

GUEST EDITORIAL PREFACE

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Great technological and research developments regarding multimedia content customization and adaptation, knowledge acquisition and management, as well as semantic-driven, intelligent, multimedia content search and retrieval have been recently made. The need for efficient, user-centered services and media management is more than evident in many applications such as entertainment, security, education, cultural or even technical documentation. The growing number of rich web applications provide users with the ability of creating and sharing more and more multimedia content. Intelligent processing and management of this huge amount of content together with the introduction of personalization aspects in these multimedia services is considered to be of great importance towards the goal of efficient content organization and retrieval. It is the goal of this special issue to collect and report on recent high-quality research that addresses the problem of managing and adapting multimedia content according to its underlying semantics.

Research in this area is multidisciplinary and combines the fields of multimedia processing and artificial intelligence, especially knowledge representation, semantics and reasoning, and knowledge engineering for content adaptation. The very limited understanding of the semantics of multimedia content and, hence, the limited ways in which such content can be personalized

and adapted to end-users, constitutes the need for the development of efficient adaptation methods and techniques. This special issue addresses those members of the community interested in extending their content analysis, indexing, retrieval, and delivery methods by leveraging adaptation and personalization technologies. The benefit is to explore how these technologies can be used to efficiently increase the level of semantics extraction from the content, e.g. by using social networks, folksonomies, ontologies and context to assist adaptation, namely personalization.

Acknowledging the significant role of semantics in the multimedia analysis and personalization value chain, the editors of this special issue, representing four academic institutions from three different countries, namely National Technical University of Athens (Greece), Slovak University of Technology (Slovakia), Centre for Research and Technology Hellas (Greece) and EURECOM (France), decided to bring together a selection of top-quality contributions in the field. Thus, this special issue explores emerging advances in the area set by the Semantic Media Adaptation and Personalization (SMAP) initiative started back in 2006 and which results in the establishment of the SMAP international workshop series and the foundation of a new and dedicated community of researchers and practitioners ever since.

This special issue consists of three selected papers from height submissions. All papers underwent a thorough reviewing process composed of two successive reviewing rounds and extensive discussion among the editors. The selection process was particularly difficult because a number of high-class contributions were up for consideration for the special issue and guest editors had to spent significant effort to select papers of maximum quality. All accepted papers cover a wide range of techniques for semantic media adaptation and personalization and promote understanding of the wider problems and issues which are pursued by researchers working in the area.

Vassileios Tsetsos, Antonis Papadimitriou, Christos Anagnostopoulos and Stathes Hadjiefthymiades of the University of Athens, Greece discuss a novel approach with respect to interactive TV services in *Integrating Interactive TV Services and the Web through Semantics*. The key characteristic of their approach is the formal modeling of multimedia and user semantics that enables novel TV services. They go beyond the current state-of-the-art in the sense that they exploit typical Web elements and characteristics and apply them successfully to the TV domain. In that manner, they manage to differentiate from typical Electronic Program Guide approaches and advanced program recommendation, offering at the same time a personalized and proactive content delivery to the end users. In this paper, they adapt their research work to the framework of a specific implementation platform called POLYSEMA, by employing Semantic Web methodologies, such as utilization of custom-made ontologies and rules, while remaining compatible with standards.

In *Enhancing Folksonomy-based Content Retrieval with Semantic Web Technology*, Rachanee Ungrangsi and Chutiporn Anutariya of the Shinawatra University, Thailand and Vilas

Wuwongse of the Asian Institute of Technology, Thailand focus on the enhancement of still images content retrieval from the application side. In this context, they have developed and present SemFlickr, an application which provides an additional semantic query suggestion feature to Flickr™, thus boosting the search capabilities of photos. In order to achieve this, they employ SQORE, an ontology retrieval system that allows retrieving relevant ontologies from the Semantic Web and then derives term suggestions from those ontologies. Relations among user queries and folksonomy tags are also taken into consideration to ensure that highly-related photos will appear at the top of the retrieved results. The outcome of this work is promising and reveals a number of useful insights for developing applications that integrate both the Semantic Web and Web 2.0 together.

