Editorial

Dear Colleague:

Welcome to volume 16(4) 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 two articles are about feature selection. Ghodrati and Kasaei in the first article of this issue discuss the topic of feature weighting and propose two methods that are applicable for a better discrimination of similar actions in human action categorizations. A new feature discrimination power is defined by the authors that is used in the feature selection process. The experiments presented in this article demonstrate how their proposed methods improve the categorization accuracy using two well-known data sets. Brown *et al.* in the second article discuss the difficulty for understanding the information stored for feature space and present an efficient method for searching the feature space of a polynomial support vector machine. The time complexity of this method is based on the number of variables, the degree of kernel, the number of support vectors and the number of features that the algorithm is allowed to search. The authors demonstrate the effectiveness of their method in identifying the top weighted features in a number of simulated as well as high-dimensional real data sets.

The next four articles are about learning and classification. Hamrouni discusses the importance of discovering really useful patterns, such as associations, from large data sets and emphasizes the importance of these discoveries from an end-user point of view. This article is about the exact representation of frequent patterns and the relationships between these patterns and minimum description length principle. The article is also about classification of concise representation of frequent itemsets according to their common characteristics and contains a case study of these representations with emphasis on closed sets. Fakhrahamd *et al.* in the fourth article of this issue argue the topic of world sense disambiguation and propose a fuzzy classification system for this purpose. Their approach is based on a rule-weight mechanism that is used to tune the classifier and propose a new learning method to iteratively adjust the weight of fuzzy rules. Their proposed scheme shows a uniformly good behavior and where results are comparable or better than other classification systems. Franco-Arcega *et al.* in the fifth article discuss the limitations of classification algorithms to properly handle large data sets and propose a new fast heuristic for building decision trees from large training sets. This approach overcomes the limitations of some of the existing algorithms using all instances of the training set without storing all of them in memory. Their experimental results show the better performance of this algorithm for building decision trees from large data sets. Berka in the next article defines different approaches that are common for learning and presenting decision rules and argues that the most common approach is set-covering approach which is also called separate and conquer. The author presents an algorithm called KEX, which is in fact the LISP Miner system and demonstrates results of a rule learning approach that is implemented in the WEKA system.

Podlasov *et al.* in the seventh article of this issue discuss multi-modal analysis of heterogeneous resources in modern media and propose an approach that takes time-stamped annotations into a state-transition diagram. The authors show how the resulting state-transition diagram can be visualized using

the most common visualization tools. Their case study is based on the use of their visualization tool to assist media researchers in detecting patterns in multimodal analysis of news videos. Guerra *et al.* report on the comparison of cluster quality indices and their performance under different data characteristic conditions. Their case studies involve evaluation of standard indices using a set of parameters such as different clustering methods where the results of ranking all indices are compared. And finally, Apiletti *et al.* in the last article of this issue which is an applied research article discuss feature selection in high dimensional biological data and present a method that is intended to measure the ability of each attribute (e.g. gene) for classification of each sample and rank attributes by computing an overlap score. Their experimental results show that their proposed approach results in higher classification accuracy in terms of a wide range of feature selection applications.

In conclusion, with Volume 16 of the IDA journal, we continue receiving more and more quality papers submitted to the IDA journal for evaluation. We have also been approached for special issues to be produced from the best papers of related conferences and workshops. This year, we will be working on two special issues. The IDA conference that is usually organized in Europe, will be held in Helsinki, Finland from 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