Call for Papers:

Intelligent Data Analysis - IOS Press

Special issue on

Dynamic Networks and Knowledge Discovery

Aim and Scope

Modeling and analyzing networks is a major emerging topic in different research areas, such as computational biology, social science, document retrieval, etc. By connecting objects, it is possible to obtain an intuitive and global view of the relationships between components of a complex system. Nowadays, the scientific communities have access to huge volumes of network-structured data, such as social networks, gene/protein/metabolic networks, sensor networks, peer-to-peer networks. Most often, these data are not only static, but they are collected at different time points. This dynamic view of the system allows the time component to play a key role in the comprehension of the evolutionary behavior of the network (evolution of the network structure and/or of flows within the system). Time can help to determine the real causal relationships within, for instance, gene activations, link creation/deletion, information flow.

Handling such dynamic data is a major challenge for current research in machine learning and data mining, and has led to the development of recent innovative techniques that consider complex/multi-level time-evolving networks, graphs, heterogeneous information (nodes and links), and requires scalable algorithms that are able to manage huge and complex networks.

This special issue is motivated by the interest of providing a meeting point for scientists involved in the intelligent analysis of large complex networks and more specifically in the dynamic aspects of such networks. It aims at attracting contributions from both aspects of dynamic networks analysis: large real network analysis and modelling, and knowledge discovery within those networks. Application of such techniques in the Bioinformatics or Social Networks fields are most welcome in the special issue.

Following the success of the DyNak workshop (http://kdd.di.unito.it/DyNaK2010/) joint with ECML/PKDD 2010 in Barcelona, we invite DyNaK's authors to send extended versions of their workshop contribution. The special issue is however open to relevant contributions that were not presented at the DyNak workshop (see submission process below).

Topics of interest

Contributions to the special issue should be focused on this (non exhaustive) list of topics:

Methods:

- Network inference from raw data
- Graphical models
- Graph mining algorithms

- Graph kernel algorithms
- Relational learning algorithms
- Matrix/Tensor methods
- Information retrieval algorithms
- Bayesian methods
- Evolutionary clustering
- Mining and learning from heterogenous domains
- Bisociative information discovery
- Clustering/Co-clustering/Biclustering
- Pattern mining and clustering with constraints
- Community detection/Module extraction
- Analogies between social and biological networks

Applications:

- System biology: regulatory gene networks, protein-protein interaction, miRNA networks, metabolic networks
- Social networks: folksonomies, digital libraries, information networks, social media, collaborative networks
- Sensor networks, peer-to-peer networks, Web, agent networks, body sensor networks

Key Dates

- Abstract submission: **December 15, 2010**
- Feedback on abstracts: **December 22, 2011**
- Full paper submission: **January 31, 2011**
- Author notification: **April 30, 2011**
- Paper revision due: **May 31, 2011**

Guest Editors

- Ruggero G. Pensa, University of Torino, Italy (pensa@di.unito.it)
- Francesca Cordero, University of Torino, Italy (fcordero@di.unito.it)
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Submission process

The selection will take place in two steps:

- by *December 15th* 2010, authors should send a two-page abstract, motivating the relevance of their work with respect to the special issue topics. The authors should receive by December 22nd a first feedback from guest editors.
- by *January 31st* 2011, authors allowed to proceed to full submission should send their manuscript, in pdf exclusively. Manuscripts should not be more than 30 pages in the IOS format (please refer to http://www.iospress.nl/html/1088467x_ita.html, when preparing your manuscript). Abstract and full submissions should be sent both to
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  and
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