INVITED SESSION SUMMARY

Title of Session:
Understanding the complex, multi-layer, attributed, and dynamic facets of networks.

Name, Title and Affiliation of Chair:
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Details of Session (including aim and scope):
The fast development and spread of social media in the last few years has allowed people to share and exchange information. Microblogging services and social networks, such as Twitter, Facebook, Instagram, Tumblr, etc., are nowadays used by millions of users all over the world.
Every day these services originate a deluge of user-generated contents, containing personal information and opinions on a variety of topics. These contents different from traditional data, and need new computational approaches for representing, analysing, and extracting useful pattern from them.
The availability of huge network-structured data, such as social, citation, mobile, terrorism, gene/protein/metabolic networks provides great opportunities to understand complex systems and the evolution of their behaviour when the time component is present.

Real-world systems, often, are connected through multiple, diverse, and time-dependent relationships. Online users, for example, may interact through social networking websites, professional networks like LinkedIn, phone calls or emails. Moreover, each user usually provides information regarding his profile, such as interests, education, gender, and so on.

Research in modelling, analysing and mining networks realized that the approach adopted so far of aggregating the different type of interactions among the actors forming the network, results in a loss of important information. Such information, on the contrary, should be properly exploited to better understand the features of the original system. Networks with multiple types of interactions, known as multi-layer networks since each type of interaction network is modelled through a network layer, have been recently proposed to provide a much more complete description of real-world networks.

Complex, multi-layer and attributed networks, pose several challenges with respect to existing network analysis tasks. The purpose of this special session is to provide a forum for the discussion of new approaches, research directions and applications in complex, multi-layer, attributed, and dynamic networks. We welcome contributions from researchers working on the following topics of interest including, but not limited to:

- Community structure analysis and detection in social networks;
- Evolution and dynamics of social networks;
- Temporal analysis of networks;
- Applications of social network and media analysis and mining;
- Propagation and diffusion of information in complex networks;
- Modelling and analysis of multidimensional, multimode, and temporal networks;
- Anomaly detection in networks;
- Link prediction;
- Privacy and security in social networks;
- Visual representation of dynamic social networks;
- Complex network analysis in social and political science;

- Multi-layer, attributed, and dynamic networks analysis and mining;
- Information diffusion;
- Network vulnerability, resilience, epidemics and rumours;
- Health analytics;

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

Website URL of Call for Papers (if any):

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