# Narrative-Driven Recommendation as Complex Task

Toine Bogers
Aalborg University Copenhagen
Denmark
toine@hum.aau.dk

Marijn Koolen
Royal Netherlands Academy of Arts and Sciences
Netherlands
marijn.koolen@di.huc.knaw.nl

## ABSTRACT

This paper is an extended abstract of [2] and [3].

**ACM Reference Format:**
Toine Bogers and Marijn Koolen. 2018. Narrative-Driven Recommendation as Complex Task. In *Proceedings of Dutch-Belgian Information Retrieval Workshop (DIR2018)*. ACM, New York, NY, USA, 1 page.

## 1 INTRODUCTION

Current-generation recommendation algorithms are often focused on generic ratings prediction and item ranking tasks based on a user's past preferences. However, many scenarios are more complex with specific criteria and constraints on which items are relevant. This paper focuses on a particular type of complex recommendation needs: Narrative-Driven Recommendation (NDR), where users describe their needs in short narratives, often with one or more example items that fit that need, against a background of historical preferences that may not be spelled out in the narrative, but do play a role in their considerations. We show that such complex needs are common on the Web, yet current-generation systems offer limited to no support for these needs. We focus on narrative-driven book recommendation in the context of LibraryThing (LT) users posting recommendation requests in the discussion forums. We provide an analysis of these needs in terms of their structure, the relevance aspects they cover, and what types of data and algorithms fits these aspects. Subsequently, we propose several new algorithms that take advantage of these narratives and example items as well as hybrid systems, most of which significantly outperform classic collaborative filtering. We show that NDR is indeed a complex scenario that requires further study. Our findings have consequences for system design and development not only in the book domain, but also in other domains where users express focused recommendation needs, such as movies, television, games and music.

## 2 REQUEST ANALYSIS

We analysed a random sample of discussion threads on the LT forums and found that 9% of these focus on recommendation requests, making this a prevalent recommendation need and scenario. Of these requests, 58% contain example books or authors. The narrative often contains content-related criteria such as topic, genre, style and difficulty level, but also familiarity aspects based on previous reading experiences (e.g. books with similar style, mood or plot as some given example books). Other important relevance aspects are engagement, accessibility and metadata (e.g. books by a certain author or by a specific publisher. Similar types of NDR requests were found in other domains such as games, movies and music [1]. The different relevance aspects require different types of data and different types of relevance models. E.g. familiarity aspects require a user's personal preference information (transactions and ratings) and latent factor analysis. Topical content aspects require subject analysis as found in library metadata and user tags and reviews.

## 3 EVALUATION

The user's recommendation need is partially represented by the narrative request and the example books and authors. Using the narrative request as a textual representation is a form of **Narrative-Driven Recommendation** (NDR). Using the example books and authors as a mini-profile is referred to as Example-Driven Recommendation (EDR).

We extended the test collection from the CLEF 2016 Social Book Search Lab [4] with additional requests and relevance judgments, and evaluate a number of standard content-based filtering (CBF) and collaborative filtering (CF) approaches, using both NDR and EDR. We find that NDR is more effective than EDR and than traditional matrix factorization using the entire user profile, especially when using user-generated content such as reviews and tags for matching. Example books are more effective than example authors, probably due to the author representation leading to topic drift. However, combining NDR and EDR in a hybrid system significantly outperforms each individual approach, showing the narrative and examples provide complementary signals.

## 4 CONCLUSIONS

Narrative-Driven recommendation is a complex scenario that requires multiple data sources and algorithms to solve, and exploiting user-generated content is essential to good performance. Future work includes semantic analysis of the requests to extract structured information, exploring the value of conversational search and recommendation models and knowledge-aware approaches and testing in the domains of games, movies and music.

## REFERENCES

[1] Toine Bogers, Maria Gäde, Marijn Koolen, Vivien Petras, and Mette Skov. "What was this Movie About this Chick?" A Comparative Study of Relevance Aspects in Book and Movie Discovery. In *Proc iConf 2018*. Vol. 10766. Springer, 323–334.
[2] Toine Bogers and Marijn Koolen. 2017. Defining and Supporting Narrative-driven Recommendation. In *RecSys '17: Proceedings of the Eleventh ACM Conference on Recommender Systems*. ACM, 238–242.
[3] Toine Bogers and Marijn Koolen. 2018. "I'm looking for something like ...": Combining Narratives and Example Items for Narrative-driven Book Recommendation. In *KARS '18: Proceedings of the First Knowledge-aware and Conversational Recommender Systems Workshop*. CEUR-WS.
[4] Marijn Koolen, Toine Bogers, Maria Gäde, Mark M. Hall, Iris Hendrickx, Hugo C. Huurdeman, Jaap Kamps, Mette Skov, Suzan Verberne, and David Walsh. 2016. Overview of the CLEF 2016 Social Book Search Lab. In *Experimental IR Meets Multilinguality, Multimodality, and Interaction - 7th International Conference of the CLEF Association, CLEF 2016, Évora, Portugal, September 5-8, 2016, Proceedings*. 351–370.

*DIR2018, Nov 2018, Leiden, the Netherlands*
2018.