Editorial

Dear Colleague:

Welcome to volume 16(3) of Intelligent Data Analysis Journal

This issue of the IDA journal consists of nine 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 are about classification and knowledge discovery. In the first article, Kang and Cho propose a kernel-based binary classification algorithm which is an extension of support vector domain description for one-class classification problems. The authors use a number of well-known data sets to evaluate the performance of their algorithm and compare their results with other kernel-based algorithms such as SVM. Their results show that their algorithm performs better in terms of classification and also capable of finding moderate sparse solutions with little parameter sensitivity. Gasmi *et al.* focus on functional dependencies in the dynamic databases and discuss that some naïve algorithms that can efficiently discover functional dependencies should be sufficient. The authors propose a new technique that makes use of some existing methods in a novel way. The approach is evaluated in the paper. Hu *et al.* in the third paper, discuss the importance of choosing proper weights for scoring multiple rules and introduce properties of weighted scoring rules where in their scheme incorporates weights intro scores in a natural way. They show their scheme can overcome some of the drawbacks of classic weighted scoring methods. The article also includes results of their case study where they apply their method to outlier detection targeting an ultimate ranking problem.

The next three articles of this issue are about evaluation and comparison of some exiting data analysis techniques. Bouraoui *et al.* evaluate the performance of independent component analysis (ICA) with the intention of adapting the basic ideas to the well-known Iris recognition problem. Their article includes a comparative study between implemented ICA algorithms and some recent methods of Iris recognition where they demonstrate their experimental results using some well-known Iris data bases. Their conclusion is that the ICA approach is far more effective than other techniques. Mendes-Moriera *et al.*, in the fifth article of this issue, discuss the problem of long term travel prediction in time series data and compare three non-parametric regression methods, where for each of these methods they study the best combination of input parameters. The article also includes the impact of applying different methods for pre-processing tasks and the accuracy of results from regression methods. The results include their experiments performed on some real data sets where they demonstrate that Random Forest was the most suitable method. The next article by Febrer-Hernández and Hernández-Plancar is also a review paper. The authors in this article discuss the importance of sequential pattern mining in today's data analysis world and present the main characteristics of some of the most important sequential patterns mining algorithms. They also show a comparative performance study of these algorithms.

Olszewski in the seventh article of this issue propose a novel pattern mining method suitable for telecommunication fraud detection, where interesting fraud cases are identified using a threshold type classification algorithm. The proposed approach that is based on Kullback-Leibler divergence approach, includes an automatic threshold computation. The article includes the results of this study using some telecommunication data. Kamaruddin *et al.* in the eighth article of this issue discuss the importance

of developing methods for discovering rare patterns in text, introduce a graph-based approach for text representation and present an error tolerance dissimilarity algorithm for deviation detection. Their approach is based on the use of conceptual graphs where they evaluate their algorithm in the context of analyzing real-world financial statements for identifying deviating performance indicators. Their results demonstrate that their proposed approach can successfully identify deviating sentences where experts validate the correctness of the discoveries. And finally the last article by Furletti and Turini is about knowledge discovery in ontologies. Discussing how ontologies allow one to represent knowledge and data in implicit and explicit way, the authors introduce a novel approach for extracting implicit knowledge from ontologies. In their approach the implicit knowledge is extracted in the form of influence rules and this is a general concept that is applicable to many domains. Their case study, which is based on an intrusion detection application, shows that the influence rules can be used to integrate existing knowledge or to support the data mining process.

In conclusion, with this third issue of Volume 16 of the IDA journal, we continue our efforts on organizing and publishing a high quality journal in this community. The next IDA conference that is usually organized in Europe, will be held in Helsinki, Finland on October 25–27, 2012. For details please refer to http://ida2012.org/. 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