Integrated Visualization for Semantic Web

Ing-Xiang Chen*, Chun-Lin Fan, Pang-Hsiang Lo, Li-Chia Kuo, and Cheng-Zen Yang
Dept. of Computer Sci. and Eng., Yuan Ze University, Taiwan
* sean@syslab.cse.yzu.edu.tw

Introduction

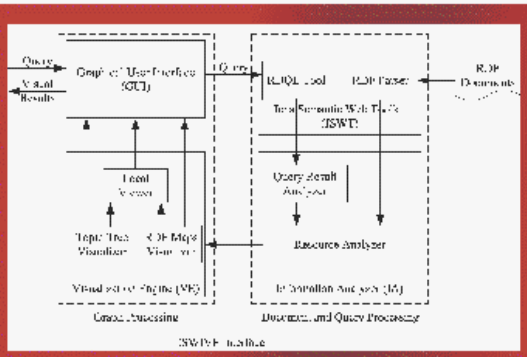
◆Background The current Semantic Web visualizations are based on two diverse standards RDF and Topic Maps.

◆The Problem The past visualization research only presents part view of the Semantic Web. Consequently, the panorama of the Semantic Web cannot be displayed.

◆Our Work We present an integrated Semantic Web interactive visualization environment (ISWIVE) to view both frameworks in a cooprative way.

◆Benefits ISWIVE can help users view the structure in both high-level indexing and detailed views, and further help users efficiently handle and use the Semantic Web resources by interacting with the visual semantic query and the interactive local viewer.

Design



ISWIVE uses the RDF Topic Maps (RTM) namespace to translate they syntax of Topic Maps.

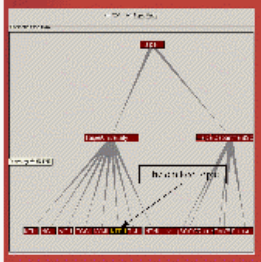
The ISWIVE interface utilizes two algorithms:

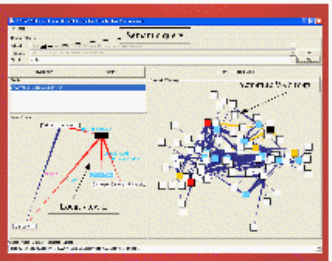
1. The multi-scale force-directed algorithm features that a balanced graph can be fast created, and the connected semantic relations can be intuitively close to human experiences.

2. The hv-drawing algorithm benefits that the area bound can be properly arranged to avoid overlapping. The edges are also prevented from intersection to display a clear view.

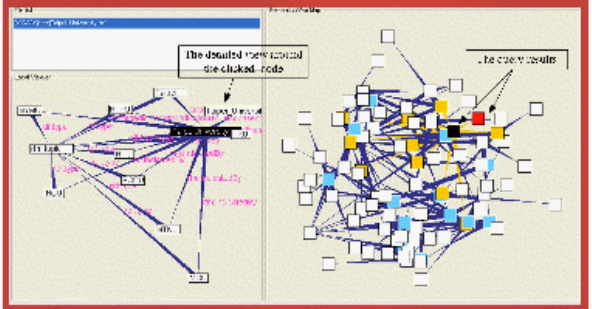
Prototype Demo

ISWIVE consists of three major areas, the semantic query, the Semantic Web map, and the local viewer.





The topic tree panel displays the relationship between the main topic and the subtopics in proper order.



The screenshot displays a query example of visualizing the semantic query results of the universities located in Taipei.

Conclusions

◆ ISWIVE initiates the visual presentation combining RDF with the features from Topic Maps and verifies its feasibility.

◆ ISWIVE enhances the interface interoperability and visual query functionality.

◆ ISWIVE visualizes the concept of Topic Maps in the RDF framework and thus presents a more complete view of Semantic Web.

The ISWIVE prototype is still primitive and a lot of work needs to be done such as designing a more simple and clear metaphor and an advanced inferential visual query.