

Ontology Research at Miami University (ORG@muohio)

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Abstract

The Semantic Web, considered by many to be the next generation of the Web, is “an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation.” (Berners-Lee et al, 2001) Researchers are actively participating in the development of techniques and tools to make the meaning of the information explicit and to reason based on an understanding of this meaning. “For the semantic Web, ontologies from the AI field are envisaged to codify this information. ...Therefore, the future of the semantic Web is linked with the future of ontologies on the Semantic Web.” (Kim, 2002)

The Ontology Research Group at Miami University (ORG@muohio) is dedicated to investigating issues that affect the usability of ontologies for the Semantic Web. An ontology is a specification of a shared conceptualization (Gruber, 1993). An ontology specifies a shared vocabulary used to model a domain of interest. This vocabulary describes the types of objects and/or concepts that exist, their properties and relations. Standard relations such as is-a and part-of have predefined semantics. Ontologies have been developed for many purposes. In software systems, they provide reusability and information sharing. In information retrieval the search operation may use an ontology as metadata to help direct the information retrieval to more relevant sources. Researchers in areas such e-Commerce or geographical information systems are developing global standardized ontologies. But most agree that it is not feasible for each discipline or community to standardize.

The various research issues being tackled by ORG@muohio include the use of semantic similarity for determining ontology interoperability, ontology metrics for evaluation of the reusability of ontologies, ontology learning for adaptation, annotation querying with terminological ontologies, and 3D ontology visualization. This presentation provides first an overview of the Semantic Web and ontologies and then overviews several of these various research projects addressing issues that hinder the widespread use of ontologies.

Berners-Lee, T. and J. Hendler (2001)The Semantic Web,
<http://www.sciam.com/2001/0501issue/0501bernens-lee.html>

Gruber, T. (1993) "A translation approach to portable ontology specifications."
Knowledge acquisition, 5(2), 199-220.

H. Kim, Predicting how ontologies for the semantic web will evolve, *Communications of the ACM* February 2002) pp 48 - 54.

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