

Management of recommendations for accessible eLearning platforms: is it a need for learning management system users?

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Abstract. The objective of this paper is to open a discussion within the workshop regarding the particularities of recommendations in the eLearning domain. In particular, in the context of learning management systems (LMS) that support inclusive scenarios, we aim to discuss the utility of an authoring tool for teachers to manage the recommendations provided by the LMS to students. The objective of this tool is twofold: 1) to facilitate the involvement of teachers in the process of understanding the needs of users when providing recommendations in the eLearning domain, and 2) to offer teachers a control mechanism on what is recommended to users.

Keywords. Recommender systems, Accessibility, Authoring tools, eLearning.

Introduction to the discussion topic

In a world where information overload is constant, recommender systems (RS) represent a highly valuable feature: they aim to offer the most relevant products, services or guidance to each specific user. RS are based on technologies processing previous interactions with the system from a specific user or from similar users. Typical examples of RS are found in commercial web services (e.g.: Amazon, YouTube, LastFM). In the eLearning domain, at this time none of the major eLearning platforms, being commercial or open-source, include a RS. And it is a fact that in learning management systems (LMS) information overload exist.

In aDeNu R&D group, we are developing a RS within the context of an e-learning platform that takes into account not only the user preferences, but also psycho-educational considerations. Following a user centered design process, we have found out that in the case of e-learning scenarios involving interactions with a teacher, there is a need for a validation step, before publishing a recommendation. This “manual” step deviates from the initial concept of RS where recommendations are generated and published automatically using artificial intelligence techniques such as collaborative filtering and content-based filtering. Our approach is not to substitute the algorithms by the teachers’ knowledge (as in expert systems) but to provide a tool to facilitate the involvement of teachers in the process. It follows two objectives: 1) to offer a tool where teachers can modify, design and experiment recommendations, and 2) to offer

teachers a control mechanism on what is recommended to users. Teachers can benefit from the reduced workload coming from the analysis of the users' interactions and the generation of recommendations regarding platform support with artificial intelligence techniques. But they also want to have visibility and control on what is recommended to their learners within the course.

The research questions that we aim to solve are:

- What are the needs of users of LMS?
- What psycho-educational support is required in inclusive eLearning scenarios?
- What types of situations are meaningful for providing recommendations?
- Which is the best action each learner should perform in each situation?
- What type of recommendations can best benefit to the learners?
- What is the most appropriate design for the teacher's tool to manage recommendation?

Currently, we are focusing on the needs of learners to improve the efficiency, effectiveness and satisfaction during their learning, and how the teacher can be supported in her tutoring task with a RS. A useful recommendation for a learner depends on many variables/factors: the user's learning goals, the progress in the course, the quality of the contents contributed by other members, etc. Given the complexity of the learning context, it is not possible to design in advance the most appropriate navigation path for each learner in each situation as instructional design theories propose, but it has to be dynamically built taking into account the current learner features, her context and past interactions (of other users, whether they have been can be successful or not). Recommendations offer a personalized way to guide learners through the wide spectrum of possible actions to in the course. An adaptive system is required for such a personalized navigation support. In this respect, RS is considered a suitable solution to provide adaptive responses to users' interactions.

Our innovation here is to offer the teacher a tool to validate and modify the recommendations generated by the algorithms, as well as to introduce new ones that consider psycho-educational needs that may not have been covered by the algorithms. Two hypothesis support this idea (which are to be validated) are: i) teachers feel more confident with this control over the recommendations and ii) for the algorithms, this human input is useful to improve the quality and utility of the recommendations generated. The main research goal now is to understand the needs of learners in LMS. For this, a scenario-based user centred design process has been defined that involves teachers in the process to elicit relevant eLearning situations and what recommendations could be provided in them. We are designing an authoring tool that can be used by the teacher to create new recommendations and manage those that are given to the learners. The design of the authoring tool needs to take into account the conceptual model of the users in order to provide a simple interface for managing a complex system as it is the RS.

We would like to take advantage of the expertise of the audience of the workshop to discuss the particularities of recommendations in the eLearning domain. In particular, in the context of LMS that support inclusive scenarios, whether an authoring tool for teachers to manage the recommendations is perceived as useful.

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