Editorial

Dear Colleague:

Welcome to volume 26(4) of the Intelligent Data Analysis (IDA) Journal.

This issue of the IDA journal is the fourth issue for our 26th year of publication. It contains fifteen articles representing a wide range of topics related to the theoretical and applied research in the field of Intelligent Data Analysis.

The first group of articles are about advanced data pre-processing methods in IDA. Pan et al. in the first article of this group present a multi-label feature selection method that is based on an approximation of interaction information. The idea proposed here is to take the correlation of labels into account which doesn't increase the computation cost significantly at the same time. Their experimental analysis results show that the proposed method is quite effective. Zhang et al. in the second article of this group present an approach that is based on unifying attentive sparse autoencoder with neural collaborative filtering for recommendation. They argue that the autoencoder network has been proven to be one of the powerful techniques for recommender systems. The authors propose a novel hybrid deep learning model for top-n recommendation, called attentive stacked sparse autoencoder, which can capture attention weights vector of a user for items, and then combined with the neural matrix factorization to improve the performance of recommender model. Their experiments on four real-world datasets show that their algorithm has significant improvements over state-of-the-art algorithms. Gao et in the last article of this group present a two-dimensional dynamic time warping algorithm for matrices similarity. The authors argue that a dynamic time warping algorithm provides an effective method to obtain the similarity between unequal-sized signals. However, it cannot directly deal with high-dimensional samples such as matrices. Their experimental results suggest that the performance of their proposed distance is superior to the traditional Euclidean distance and can improve the similarity accuracy between matrices by introducing the warping alignment mechanisms.

The second group of articles are about state-of-the art learning methods in IDA. Li et al. in the first article of this group present an approach that is based on deep adaptive multi-channel graph neural networks. The authors make further improvements based on their approach to obtain an improved performance. They demonstrate that experimentally the fusion abilities of their proposed approach is far stronger than the existing methods and can extract relevant information from node features and topological structures to the maximum extent for fusion, thus significantly improving the accuracy of node classification. Liu et al. in the next article of this group present an isomorphic CNN-based prediction and decision framework for financial time series applications. The authors argue that a significant number of machine learning-based methods have been proposed and demonstrate impressive results, especially deep learning-based models. However, the performance of online trading decisions is still inadequate for practical applications. The authors propose an integrated framework of forecasting based online trading strategy to satisfy better prediction performance and dynamic decisions for real-world online trading systems. Their results show that their proposed approach outperforms its competitors in predicting metrics, trading profits, and real-time performance. Li et al. in the sixth article of this issue present an approach for mining spatial high-average utility co-location patterns from spatial data sets. The authors

consider the utility and length of the co-location pattern and propose a basic algorithm based on the extended average utility ratio of co-location patterns to mining, which solves the problem that the average utility ratio of patterns does not satisfy the downward closure property. Their experimental results show that the proposed algorithm can effectively and efficiently find interesting patterns in spatial data sets. Kodama in the next article present an approach for shape classification based on solid angles by a support vector machine. The authors argue that in the field of computer aided design it is important to recognize primitive shapes and to accurately judge and classify the deformation of primitive shapes. The authors propose a method based on solid angles, which do not depend on the positional relationship of vectors, viewpoints, or changes due to rotation, as feature quantities and show that the presence or absence of deformation can be determined when part of a primitive 3D figure is deformed. Xu et al. in the eighth article of this issue present an approach for knowledge graph embedding with entity attributes using hypergraph neural networks which show relatively low performance in link prediction. The authors propose a general knowledge graph embedding framework to learn the structural information as well as the attribute information of the entities simultaneously. Their experiments on multiple real-world data sets show that the proposed model has significantly improved the link prediction performance, especially in the embedding of long tail entities. The ninth article of this issue by Qiu et al. is about a multi-view hybrid recommendation model that is based on deep learning. The authors use an improved latent Dirichlet allocation method to extract the vector representation of user review text to apply to contextual semantic level user review sentiment analysis. At the same time, the emotion fusion method based on user score embedding is proposed. Their experimental results show that the prediction capability of the proposed model has been significantly improved. Hong et in the last article of this group present an approach for mining multiplex interaction relationships from usage records in social networks. The authors propose an approach to find the multiplex interaction relationships based on the action records of users on social networks. These interactions are then used to check the friend and the follower relations such that users can find which friends or followers are active or not. Their results show the proposed approach is effective in helping users know the truly close friend relationships on a social network.

The last group of articles in this issue are about enabling techniques and innovative case studies in IDA. Li et al. in the first article of this group present a parallel double-layer prediction model construction and empirical analysis for enterprise credit assessment. The authors argue that in order to improve generalization ability of models and accuracy of prediction results, a parallel double-layer prediction model is proposed. The proposed model is based on Stacking and Bagging methods. Through their experiments, the authors compare three single algorithm models along with four integrated learning models with other combination strategies and parallel double-layer prediction model. The twelfth article of this issue by Bhatia et al. is presentation of a hybrid approach for noise reduction-based optimal classifier using genetic algorithm. This is a case study in plant disease prediction. The authors propose a noise reduction-based hybridized classifiers for plant disease prediction. The performances of their proposed approach on a number of plant data sets shows significant differences exist between various classifiers in terms of prediction. Zhao et al. in the thirteenth article of this issue present a wear-free gesture recognition system that is based on residual features of RFID signals in which the users do not need to wear any devices. In their proposed model, the interference information generated by the gesture action on the tag signal is used as the fingerprint feature of the action. Their experimental results show that the recognition system achieves more recognition accuracy than existing methods. In the fourteenth article of this issue, by Puhohit et al. argue that networks are a fundamental and flexible way of representing various complex systems and present an approach for independent temporal motifs to summarize and compare temporal networks. The proposed approach can be used to model the structure and the evolution

of the graph. The authors apply their proposed approach to measure the similarity of temporal graphs where in their experiments they achieve higher accuracy than other motif frequency-based approaches. This is shown on both synthetic and real temporal networks. And finally, the last article of this issue by Kalejahi et al. is an in-depth literature review of the diagnosis of liver disease through computer-assisted imaging techniques (CAD). The authors argue that accurate disease detection by using ultrasound images or other medical imaging modalities depends on the physician's experience and skill where CAD systems have a critical role in helping experts make accurate and right-sized assessments. The authors argue that machine learning and deep learning algorithms and models play also a big role in this area. They provide an evaluation of different techniques that are used to segment and analyze the liver ultrasound medical images, which is still a challenging approach on how to use these techniques and their technical and clinical effectiveness as a global approach.

In conclusion, we would like to thank all the authors who have submitted their manuscripts with the results of their excellent applied and theoretical research to be evaluated by our referees and published in the IDA journal. Over the last few years, our submission rate has increased substantially, although our acceptance rate remains around 12–15%. We are also glad to announce that our impact factor has increased by 32% since last year. 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