SUMMARY OF Ph.D. DISSERTATION

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Title

Implementing Semantic Web Contents Development Tools with Case Studies

Abstract

Since current Web contents are just for people, it is difficult for machine to understand them. On the other hand, Semantic Web enables machine to understand and even infer Web contents, giving machine-readable metadata to them. Thus intelligent search and data integration over many applications will come up with   Semantic Web.

However it takes many costs for users to develop Semantic Web contents described by RDF, RDFS, and OWL by hands. So this paper focuses on the intelligent tools to support users in constructing them.

This paper has been organized as follows:

Chapter1 described backgrounds, issues, and purpose of this study.

Chapter2 introduced Semantic Web technologies, definitions and examples of ontology, an ontology development method, and ontology development environment as related technologies and studies around this paper.

Chapter3 described the design, implementation, and evaluation of the RDF(S) contents development tool called MR^3. MR^3 has graphical facilities for RDF(S) contents and RDF(S) management facilities to maintain both RDF and RDFS mutually. In order to evaluate MR^3, we compared MR^3 with other related tools. Case studies in the domain of business have shown us that MR^3 goes well.

Chapter4 described the design, implementation, and evaluation of the domain ontology (OWL contents) development environment called DODDLE-OWL. DODDLE-OWL makes reuse of existing ontologies and supports the semi-automatic construction of taxonomic and other relationships in domain ontologies from documents. In order to make sure how much well DODDLE-OWL goes, we compared DODDLE-OWL with popular ontology development tools. In order to evaluate the scalability of DODDLE-OWL, we constructed a large scale of ontology with 34,000 concepts or more in the field of rocket operation using DODDLE-OWL. The case studies have shown us that we have build up the large scale of the rocket operation ontology within 30 hours.

Finally, in chapter5, we have concluded this paper and pointed out future issues.