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EDITORIAL

Special issue on intelligent techniques for multimedia information management and personalization

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Over the last decade, we have witnessed an explosive growth in the information available in digital form, especially on the World Wide Web. Today, web browsers and search engines on our PCs provide easy access to a multitude of sources of text and multimedia data; however finding the desired information at the right time is not an easy task. In fact, standard search engines do not consider semantic information that can help in recognizing the relevance of a document with respect to the meaning of a query, so that users have to analyze every document and decide which documents are relevant with respect to the meaning implied in their search.

Nowadays, intelligent techniques can be applied to solve challenging problems related to find, extract, filter, and evaluate the users desired information from distributed and heterogeneous multimedia data. Therefore novel smart tools integrating semantic and soft computing techniques are expected to enhance future information management systems improving information retrieval and visualization as well as providing personalized and adaptive applications.

The aim of this Special Issue is to present the innovative researches, technologies and developments related to the intelligent management and personalization of multimedia information. This Special Issue was organized with papers from the 7th Atlantic Web Intelligence Conference (AWIC 2011), which was held in Fribourg, Switzerland from January 26 to January 28, 2011. AWIC 2011 received about 50 papers and only 21 papers were accepted for publication. We encouraged the authors of AWIC 2011 to extend their papers and submit to this Special Issue. Based on the quality and the relevance with the Special Issue, we selected seven papers. Each manuscript was reviewed by three reviewers consisting of guest editors and external reviewers.

In the first paper by Cudre-Mauroux, the author introduces a new paradigm for the publication of personal information on the Web based on the concept of loosely-coupled ontological constructs which reduces the burden on the end-user related to the use of semantic web techniques. The proposed approach encourages end-users to publish potentially incomplete or conflicting information according to their local context and consolidates heterogeneous data with a posteriori, bottom-up and decentralized process. The use of such approach has the main advantage of greatly simplifying the publication of user-created data while preserving the advantage of expressiveness of semantic technologies.

In the second paper by Arkadiusz Tomczyk et al., the authors propose a method, which combines automatic image analysis techniques with human generated knowledge in order to improve semantic descriptions of image content. The proposed method, called Cognitive Hierarchical Active Partitioning (CHAP), extends the active contours method and divides the whole process into a set of interrelated steps where each step provides the appropriate level of semantic knowledge based on the use of external expert experience.

In the third paper by Niewiadomski, the author proposes a cylindric extension of interval-valued fuzzy set in order to describe compound linguistic expressions. The new description can be useful when two or more interval-valued fuzzy sets are defined in different universes of discourse but the terms represented concern the same object, e.g. a man

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who is tall and rich. Performing usual union or intersection is not possible here because tall and rich are defined in different domains. The proposed technique allows making computations simplified and more human-oriented.

In the fourth paper by Litvak et al., the authors present DegExt, an unsupervised graph-based language-independent keyphrase extractor. They also compare it with two state-of-the-art approaches, GenEx and TextRank, and provide a set of guidelines on which algorithm to prefer according to different usage contexts and parameters (training set quality, computational complexity, implementation simplicity, etc.).

In the fifth paper by Hoque et al., the authors combine the concept of conceptual query extension using Wikipedia and visual search results exploration in order to improve image retrieval on the Web. The key benefit of this approach is that it allows searchers to begin with short and ambiguous queries, which are automatically expanded to provide a diverse range of images. The interactive interface allows searchers to perform conceptual filtering and focusing operations using a hierarchical representation of the concepts.

In the sixth paper by Carrino et al., the authors present a system which addresses the problem of enriching multimedia personal content with semantic metadata. The proposed system uses a novel approach that combines semantic annotation, data mining, virtual queries and interactive visualization techniques aiming to provide the user with a personal information manager capable of dealing with heterogeneous multimedia information.

In the seventh paper by Catenazzi and Sommaruga, the authors discuss and evaluate two complete frameworks for knowledge management and visualization that go beyond state-of-the-art ontology editors by providing two generic and integrated environments to represent, organize and visualize knowledge. One of the key aspect of these frameworks is to offer easy to use environments which can be used by domain experts, who are not semantic web or ontology experts.

Finally, we would like to thank all the authors for submitting their papers and the reviewers for their detailed comments and constructive suggestions.

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