

## Editorial

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Dear Colleague:

Welcome to volume 17(2) of Intelligent Data Analysis Journal.

This issue of the IDA journal consists of ten articles which represent a variety of topics, all related to the applied and theoretical research in the field of Intelligent Data Analysis.

The first three articles of this issue are about similarity and association. Khosravi-Farasani *et al.* in the first article discuss similarity estimation and propose a new perspective on specifying the similarity between resources in linked data and in particular for a directed and attributed graph. The idea is to use combination of structural properties of a graph and attribute value of vertices. Their suggested model is evaluated in a clustering procedure using some standard data sets where class label of each resource is estimated and compared with the ground-truth class label. Their experimental results show that their model outperforms other clustering algorithms in terms of precision and recall. The second article of this issue by Jaminéz *et al.* is about the study of association rules within a group of individuals. The authors define group association rules where they identify the interestingness measures for them. These measures are then used to rank not only groups of individuals but also rules within each group. The proposed approach is evaluated on a number of well-known data sets. Zare *et al.* in the third article of this issue discuss the drawback of computing an exact measure of betweenness centrality in high dimensional data. They apply a random projection approach and propose an approximation algorithm that is suitable for weighted and unweighted graphs. Their proposed algorithm significantly reduces the number of single-source shortest path computations. The results of their evaluation on a number of real-world networks and synthetic bench marks show interesting results based on some statistical evaluation measures.

The next two articles are mostly on classification and supervised learning. Wang proposes a nonparametric bivariate copula estimation method which is based on smoothing empirical copula with shape restricted least squares support vector regression. The proposed approach exploits a priori shape of copula function. The experiments presented in the article that are based on artificial and financial time-series data, clearly show that the approach can achieve significantly better performance than parametric methods and kernel smoother. Hassanzadeh and Kevanpour in the fifth article of this article discuss the topic of sequence labeling and propose using active learning and semi-supervised learning for sequence labeling. It seems that their proposed approach could significantly reduce manual annotation costs (~90%) compared with supervised learning that is estimated at 30%. The particular model selected here is conditional random field which has shown promising performance in several sequence labeling tasks.

This issue also includes four applied research articles. Shankar and Purusothaman discuss the concept of utility based data mining and argue that when data mining is employed in stock market prediction, it would devise association rules that would lead to high return in investment. The authors propose a new analysis methodology which is based on the concept of utility based data mining where it generates utility emphasized trading rules. The article includes experiments where the proficiency of the obtained rules is compared against the conventional utility-emphasized and frequency-based trading rules using a set of related values. Mazloomian and Beigy discuss the concept of nested effects model and propose

two methods for inferring signaling pathways from interventional data. Their first method consists of a search in all feasible solutions to maximize a Bayesian score and their second method sub-models are constructed with informative features. The two methods proposed here are evaluated in various noise levels on real and artificial networks with different sizes. Their results show that the networks constructed using their approach comes with a higher level of accuracy compared to networks inferred from comparing methods. Swapna *et al.* in the next article of this issue discuss use of heart rate variability (HRV) signals obtained from ECG data for better diagnosis of diabetes. Their approach is based on extracting features from HRV, linearizing them for their studies and subsequently applying several classification methods to better identify normal and diabetic subjects. The novel approach proposed here demonstrates the ability to detect diabetes efficiently by analyzing subtle changes in ECG signals. Karunaratne *et al.* in the last article of this group discuss the topic of quantitative structure-activity relationship modeling which consists of two steps: descriptor discovery and model building. The particular domain and problem presented in this article is chemoinformatics. The authors show a comparative analysis of chemoinformatics-based and structure-based approaches where in their experiments they demonstrate that one of the chemo-informatics based approaches results in significantly more accurate models compared to all other methods investigated. Results from combining descriptor sets are also presented in this article.

And finally, in the last article of this issue, Bellodi and Riguzzi present a machine learning technique targeted to probabilistic logic programs, its associated languages, and propose a technique for learning parameters for these languages. They adopt an expectation maximization algorithm which is evaluated on a number of well-known bench mark data sets with some interesting results included in the article.

In conclusion, with this issue of the IDA journal which is Volume 17(2), we are observing a sharp increase in submission of manuscripts to our journal for evaluation and publication. We continue our efforts to select the highest quality papers. We have also learned that the IDA-2013 Symposium will be held in London, UK from October 17–19. The deadline for submission of papers is May 6, 2013. For more information please refer to <http://sites.brunel.ac.uk/ida2013>. We look forward to receiving your feedback along with more and more quality articles in both applied and theoretical research related to the field of IDA.

With our best wishes,

Dr. A. Famili  
Editor-in-Chief