

Development of a Conceptual Map Generation Tool for Exploring Ontologies

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Abstract. This paper discusses a conceptual map generation tool for exploring ontologies. It extracts concepts from an ontology and visualizes them in a user-friendly form, i.e. conceptual map, in which the user is interested. It helps users to understand the extracted knowledge from the ontology, and contribute to integrated understanding of ontologies and domain dependent knowledge.

Keywords: Ontology exploring, View point, Conceptual map

1 Introduction

Ontologies are designed to provide systematized knowledge and machine readable vocabulary of domains for Semantic Web applications. It is important that the ontology captures the essential conceptual structure of the target world as generally as possible. However, such ontologies are sometimes regarded as verbose and divergent descriptions by domain experts because they often want to understand the target world from the domain-specific viewpoints in which they are interested. In many cases their interests are different, even if they are experts in the same domain. Therefore, it is highly desirable to have not only knowledge structuring from the general perspective but also from the domain-specific and multi-perspective perspective so that concepts are structured for appropriate understanding from the multiple domains. On the basis of this observation, we developed a conceptual map generation tool for exploring ontologies. The tool extracts concepts from an ontology and visualizes them in a user-friendly form, i.e. conceptual map, depending on the viewpoints that the users specify. The tool bridges the gap between ontologies and domain experts, and it can contribute to effective utilization of ontologies.

2 A Conceptual Map Generation Tool for Exploring Ontologies

Fig.1. outlines the conceptual map generation tool that extracts concepts from an ontology and visualizes them depending on the viewpoints in which the user is interested. We define the viewpoint as the combination of a focal point and an aspect. The focal point indicates a concept to which the user pays attention as a starting point of exploration. The aspect is the manner in which the user explores the ontology. Because an ontology consists of concepts and relations among them, the aspect can be represented by a set of methods for extracting concepts according to its relations. We classify the relations into *is-a* relations and others, and define two methods in each

