The ever-evolving universe of social networks offers new tools to improve users’ experience and facilitate their communication. This evolution presents data miners with opportunities and challenges, and increases pressure to provide approaches that are suitable at the big data scale and in highly dynamic contexts. In addition to pure graph mining, the need to consider other attributes on vertices and edges (query text, tweets, messages, event cascades, and so on) is becoming more common. Aspects related to these graphs’ temporal as well as spatial aspects are pivotal.

This special issue presents recent results both at the methodological level and on the application side, with a twofold aim: to allow researchers to share their experience in this new and multifaceted field, and to help industry in its efforts to provide users with new social networking applications. The articles presented here focus on methods and algorithms for mining, as well as applications of the identified techniques.

Security is a central aspect in the study of modern social networks. In “Anti-Reconnaissance Tools: Detecting Targeted Socialbots,” Abigail Paradise, Rami Puzis, and Asaf Shabtai consider the very timely problem of recognizing and avoiding automated attacks to online social networks by monitoring a small number of selected profiles. This kind of attack is becoming more common and can be extremely dangerous because it can let attackers establish a foothold in organizations, putting precious information at risk. Being able to detect such attacks early and efficiently is, therefore, crucial.

On the other hand, social networks are a precious source of knowledge and expertise for their users; this is one of the main reasons behind their existence. The article “Dynamic Latent Expertise Mining in Social Networks,” by Nir Ofek and Asaf Shabtai, offers new tools for the dynamic identification of experts among a user’s connections in a social network.

Analyzing users’ activity to understand their behavior and predict their future interests is also the main theme of “Recommending Venues Using Continuous Predictive Social Media Analytics,” by Marco Baldini, Alessandro Bozzone, Emanuele Della Valle, Yi Huang, and Geert-Jan Houben. The authors’ system analyzes the activity of visitors to (real-world) events and produces high-quality predictions on the venues that they’ll be interested in.
Finally, “Predicting Edge Signs in Social Networks Using Frequent Subgraph Discovery,” by Athanasios Papaoikonomou, Magdalini Kardara, Konstantinos Tserpes, and Theodora A. Varvarigou, also deals with recommendation systems. Here, the authors consider the problem through an unusual perspective: although social links influence user behavior, they don’t always do so in a positive way. Understanding which links are positive and which are negative can be crucial to developing recommendation systems.

This special issue considers only a handful of the many relevant topics of investigation in Web and social graph mining. Other areas of research include the growing importance of the interaction between physical and digital social networks, the study of social networks’ mobility patterns and spatio-temporal dimensions, the analysis of the structured interaction between people within online communities, and the development of novel data structures and algorithms for mining the Web and social graphs within parallel and distributed programming frameworks. These issues are of paramount importance for the future of Internet computing given the massive deployment of Internet and sensing devices in both the physical and digital space expected in the near future. We hope to find contributions on these topics in upcoming issues.

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