Title: A reference ontology for profiling scholar's background knowledge in recommender systems

Author/Authors: Bahram Amini, Roliana Ibrahim, Mohd Shahizan Othman, Mohammadali Nematbakhsh

Abstract: The profiling of background knowledge is essential in scholar's recommender systems. Existing ontology-based profiling approaches employ a pre-built reference ontology as a backbone structure for representing the scholar's preferences. However, such singular reference ontologies lack sufficient ontological concepts and are unable to represent the hierarchical structure of scholars' knowledge. They rather encompass general-purpose topics of the domain and are inaccurate in representing the scholars' knowledge. This paper proposes a method for integrating of multiple domain taxonomies to build a reference ontology, and exploits this reference ontology for profiling scholars' background knowledge. In our approach, various topics of Computer Science domain from Web taxonomies are selected, transformed by DBpedia, and merged to construct a reference ontology. We demonstrate the effectiveness of our approach by measuring five quality-based metrics as well as application-based evaluation against the developed reference ontology. The empirical results show an improvement over the existing reference ontologies in terms of completeness, richness, and coverage.