Course Recommendation Based on Query Classification Approach

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ABSTRACT
This article describes how with a non-formal education, a scholar has to choose courses among various domains to meet the research aims. In spite of this, the availability of large number of courses, makes the process of selecting the appropriate course a tedious, time-consuming, and risky decision, and the course selection will directly affect the performance of a scholar. The best approach to solve such problems and to produce desirable results is to use a “recommendation system.” Recommender systems at the core employ information retrieval techniques and the ongoing effort of such information retrieval systems is to deliver the most relevant information to the learner. Therefore, if a recommender system is able to recognize the intent and requirements that a user express in the form of queries, it can generate more valid recommendations. This article presents an N-Gram classification technique which can be used to generate course recommendations to scholars depend on the requirements and domain of interest. This way of personalization can improve the quality of research and learning experience by recommending courses which are otherwise overlooked by scholars, as it takes the time to go through the curriculum and finding the best possible match.

KEYWORDS
Classification, E-Learning, Ontology, Personalization, Recommendation System

1. INTRODUCTION
Recommendation Systems have been an area of significant research interest since its inception from mid-1990. However, recommendation systems haven’t been effectively used in E-learning as compared to other Domains. These Systems had been explored and implemented in various domain applications, which includes mostly E-Business in the last decade. With advancement in learning Technology, the demand for E-Learning and Online learning systems are growing as all these systems are based on Learner centric environment, Recommender system is getting lots of attention in e-learning systems by Providing personalized and most relevant Information or courses to learners that is likely of their area of their interest. Personalization means to tailor the needs of Learners which can be based on the technical needs and requirements, knowledge, style of learning and other preferences of learners. This approach is beneficial as it motivates learners to improve their performance (Zameer et al., 2015).

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However, due to huge number available courses and when it comes to select what to learn, learners would feel difficult to make a decision what course to choose and what would be more appropriate for them. They can support their decision based on their previous knowledge. But in some cases, to select the right course, topic, task or material might be tedious. In such situations, a recommender system can be a savior by making appropriate course selections (Adomavicius et al., 2011). At present RS’s are the most employed tools for personalization in e-commerce, businesses, social networking, entertainment and Educational Scenario, etc., because they provide the basic and the relevant information that is likely in the interest of the user of the system. The Learners are provided with the content which is relevant and suitable for their needs, obtained through different methods like learner’s profile, of selection, etc. (Nganji et al., 211). Several recommender systems in E-learning have been introduced but most of them will be focusing on recommending learning material only (Kumaran, & Sankar, 2013). Found that technology quality, course flexibility, course dimension perceived usefulness is positive significant predictors of learner’s satisfaction (Maryam et al., 2016). Therefore, Integration of such beneficial and successful recommender systems in other domains encouraged researchers to seek its benefits in Learning Technologies or E-learning Domain as they know RS have the high potential for achieving personalization at an advanced level in such domain.

Therefore, in this paper, we have proposed a hybrid recommender system that supports learner centered activities by selecting the appropriate courses and recommend it to the learner as per his area of interest. The benefits of such paradigm are that it promotes active learning, motivates them and can enhance their performance. In e-learning systems, a number of recommender system have been proposed and implemented so far, but most of them focus on recommending Learning Objects and Learning tasks only. Our proposed a recommender system is based on Query Classification supported by Ontology and aims at recommending Learning Courses based the learner’s area or domain of interest. It also presents knowledge model using Ontology for all courses and also creates a model for learner so that learner can easily see the how courses are connected with each other. Such approach in the domain of Computer Science & Engineering is very limited. The Ontologies related to a CS domain provides sharing and common understanding of main concepts in domain and relationship among the concepts. This recommender system can be integrated with any learning system to provide personalization based on the domain of learners’ interest along with ontology support.

The remainder of the paper is organized as follows: The next section 2 presents Literature review. In Section 3 proposed methodology is described. Section 4 include implementation and the construction of Ontology and Section 5 presents’ performance measure followed by Performance accuracy in Section 6. The remaining, Section 7 includes results and discussions and Section 8 will conclude the paper by giving a brief of the main contributions of our approach and presenting future directions.

2. RELATED WORK

With advancement in learning Technology, the demand for E-Learning and Online learning systems are growing as all these systems are based on Learner centric environment, which provides advantages to learners such as learning, whenever and wherever they want as per their own pace. Learning pedagogies are of two types: teacher centric and Learner centric. In former, a teacher is responsible for controlling the learner and decides what a learner should during the learning process, but a shift can be witnessed towards learner centric approach where a learner himself chooses what to learn and how to learn, as teacher centric learning is a traditional and common pedagogy. Such flexibility can motivate a learner and help them to improve their performance (Bahramiana, 2015). But most of the E-learning systems lack flexible delivery of resources and prominent among them is that a learner has to spend his time to find right course content which is a time-consuming task (Zameer et al., 2016). In such Recommender Systems can come to rescue and manage that information load
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