SemAware: An Ontology-Based Web Recommendation System

Nizar Mabroukeh, University of Windsor

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Abstract
Web Recommendation Systems (WRS's) are used to recommend items and future page views to world wide web users. Web usage mining lays the platform for WRS's, as results of mining user browsing patterns are used for recommendation and prediction. Existing WRS's are still limited by several problems, some of which are the problem of recommending items to a new user whose browsing history is not available (Cold Start), sparse data structures (Sparsity), and no diversity in the set of recommended items (Content Overspecialization). Existing WRS's also fail to make full use of the semantic information about items and the relations (e.g., is-a, has-a, part-of) among them. A domain ontology, advocated by the Semantic Web, provides a formal representation of domain knowledge with relations, concepts and axioms. This thesis proposes SemAware system, which integrates domain ontology into web usage mining and web recommendation, and increases the effectiveness and efficiency of the system by solving problems of cold start, sparsity, content overspecialization and complexity-accuracy tradeoffs. SemAware technique includes enriching the web log with semantic information through a proposed semantic distance measure based on Jaccard coefficient. A matrix of semantic distances is then used in Semantics-aware Sequential Pattern Mining (SPM) of the web log, and is also integrated with the transition probability matrix of Markov models built from the web log. In the recommendation phase, the proposed SPM and Markov models are used to add interpretability. The proposed recommendation engine uses vector-space model to build an item-concept correlation matrix in combination with user-provided tags to generate top-n recommendation. Experimental studies show that SemAware outperforms popular recommendation algorithms, and that its proposed components are effective and efficient for solving the contradicting predictions problem, the scalability and sparsity of SPM and top-n recommendations, and content overspecialization problems.

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Research on the Application Ontology-Based Personalized Tourist Recommendation System. Pan Hua-li. 1. 1. OWL stands for Web Ontology Language, which is a standard Semantic Web ontology language. OWL uses an object-oriented way to describe the field of knowledge. That is using class attribute to describe the object, and also using axiom to describe the characteristics and. Recommendation Systems; Semantic analysis; ontology-based analysis; Wikipedia ontology. 1. INTRODUCTION. The web has become the dominating source of information in people's life. Nowadays, internet users are able to update web content in a variety of web applications. Stemming from the efficiency of using Wikipedia as an ontology, the work presented exploits that fact for proposing a semantic-based text recommendation system model. The proposed semantic analysis modifies part of the work done in [7] using spreading activation and the concepts hierarchy for extracting concepts from the ontology. A hybrid collaborative via content recommender model is used for recommendation as it proved to be more promising compared to traditional models [3]. In semantic recommendation approach, the recommendation process is generally based on a concept diagram or an ontology describing a knowledge base and uses Semantic Web technologies [42]. An ontology, which consists of concepts in a domain and relations between them, is a form of knowledge representation [43]. Because the semantic recommendation systems bases on a knowledge-base, they can appear in the category of knowledge-based recommender systems [2]. Semantic recommendation systems can be used to limit the sparsity and new item problems of collaborative filtering systems [44]. Some of