Editorial

Dear Colleague:

Welcome to volume 17(6) of Intelligent Data Analysis Journal.

This issue of the IDA journal, the last one for Volume 17, which is our 2013 publication, consists of ten articles, all representing different aspects of theoretical and applied research related to the field of Intelligent Data Analysis.

The first article of this issue by Ordonez and Chen is about discovering frequent pattern pairs. The authors introduce the idea of cube pairs, which are pattern pair generalization of cubes and association rules. They introduce an algorithmic optimization approach to discover comparable pattern sets and compare a number of related methods. They approach includes a reliability metric that is based on cross-validation. The authors present an extensive experimental evaluation of their approach with a number of real data sets and show that cube pairs produce more reliable results than rule pairs. In the second article of this issue, Vimal-Kumar and Tamilarasi propose an optimization based algorithm for rule mining of multi-relational data that is based on an adapted genetic algorithm approach. The rule optimization is done through filtering the fitness function of the genetic algorithm in relation with the multi relational data mining algorithm. Their experimental results show that their proposed approach has a much better efficiency. Haghighi and Rahmati in the third article of this issue discuss the idea of mapping to multidimensional optimal region as a proposed method for multiclass classification tasks. Their theoretical and experimental results show the advantages of this approach in terms of computational complexity and is comparable to several methods and complementary to others such as Vapnik-Chervonenkis growth function.

Mutual information evaluation and feature weighting is the subject of the next article by Ji *et al*. The authors discuss the important topic of feature weighting and propose using mutual information to predict the performance of feature weighting through measuring gain in mutual information. Their experimental results show that the mutual information evaluation reduces the running time without sacrificing the quality of clustering, a common approach in feature weighting. In a similar research by Perlata *et al.*, the authors discuss the process of supervised clustering and present Labeled K-Means, an algorithm suitable clustering labeled data. The authors evaluate the performance of their proposed algorithm using a set of standard real data sets and also compare their approach with standard K-Means. Their experiments show that in most cases the proposed clustering approach outperforms alternative techniques by a considerable margin.

Won-On in the sixth article of this issue discusses the importance of mining interaction behaviours of actors in social networks and identify two interaction behaviours, namely engagingness and responsiveness. The study presented in this article involves use of Enron email data set to perform some preprocessing and establishing some links between e-mails and their replies. The study also includes quantitative behavior models for systematically measuring users' engagingness and responsiveness and also a graph visualization technique to visualize information exchange networks by means of behaviours and community structures. Wang *et al.* in the next article present a novel cluster analysis approach that is based on time-series structure and is intended to identify similar motions in analyzing human motion data. In

their approach, to cluster sequences, the authors transform the movement sequences from time-series video into low-dimensional multivariate time series and later convert them into vectors based on their structure in a finite-dimensional Euclidean space. The article includes application of various clustering algorithms to demonstrate the effectiveness of their proposed approach on some real data sets. In the next article which is along the same line of research, Shamsinejadbabaki *et al.* discuss the applicability and post-processing of discovered models which is the core of action mining. The authors introduce a novel approach suitable for action mining that explicitly relies on an automatically obtained best estimate of the causal relationships in a given data set. Evaluation of their approach is also presented in their article.

The last two articles of this issue are more on applied research. Wu and Huang discuss some of the challenges in efficient recommender systems and propose a genre-based fuzzy inference filtering approach for predicting movie preferences. Their approach is based on using content-based and collaborative filtering algorithms as baseline methods to evaluate the performance of their proposed approach. The results of their experiments demonstrate that the hybrid approach exploits the strengths of the content-based and collaborative filtering algorithms to achieve filtering in terms of precision. In the last article of this issue, Twala discusses the effects of noise and low quality data in machine learning and presents an investigation of five machine learning algorithms in terms robustness in credit-risk applications. In particular, the author shows that when noise (class or attribute) is added to a given data set, the noise in the class variable is the one that is primarily responsible for poor predictive accuracy.

In conclusion, with this issue of the IDA journal which is Volume 17(6), we are glad to report continuous increase in submission of manuscripts to our journal for evaluation and publication and also requests for special issues. A special issue in planning is in the area of Business Analytics in Finance and Industry. The deadline for submission of papers for this special issue is March 15, 2014 (please see call for papers included in this issue of IDA journal). Interested authors can contact Prof. Richard Weber, Department of Industrial Engineering, Universidad de Chile (rweber@dii.uchile.cl). 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