (2015, 2017) organized in conjunction with ECIR and CHIIR [11, 12].

2 TOPICS AND FORMAT

ComplexRec 2019 was organized as an interactive half-day workshop with short paper presentations and a keynote, with the aim of capturing a diverse set of aspects that contribute to complex recommendation scenarios. We therefore invited contributions to the workshop about topics related to complex recommendation, such as:

- **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 and domains** (Approaches to dealing with complex data sources or data sources with unique characteristics in a specific domain or across several domain.)
- **Evaluation & validation** (Approaches to the evaluation and validation of recommendation in complex scenarios)

3 WORKSHOP SUMMARY

The half-day workshop consisted of two slots, with six paper presentations and a closing keynote presentation by Christoph Trattner about the complexities inherent in two different domains: data visualizations and recipes. Authors of accepted submissions were invited to give 15-minute presentations. Evaluation criteria for acceptance included 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 at least three members of the Program Committee.

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://complexrec2019.aau.dk>. The proceedings are available as a CEUR Workshop Proceedings volume, a link to which can be found on the workshop website. A summary of the workshop will appear in SIGIR Forum to increase cross-disciplinary awareness of recommender systems research. In addition, we aim to explore the possibility of publishing a special journal issue on recommendation in complex scenarios, collecting the best authors and papers of the 2017–2019 editions of the workshop.

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