Ontologies for Knowledge Management and Learning on the Semantic Web

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Abstract

Most of the Web’s content today is designed for humans to read and not for computer programs to manipulate meaningfully. The Semantic Web is envisioned as an extension of the current Web in which information is given well-defined meaning, better enabling computers and people to work in cooperation. Ontologies are a key technology enabling interoperability in the Semantic Web by providing precisely defined vocabularies that can be shared between applications (and humans). Ontologies are conceptual models that represent domains and can be used to reason about objects in those domains and relations between them. Building ontologies and efficient tools for semantic annotation of Web documents however is still a challenging task and significant research is needed for realistic advancement in that direction.

In this talk I will present an overview of my research related to ontology engineering and development of ontology-based learning environments and the main prototypes developed in the Semantic Web-related projects of the Intelligent Information Systems Group at WSSU. I will present TM4L, a topic map-based ontology editor, which enables building, maintaining, and using ontology-aware repositories of (learning) resources. TM4L has already gained popularity in the international Semantic Web and e-Learning community. Users have translated its interface in twelve languages. I will also present three ontology-aware Web portals that we have developed - the Java Portal, the Ontologies for Education Portal, and the Virtual Art Gallery Portal.

Biography

Darina Dicheva is the Paul Fulton/Delta Sigma Theta Distinguished Professor of Computer Science at Winston-Salem State University. She has a PhD in Computer Science from the University of Sofia, Bulgaria. Before joining WSSU, she has worked as a tenured professor at the Faculty of Mathematics and Informatics, University of Sofia, Bulgaria, and as a visiting professor at Dublin City University and University College Dublin, Ireland. Her research interests include AI methods and tools in education, Intelligent tutoring systems, Web information management, Web-based educational systems, Ontology engineering, Semantic Web, Collective intelligence and Social networks, Adaptive information retrieval and filtering, and User modeling. Her research has been funded by the National Science Foundation and a number of EU Research Programs. She has authored and co-authored over 100 research papers and textbooks. She is a member of the IFIP WG 3.3 “Research on Educational Applications of Information Technologies”, the Int’l Society of AI in Education, ACM, IEEE, IFETS, and IEEE Learning Technology Task Force.