

## **Introduction to the topical issue on Semantic Social Networks and Media Applications**

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Online social networks have been with us since the early days of Six Degrees in 1997, whilst the semantic web, in the form we know it emerged in 2001. Yet, only recently have the two areas started to really come together, giving us social networks that incorporate technologies for semantifying the information associated with them, as well as their diffused content. These semantic social networks can be seen as tools to model knowledge from multidisciplinary social media and scattered online communities.

Today, the exponential growth of social networking data, combined with developments in the area of semantic technologies, is giving rise to numerous new interesting research topics. Several challenges arise with respect to identification and modeling of complex and evolutionary patterns using computational intelligence and data mining techniques, discovery and analysis of online communities, personalization, identification of online user behavior and so on. In response to these research challenges, in this topical issue, we report on recent results from high-quality research efforts. The results combine semantics and knowledge engineering with social networks and their different contextualization types. Unsurprisingly, the response we obtained from the call for contributions has been overwhelming and diverse. Through a stringent review process, we have narrowed the topical issue down to eight excellent contributions each of which provides a different view of the area and all of them present state-of-the-art results in the field.

We should note that, due to the large number of contributions, we were forced to choose only the best, most diverse and relevant papers to include in this topical issue leaving out some other deserving and promising submissions. We are grateful to all the contributors for having trusted us with their works, as well as to the reviewers who assisted the authors in enhancing their articles and helped us in selecting the best papers for this issue.

The eight articles that are included in this topical issue cover topics that include the use of online social media and semantic technologies in areas ranging from determining the cognitive styles of users to making recommendations for them, from routing in a museum to stimulating discussion regarding its exhibits, from ranking influential users to ranking educational content and from video standards to homemade explosives.

The experiments reported in “Social Network Profiling for Cultural Heritage: combining data from direct and indirect approaches” by Antoniou indicate that by monitoring online user activity, such as information shared by users and their behaviors in online games, one can make accurate and reliable estimations of some parameters of users' cognitive styles. The paper discusses the application in the field of cultural heritage, but the opportunities to adopt and apply to new domains are many and promising.

In “Exploiting social media information towards a context-aware recommendation system”, Korakakis et al. extracted and utilized previously ignored information found in the vast volumes of Flickr images.. Geolocation and timestamps are studied together in order to automatically assess, in a crowdsourcing approach, the trajectory patterns of tourists, to detect popular places-of-interests and finally to estimate the average visit duration. In this way, a recommendation engine of higher utility is developed in the Xenia system which is able to provide personalized recommendations that optimize the user experience and adhere to user-specified time constraints.

In “Quality of Experience based Museum Touring: A Human in the Loop Approach”, Tsiropoulou et al. investigate the problem of effectively routing visitors in museums. They consider the view of experts

(archeologists, museum and gallery directors, visitors that often visit museums), physical parameters, and they also take into account visitors' interests and social interactions. The authors formulate routing in the museum as an optimization problem. Of particular interest is the optimized parameter which is the visitor's perceived Quality of Experience, thus creating a direct link between the information one can mine about users from their social media interactions and the value that they can provide to the users.

In "Stimulation of Reflection and Discussion in Museum Visits through the Use of Social Media" Vassilakis et al. explore the museum visit from a totally different perspective. Here the focus is on maximizing the personal connection, interest and stimulation that the user will experience. We see how in the project CrossCult social media are used to generate public interest, profile users, promote content related to currently trending topics, stimulate reflection and trigger discussion. The actual application in a real life setting demonstrates that the approach is ready to be widely transferred and adopted in the cultural heritage domain.

In "Defining And Evaluating Twitter Influence Metrics", Drakopoulos et al. examine how influence can be measured and how influential accounts can be automatically identified. First, they present a review of higher order influence metrics and then provide a practical comparative study. Their results indicate that metrics that are based either on solely structural or solely functional characteristics of the accounts perform well, but a metric that builds on the strengths of both outperforms them all. This opens a promising path for the automated identification of highly influential accounts and users, yet a challenging one as there are severe computational issues to be considered and addressed.

In "Advanced Searching Framework for Open Online Educational Video Lectures", Kravvaris and Kermanidis focus on educational materials. Today, we have a huge number of educational lectures that are available online and they keep growing every day. The authors propose the use of social opinion mining to complement conventional ranking approaches. Initial experiments, although limited, indicate that this crowd-sourcing approach has the potential to enhance ranking and searching in the online educational content space.

The inevitable shift to newer video standards is the subject of discussion in "On Planning the Adoption of New Video Standards in Social Media Networks: A General Framework and its Application to HEVC" by Koziri et al. As different social media platforms will face different challenges and enjoy different benefits, the authors propose a transition framework that considers each platform's cost model and characteristics. The applicability of the approach is demonstrated via a simulated shift from H.264/AVC to HEVC and further interesting conclusions are drawn.

Last but not least, Paraskakis and Pappas introduce us to homemade explosives and classify information from law enforcement agencies. In "HOMER: A Semantically Enhanced Knowledge Management Approach in the Domain of Homemade Explosives Intelligence", we learn about the HOMER project, where data is aggregated from assorted, heterogeneous and online sources such as police databases, online forums and explosives wikis, stored in an unstructured manner, and annotated by users and ultimately categorized based on the knowledge retrieval needs.

The discussion of the accepted papers in the topical issue above demonstrate the role of Semantic Social Networks in different aspects of real-life applications. We believe that this topical issue further demonstrates the broad diversity of state-of-the-art approaches, as well as the dynamics that hide within current semantic social networks. There is a lot to be gained by bringing both semantics and social research communities together by combining their approaches. In this context, we believe that this issue contributes toward this direction.

Finally, we thank the EiC and the editorial office staff of Springer SNAM journal. Their efforts and guidance helped us to accomplish our work smoothly and with great success,

## Guest Editors short CVs



Ioannis Anagnostopoulos received his PhD from the Multimedia Technology Laboratory, National Technical University of Athens, School of Electrical and Computer Engineering. Currently, he is Associate Professor in the Department of Computer Science and Biomedical Informatics at the University of Thessaly.

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Manolis Wallace received his PhD from the National Technical University of Athens. He is an assistant professor at the University of Peloponnese, the founder of ΓAB LAB – the Knowledge and Uncertainty Research Laboratory – and a co-founder of the Semantic and Social Media Adaptation and Personalization (SMAP) series of workshops.

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Sherali Zeadally received a Bachelor's degree from the University of Cambridge, United Kingdom, and his doctorate from the University of Buckingham, United Kingdom, both in computer science. He is an associate professor with the College of Communication and Information, University of Kentucky, Lexington.

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