

ABSTRACT

Title: SemRPer- A Rule based Personalization System for Semantic Web

With millions of pages available on Web, it has become difficult to access relevant information. One possible approach to solve this problem is Web personalization. Web personalization is defined as any action that customizes the information or services provided by a Web site to an individual. Personalization in Web is no longer considered an option but has become a necessity because of the movement from traditional physical stores of products or information to virtual stores of products and information. Personalization helps to solve the customer retention problem. Web contains documents which can be interpretable only by human beings but not by machine. To support machine-processed content on Web, Tim Berners-Lee proposed Semantic Web, which will enable the machines to understand and process the information automatically by adding meaning to the documents on Web. World Wide Web has been extended as Semantic Web for supporting extraction of new knowledge to facilitate decision-making processes by enabling machines to understand the content. When personalization is applied to the Semantic Web it offers many advantages when compared to the traditional Web because Semantic Web integrates semantics with the unstructured data on Web so that intelligent techniques can be applied to get more efficient results. Semantic Web is the next generation Web where information is organized into conceptual spaces called as ontologies. Ontological relationships are utilized in inferring additional characteristics required for producing personalized recommendation for Semantic Web users.

SemRPer- A Rule based personalization system for Semantic Web users is proposed in this research work. Jena Semantic Web framework is used for creating Semantic Web application because it's free; Java based, contains API and supports plug-ins and tools for working with RDF and OWL. SemRPer system generates personalized recommendations using a generic rule reasoner which can be configured using rule set which consist of a set of rules written to carry out the personalization task. Logic formalisms supported in Semantic Web is utilized for writing rules. SemRPer system performance is demonstrated on ontologies from different domains. Precision, Recall and F1-Measure measures are used to specify the quality of generated recommendations. SemRPer system generates recommendations with high values of precision, recall and F1-Measure when compared to recommendations generated by existing system. SemRPer system is rigorously tested based on the performance markers such as loading time of ontology, configuration and reasoning time of the reasoner and the memory consumed for generating personalized recommendations. Performance of the proposed system is found to be far ahead in terms of existing system. The main aim of personalization system is to reduce the time required for searching the required information is successfully achieved in this research work by generating a novel Semantic Web based personalization system which not only produces high quality recommendations but also has a very good performance in terms of time and memory consumed to generate recommendations.