Chapter 12

SEMblog: An Ontology-Based Semantic Blogging Tool for Knowledge Identification, Organization, and Reuse

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ABSTRACT

Information Technology (IT) is often employed to put knowledge management policies into operation. However, many of these tools require human intervention when it comes to deciding how the knowledge is to be managed. The Semantic Web may be an answer to this issue, but many Semantic Web tools are not readily available for the regular IT user. Another problem that arises is that typical efforts to apply or reuse knowledge via a search mechanism do not necessarily link to other pages that are relevant. Blogging systems appear to address some of these challenges but the browsing experience can be further enhanced by providing links to other relevant posts. In this chapter, the authors present a semantic blogging tool called SEMblog to identify, organize, and reuse knowledge based on the Semantic Web and ontologies. The SEMblog methodology brings together technologies such as Natural Language Processing (NLP), Semantic Web representations, and the ubiquity of the blogging environment to produce a more intuitive way to manage knowledge, especially in the areas of knowledge identification, organization, and reuse. Based on detailed comparisons with other similar systems, the uniqueness of SEMblog lies in its ability to automatically generate keywords and semantic links.

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INTRODUCTION

Many organizations have adopted knowledge management policies in an effort to organize their knowledge resources and to stay ahead of their competitors. To facilitate knowledge management, IT-based tools have become indispensable in the day-to-day running of many organizations. However, many of these tools require human intervention when it comes to deciding how the knowledge is to be managed, i.e., how is the knowledge acquired and stored, how is it processed, and how is it retrieved and presented. Many of the knowledge management processes, i.e., knowledge creation, identification, acquisition, organization, sharing, adaptation, and application (O’Dell & Grayson, 1998) need careful design for them to be automated for the convenience of users.

The Semantic Web, through a better understanding of the meaning in Web documents, may be an answer to this issue but many Semantic Web tools are not readily available for the regular IT user. Another problem that arises is that typical efforts to apply or reuse knowledge via a search mechanism do not necessarily link to other pages that are relevant.

In an organization or a community, although employees or users may have relevant problem solving knowledge, many solutions go unnoticed because there is no proper outlet for them to share knowledge. Current blogging systems allow this but the browsing experience can be further enhanced by providing links to other relevant posts (Mishne, 2006; Sood, et al., 2007). Infusing the Semantic Web into blogging, semantic blogging (Cayzer, 2004) is seen as an effort to transform blogging into an effort to share rich information or knowledge as opposed to being just a “communal diary.”

In this chapter, we present a semantic blogging tool called SEMblog to identify, organize and reuse knowledge based on the Semantic Web and ontologies (Swartout & Tate, 1999; Wimalasuriya & Dou, 2010). The SEMblog methodology brings together technologies such as Natural Language Processing (NLP), Semantic Web representations, and the ubiquity of the blogging environment to produce a more intuitive way to manage knowledge, especially in the areas of knowledge identification, organization and reuse. These result in the categorization of blog posts, i.e. capturing the meaning of blog posts, for them to be effectively linked and shared with others.

BACKGROUND

Work on Semantic Web is usually related to ontologies (Swartout & Tate, 1999). This has been discussed by Warren (2006). Warren also elicited a knowledge management environment that starts from a scenario and then utilizes technologies along the way to fulfill a particular knowledge management purpose. Warren reported that, with the right technologies induced, Semantic Web works well as a search mechanism. Stojanovic and Handschuh (2002) introduced a real-life application approach to the Semantic Web by building a framework using the existing tools in the Semantic Web and enhanced it to cater for practical problems.

Haystack (Karger & Quan, 2004) provides a rigorous semantic blogging system that can handle inter-links from different blogs. The project has been reported as a successful Semantic Web prototype. One of its interesting features is the introduction of an RDF-encoded blog in order to test how blogging activities can benefit from this RDF representation.

The three efforts mentioned so far have impressed upon us the need to build more practical Semantic Web applications. We therefore chose to explore possible contributions towards the blogging environment with potential applications for knowledge management. Like Haystack, we aim to connect blogs that are semantically related. However, we aim to make this process more