Finally, Annett Mitschick, Stefan Pietschmann and Klaus Meißner of the Dresden University of Technology deploy a more context-oriented approach in *An Ontology-Based, Cross-Application Context Modeling and Management Service* to address the shortcomings of applications within heterogeneous and networked environments. They present an ontology-based, cross-application context modeling and management service, called CROCO that allows for cross-application context gathering, modeling, and provision. The key novel characteristic that differentiates this approach with respect to numerous approaches dealing with application-independent context management is the fact that none of them sufficiently supports the vision of cross-application context handling. Practicability of the proposed approach has been validated by using it successfully within three “orthogonal” application scenarios, namely personal multimedia document management, adaptive co-browsing and the context-aware composition of user interface mashups.

Phivos Mylonas was born in Athens in 1978. He obtained his Diploma in Electrical and Computer Engineering from the National Technical University of Athens (NTUA) in 2001, his Master of Science (M.Sc.) in Advanced Information Systems from the National & Kapodestrian University of Athens (UoA) in 2003 and his Ph.D. degree at the former University (NTUA) in 2008. He is currently a Researcher by the Image, Video and Multimedia Laboratory, School of Electrical and Computer Engineering, Department of Computer Science of the National Technical University of Athens, Greece. His research interests lie in the areas of content-based information retrieval, visual context representation and analysis, knowledge-assisted multimedia analysis, issues related to multimedia personalization, user adaptation, user modeling and profiling. He has published articles in 23 international journals and book chapters, he is the author of 38 papers in international conferences and workshops, he has edited 7 books and is a guest editor of 4 international journals, he is a reviewer for 9 international journals and has been involved in the organization of 18 international conferences and workshops.

Maria Bielikova received her Master degree (with summa cum laude) in 1989 and her Ph.D. degree in 1995 both from Slovak University of Technology in Bratislava. Since 2005, she has been a full professor, presently at Institute of Informatics and Software Engineering, Slovak University of Technology. She (co-) authored five books, several teaching materials and more than 130 scientific papers in proceedings of international conferences and workshops and international journals. She is a member of the Editorial Board of the Int. Journal of Intelligent Information and Database Systems and the editor of 31 proceedings or books of scientific conferences, five of them published by Springer. Her research interests are in the areas of ambient intelligence and web-based adaptive systems, user modeling, and especially the social dimension of personalized web-based systems. She is senior member of ACM, senior member of IEEE and its Computer Society and a member of the executive committee of the Slovak Society for Computer Science.

Yiannis Kompatsiaris received the Diploma degree in electrical engineering and the Ph.D. degree in 3-D model based image sequence coding from Aristotle University of Thessaloniki, Greece, in 1996 and 2001, respectively. He is a Senior Researcher (Researcher B') with the Informatics and Telematics Institute. His research interests include semantic multimedia analysis, indexing and retrieval, Web 2.0 content analysis, knowledge structures, reasoning and personalization for multimedia applications. He is the coauthor of 39 papers in refereed journals, 20 book chapters, 4 patents and more than 150 papers in international conferences. He has served as a regular reviewer for a number of international journals and conferences. He is a member of IEEE and ACM.

Raphaël Troncy obtained with honours his Master's thesis in Computer Science at the University Joseph Fourier of Grenoble (France), after one year spent in the University of Montreal (Canada). He benefited from a PhD fellowship at the National Audio-Visual Institute (INA) of Paris where he received with honours his PhD from the University of Grenoble (INRIA/INA) in 2004. He selected as an ERCIM Post-Doctorate Research Associate 2004-2006 where he visited the National Research Council (CNR) in Pisa (Italy) and the National Research Institute for Mathematics and Computer Science (CWI) in Amsterdam (The Netherlands). He was a senior researcher for CWI from 2006 till 2009. Since 2009, he is an assistant professor at EURECOM leading the Multimedia Semantics group. Raphaël Troncy is also co-chair of the W3C Incubator Group on Multimedia Semantics and the W3C Media Fragments Working Group, contributes to the W3C Media Annotations Working Group and was an active participant of the EU K-Space Network of Excellence. He is an expert in audio-visual metadata and in combining existing metadata

standards (such as MPEG-7) with current Semantic Web technologies. He works closely with the IPTC standardisation body on the relationship between the NewsML language family and Semantic Web technologies.