Editorial

Dear Colleague:

Welcome to volume 27(5) of the Intelligent Data Analysis (IDA) Journal.

Estimated reader, this is the fifth issue for the 27th year of the IDA journal. It contains fifteen articles covering a wide range of theoretical and applied research topics in the field of Intelligent Data Analysis. I want to thank Prof Jerry Chun-Wei Lin, who has been involved in preparing a dedicated special issue that we have finally merged into this regular issue. You will also notice that several of the papers share a common scope that has helped create a very thematically consistent issue.

We open this issue with a state-of-the-art survey paper by Vieira et al. that reviews the use of recommendation systems in chronic diseases. This paper examines the most recent literature on the topic and identifies the current challenges in applying these systems in clinical practice.

Secondly, we have a section on different data preprocessing and preparation algorithms and techniques. Gao et al. propose an innovative anomaly detection method for edge computing based on k-nearest neighbours and locality-sensitive hashing, and its results are compared with six reference methods in anomaly detection for accuracy and energy consumption. Next, Yang et al. present a new approach, OS-GAN, based on generative adversary networks to conduct data oversampling, particularly for binary problems. This method is tested to obtain more generalised models on 15 datasets, one of them a high-dimensionality one. We conclude the data preprocessing section with Wang et al., a paper exploring blockchain use to facilitate trusted data storage proposing a hybrid storage mechanism based on IPFS (inter-planetary file system) and a mechanism to divide the blockchain into multiple shards.

Our next section is focused on new algorithms and methods for general intelligent data analysis. Firstly, Zhou et al. introduce us to a new short text classification method (KSAM) that uses keyword screening and attention mechanisms based on a BiLSTM that also relies on conceptual information for the classification of these short texts. In Li et al., we have a new method for non-parametric graph-based clustering, which also adaptively detects noise data unsupervised. This new technique successfully performs with no preliminary parameter settings being able to define clusters with arbitrary shapes and unbalanced densities. Our next contribution, Wu et al., addresses the problem of frequent itemset mining, particularly high-utility itemset mining. The paper presents a new parallel Map/Reduce-based iterative algorithm tailored for IoT and mobile cloud-based scenarios. The algorithm addresses this problem in three processing stages (calculating, sorting, and mining).

As part of the application block, we start with two smart city applications focused on scalable machine learning; the first is Cheng et al., a proposal for a distributed induction tree algorithm tailored for urban big data scenarios. The paper presents how to exploit a distributed framework to analyse this information under different scalable configurations. The second contribution to this topic is Biswas et al. paper. In this article, the authors present an energy-efficient dynamic virtual machine consolidation model addressing the problem of energy consumption of cloud data centres. The proposal uses a Bayesian machine learning model to detect node overload coupled with a smart power-aware allocation policy. Our third application paper acts as a bridge between the smart city subsection and the financial applications. In Chen et al., the authors present an optimisation algorithm using memetic heuristic optimisation (genetic algorithms

and simulated annealing) to construct a transaction robot. The algorithm aims to obtain a technical indicator portfolio and its parameters for predicting trends of target stock and making investment plans in a smart city environment. In the context of pure financial applications, Han et al. tackle the problem of credit risk assessment with a novel ensemble approach based on a multi-layer multi-view stacking model (MLMVS), which also integrates LIME for model interpretability and test it on a well-known dataset and compare it with other simple and ensemble classification techniques. A second paper on fintech authored by Wei & Dai focused on stock trend forecasting using, in this case, generative adversarial networks combined with unsupervised domain adaptation also integrated as an adversarial competing process. This new method is tailored for small sample size of newly listed stocks. On a different application field, Chen et al. present their work in power production and, particularly, in the economic dispatch problem (EDP), a complex non-convex constrained optimisation problem. The authors propose a hybrid quantum-behaved particle swarm optimisation algorithm that uses Solis-Wets as the local search strategy. We continue with Ramachandran's contribution to diagnosing retinopathy of prematurity (Terry syndrome) in premature babies that coexists with a disease stage known as Plus disease. The proposed method analyses infant retinal images to estimate blood vessel tortuosity using convolutional neural networks for image segmentation. The article includes data from a 289-infant clinical study in India. We conclude with an interesting agritech application problem, presented by Yang et al., in the use of deep learning-based computer vision to detect multiple-size peaches with varied illumination and fruit occlusion to guide robot picking automation in orchards. The authors present an improved detection transformer network (R2N-DETR) using Red-Green-Blue-Depth (RGB-D) images.

I would also like to use this first issue, in which I have been involved since the beginning to thank the original founder of this exceptional journal. Dr A Famili created the journal in 1995-96 and was in charge of the editorial process until the previous issue. More than 26 years of uninterrupted, well-recognised and high-quality scientific papers, carefully selected by him and a large number of collaborators, editorial board members, publishers, and reviewers. To all of them, and particularly to Dr Famili, I would like to thank him for this great job that I hope I can humbly continue. I will also count on the help of many of you involved in the different tasks that are part of the preparation of a scientific journal in this new period.

With our best wishes,

Dr. A. Famili   *Dr. J.M. Pena*
Founding Editor   *Editor-in-Chief*