Zeeva: A Collaborative Semantic Literature Management System

- Literature Management
- Semantic Publishing
- Semantic Wiki
- Text Mining

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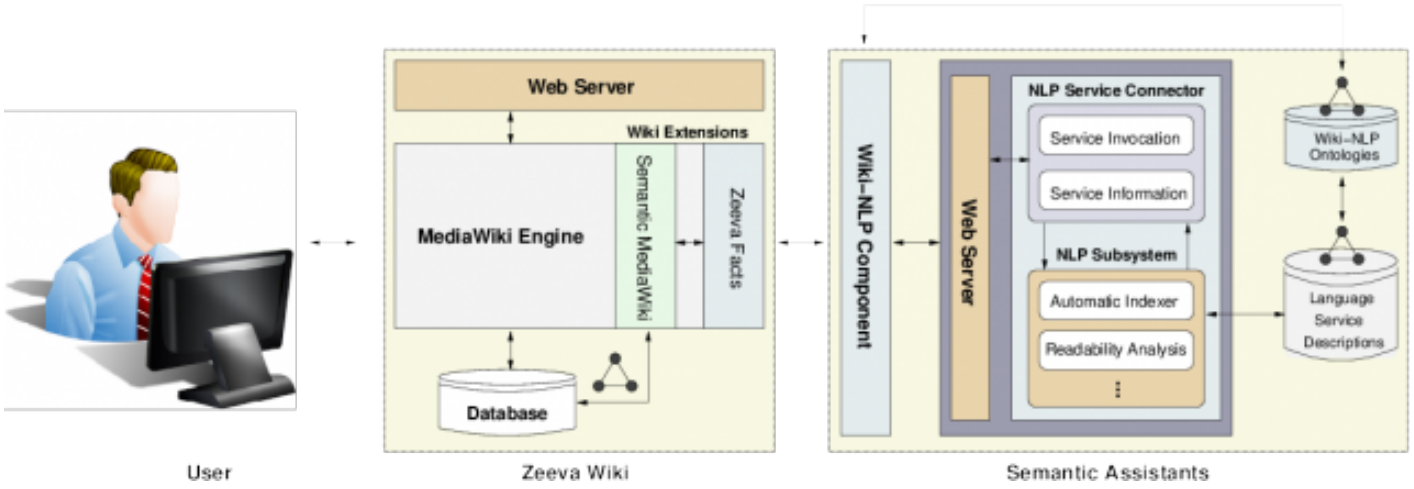
1. Overview

Transforming scientific literature into semantic triples

The overabundance of literature available in online repositories is an ongoing challenge for scientists that have to efficiently manage and analyze content for their information needs. Most of the existing literature management systems merely provide support for storing bibliographical metadata, tagging, and simple annotation capabilities. We go beyond these approaches by demonstrating how an innovative combination of semantic web technologies with natural language processing can mitigate the information overload by helping in curating and organizing scientific literature. *Zeeva* is our research prototype for demonstrating how we can turn existing papers into a queryable knowledge base. For more information, please refer to our publications [1], [2], [3], [4].

2. System Architecture



A high-level overview of the Zeeva system architecture

The Zeeva system features a wiki as its front-end. Powered by the highly scalable MediaWiki engine, users interact with the Zeeva wiki using their Web browser. They can view and edit the wiki content using a simple markup language, called wiki markup. Semantic capabilities are provided through the Semantic MediaWiki (SMW) extension. SMW allows special markup to be inserted into wiki pages in order to embed metadata about the page's content. The metadata is subsequently transformed internally into RDF triples. In addition, the Zeeva wiki has a special extension, called Zeeva Facts, which allows wiki users to seamlessly interact with natural language processing (NLP) pipelines directly within the wiki environment to automatically analyze scientific publications.

The NLP services in Zeeva are provided by the Semantic Assistants, an open source framework that can publish various NLP pipelines, implemented based on the General Architecture for Text Engineering (GATE), as W3C standard web services. The service-oriented architecture of the Semantic Assistants framework allows us to add or remove arbitrary NLP pipelines from the Zeeva wiki to experiment different use cases without any modifications to its wiki engine.

3. Screencasts

We have prepared a number of screencasts to showcase the capabilities of our Zeeva system. For a better viewing experience, switch to full-screen size and high-definition (HD) streaming mode. Note that these following videos reflect the state of the system, as presented in Sateli, B., and R. Witte, "Collaborative Semantic Management and Automated Analysis of Scientific Literature", *The 11th Extended Semantic Web Conference (ESWC 2014)*, vol. 8798, Anissaras, Crete, Greece : Springer, pp. 494-498, 05/2014.

3.1. Automatic Analysis of Literature with Zeeva Text Mining Pipelines

3.2. Viewing and Editing Analysis Results through the Zeeva Wiki Interface

3.3. Generating RDF from NLP Pipeline Results

4. Additional Information

- Semantic Assistants for Wiki Systems
- Zeeva presentation talk at the SMWCon Spring 2014

References

1. Sateli, B., and R. Witte, "Collaborative Semantic Management and Automated Analysis of Scientific Literature", *The 11th Extended Semantic Web Conference (ESWC 2014)*, vol. 8798, Anissaras, Crete, Greece : Springer, pp. 494-498, 05/2014.
2. Sateli, B., and R. Witte, "Semantic MediaWiki (SMW) for Scientific Literature Management", *The 9th Semantic MediaWiki Conference (SMWCon Spring 2014)*, Montréal, Canada, 05/2014.

3. Castro, A. G., C. Lange, P. W. Lord, and R. Stevens (Eds.), Sateli, B., and R. Witte, "Supporting Researchers with a Semantic Literature Management Wiki", *The 4th Workshop on Semantic Publishing (SePublica 2014)*, vol. 1155, Anissaras, Crete, Greece : CEUR-WS.org, 05/2014.
4. Sokolova, M., and P. van Beek (Eds.), Sateli, B., "Semantic Management of Scholarly Literature: A Wiki-based Approach ", *The 27th Canadian Conference on Artificial Intelligence (Canadian AI 2014)*, vol. LNCS 8436, Montréal, Canada : Springer, pp. 387–392, 04/2014.