

Explanations of Personalized Recommendations

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Recommender systems became widely used in many different areas and on many web sites such as Amazon, Netflix, Pandora etc.. These systems are designed to learn from user's behavior and help them find what they are looking for, or offer recommendations about information they might find useful [1].

Despite its usefulness and popularity, there are various reasons, why users might find it uneasy to use these systems, or to trust and rely on recommendations they offer. The lack of knowledge about the process of recommendation tend to leave user unsafe. Privacy issues are often considered, about which information were kept, which were not and why. Hence, these systems are usually seen as black boxes in which there is no other choice for a user than to trust their recommendations. This leads users to discouragement and dubiousness in recommendations [1,2].

One of many approaches to make these systems more transparent and more credible is to present recommendations with explanations. While recommendations tell users, what they might like, explanations reveal, why they might like them. Explanations such as the one offered by Amazon: *Customers who bought this item also bought...* are not even able to increase transparency and credibility, but can also help users make decision or find what they seek, even faster.

These explanations fall into one of the three categories, namely *item-based*, *user-based* and *feature-based*. In item-based approach, explanations are based on a set of items, with Netflix as an example, which shows users their past ratings for a set of related movies.. User-based approach use other users to created explanations, such as example from Amazon previously mentioned. Feature-based approaches use qualities or characteristics of the recommended item [4].

Many researches have been done, which show that, presenting explanations of recommendations can be considered a valuable source of information for user [2,3]. Various researches have also shown, that different types of explanations have also different impact on each individual user's behavior. While some are more effective in

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decision making, others lead to better transparency and satisfaction of users using the recommender system, some even in spite of their positive effect, lead to failure. Therefore, explanations are considered highly user-dependent, what is good for one user is not necessarily good for another [2].

Nowadays, different explanation types exist in recommender system, each can be evaluated according to different criteria. In [1] seven different goals were identified for explanations, which serve mainly to evaluate how good given explanations to users are, namely [1,2]:

- Transparency - explain how the system works
- Scrutability - allow users to tell the system it is wrong
- Trust - increase users' confidence in the system
- Effectiveness - help users make good decisions
- Persuasiveness - convince users to try or buy
- Efficiency - help users make decisions faster
- Satisfaction - increase the ease of use or enjoyment

However, creating explanations that do well on all criteria might be hard to achieve. In reality, it is a trade-off. As an example of a trade-off is creating explanations with high value of transparency, which eventually slows down efficiency, because user might spend more time to read these explanations, ending with longer search time [1].

In our work, we focus on different approaches in presentation and explanation of recommendations. Our aim is to create recommender system with different types of explanations, able to present these explanations to the users. By using common approaches and methods for evaluating, we determine if our proposed approaches enhance user's satisfaction and use of a system.

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