MASTER'S PROJECT (SUMMER 2014)

TOPIC: *Estimation of Topic Coverage for Computer Science Courses Using Ontology Mapping*

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ABSTRACT

An ontology language can be used to formally specify concepts as well as their relationships in a certain knowledge domain. Ontology languages such as Web Ontology Language (OWL) are typically based on description logic or first-order logic; therefore, they support formal reasoning and classification in a specified knowledge domain. However, since ontologies in a certain knowledge domain are usually developed by many people or different organizations, they are inevitably structured differently and possibly inconsistent. How to match different ontologies within the same knowledge domain and provide effective mapping mechanism between them have been an important and challenging task in ontological engineering. In this project, we study how to estimate the percentage of the overlapping between two subjects specified in ontology by using ontology mapping and similarity measures. Some preliminary results are demonstrated through a case study. In the case study, we adopt a graduate course in computer science offered at UMass Dartmouth, namely CIS 560 - Theoretical Computer Science, as an example, and specify the ontology in terms of its topic coverage and lecture hours. We also specify the ontologies for any related courses to CIS 560, possibly with different topic coverage, offered at another university. By analyzing the ontologies and reasoning about their specified topics and lecture hours, we are able to automatically estimate the percentage of topics in this course covered by a different university. Since checking course coverage has been a critical and nontrivial task in evaluating graduate applications, which are traditionally processed manually, our approach may potentially automate this process and make the process much more efficient.