

An Ontology based framework for resolving common problems of offline technical course recommendation system

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ABSTRACT

Purpose

The academic course selection by students is a problem where information available is not sufficient to provide reliable recommendation. For such domains the recommender systems suffer from challenges like cold-start, sparsity, first-rater and scalability. The proposed work therefore aims to resolve all these common problems simultaneously.

Design

The Ontology is prepared using protégé and visualized online using OWLGrEd. The case study of building trust based ontology for course recommendation is included.

Findings

The proposed framework is able to solve cold-start, sparsity, first-rater and scalability. In case of cold start user will be recommended using the form (form for new user having top k factors) we will recommend the user on the basis of the ratings he provides to those k factors. In case of sparsity we will use the knowledge of trust from the knowledge base made from trust base ontology and provide the recommendation. First-rater can be resolved using the knowledge of factors and there ratings from the knowledge base made from trust based ontology and provide the recommendation. As framework is using forms if we use offline form the system is scalable.

Research limitations

The framework is made using ontology which is domain specific.

Practical implications

The framework can be implemented to make recommender system for academic course selection.

Originality

This paper contributes to resolve the problem of cold-start, sparsity, first-rater and scalability simultaneously from recommender system.

Keywords

Course recommendation, Cold-start, framework for first rater, Ontology based framework, Ontology based Framework for course Recommender .

1 INTRODUCTION

The availability of recommendation on web giants made recommender systems as one of the most trending topics of research. These recommendations are the predictions using one of the criteria

- The interest of the user in particular product/service.
- The interest of similar type of users in particular product/service.

How to measure the interest of user in a particular item varies with the method applied (Bobadilla et al.,2013)

There is an increase in requirement of recommendation in Educational institutes(Drachsler et al.,2015).

In the field of learning recommender system assist the user where user can be any learner/faculty/counsellor/institute to find appropriate learning media/activity/object in the procedure of learning/teaching (Lu et al.,2015).

1.1 Recommendation Techniques:

Following are the 9 major recommendation techniques developed so far

1.1.1 *Techniques based on content:* content based technique is a technique in which machine learning provides a classifier system

1.1.2 *Techniques based on collaborative filtering:* Collaborating filtering is the technique in which similar users are identified. In year 2018, a survey was conducted (Wang et al.,2018) which claimed that most of the recommendation still applies Collaborative filtering or content based techniques.

1.1.3 *Techniques based on Knowledge:-* In the Knowledge-based (KB) recommender system a method is applied to extract the knowledge. Performance of recommendation based on implicit knowledge is better in terms of performance(van Capelleveen et al.,2018).