

EVALUATION FRAMEWORK FOR PERSONALIZED RECOMMENDATIONS

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Abstract. The increase of the recommender system popularity brings researches to the various routine task. The lifecycle of recommender system design and optimization consists of several “routine” task. We propose RECO – a framework for the design and evaluation of recommender systems. RECO contains set of standard approaches for the content based or collaborative recommendation, similarity computation or metrics for evaluation. Our framework allows researcher to mix various parts of recommenders, design experiment and evaluate results of prototypes, which results in huge time savings.

1. Introduction

The design, optimization and evaluation of recommender approaches often involves repeating tasks -similar task have to be performed and implemented. In the evaluation phase, often reference recommenders have to be implemented in order to obtain relevant results, while often various solutions are available only in specific languages or environments.

Two basic techniques for personalized recommendation have been proposed and are used in today’s systems. The collaborative recommendation assumes that similar users tend to prefer similar items. On the other hand, the content based recommendation is generated based on the similar items to the previous liked by the user. Often these principles are mixed in order to obtain better results and to solve some problems of each approach (e.g. cold start problem). Such an ideal combination has to be found in the every application domain. Therefore, the process of such “ideal combination” search is often crucial, time and effort consuming. There are plenty of known shortcomings for various approaches as overspecialization, gray sheep effect or the trust of users, which offer a great area for the research.

2. RECO –experimental framework

RECO is designed to provide one unified framework for the personalized recommendation design and experiments [1]. It supports the design of the new recommenders and also provides tools for evaluation of such new approaches (Figure 1). Proposed framework is fully extensible, it allows researchers to add own recommenders, similarity metrics, collect various type of feedback and also create own evaluation metrics. For the comparison to state-of-art approaches, set of predefined algorithm as similarity computation, or basic recommenders are included into the framework.

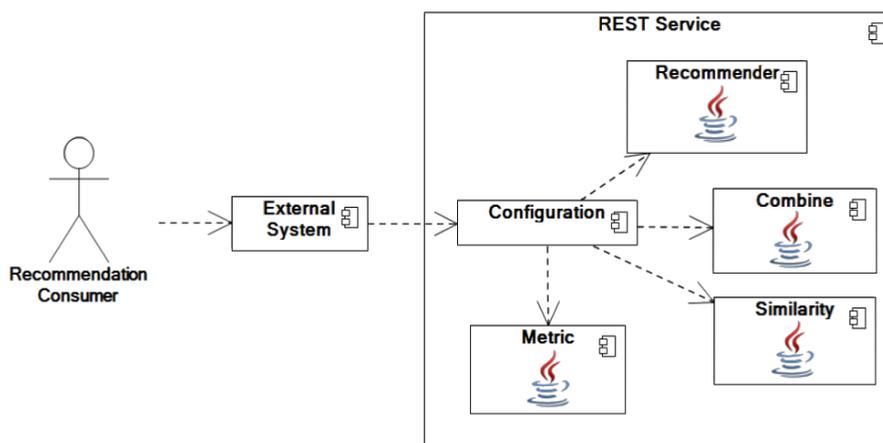


Figure 1. Architecture of proposed recommendation framework RECO.

Thanks to the universal user model, proposed framework can be extended to include specific information about actual user state and use this information in the process of recommendation (e.g. time spent for learning, user context).

Our experiments support the hypothesis that proposed novel approach is suitable to provide the unified, platform independent environment for designing and evaluation of new approaches – designing various approaches within various domains and platforms [1]. Moreover, the performance evaluation shows, that our framework can be used for the online evaluation tasks and it is able to save a lot of time and effort when designing and evaluating recommender approaches.

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References

to other papers publishing the results that are summarized here

- [1] Ševcech, J., Kompan, M., Bielíková, M.: RECO - A Framework for Experimentation with Recommenders. In: *Proc. of the International Conference WWW/INTERNET 2012, IADIS*, (2012), pp. 117–124.