Editorial

Dear Colleague:
Welcome to volume 28(1) of the Intelligent Data Analysis (IDA) Journal.

Dear reader, welcome to the first issue of our 28th year of the IDA journal. This issue includes seventeen articles covering theoretical contributions as well as papers on applied Intelligent Data Analysis.

We open the issue with review article. Fu,et al. survey in their paper the topic of network representation learning during the most recent years. The inisghts discovered by this study indicates that multi-granularity solutions emerge as the one of the best alternatives when dealing with the complexity of the network and pursuing the efficiency of computing resources.

The next block of paper include several theoretical contributions, starting with Tong et al. who present a study the uniformity the classical bilinear translational model TransE, which produce accurate embeddings from knowledge graphs assuming a uniform space. The authors propose a new method based on convolutional neural networs, named ConvUs, that addrsses the problem of uniformity including constraints on convolution filter values on a multi-layer and multi-scale architecture with triple score calculation function using non-parametric L2 norm function. The next article is Yamada & Sugiyama's paper, which addresses the problem of the definition of graph neural networks, in particular, those based on message passing schemes. The article analyses the performance of these networks for detecting large subgraph structures under incremental message passing interactions. The unexpected results question the existing paradigms based on Weisfeiler–Lehman graph kernel showing that the averaged features over nodes obtained by the message passing scheme in these networks are likely to converge to a certain value. Yuhan, et al. present another paper in graph neural networks, in this case with the objective of predicting temporal links in a stream graph series. The proposed approach extract features at differen scales, process topological features using a LSTM, and a trsnformer mechanism swapping location for time-coding. The article also includes experimental results on several well-know datasets. We continue with Zhang, et al. presenting a paper on conversational recommender systems that address the problem of large and noisy contexts when involving dialogs. The authors propose a sparse multi-hop conversational recommender model named SMCR, that reduces the computational complexity of sparse graphs resulting accurate identification of the most important edges through matching items. We close this block with Liu, et al., a comparative article in the problem of feature selction using optimisation algorithms that also proposes a new mthod based on bald eagle search and particle swarm optimisation in a hybrid approach. The paper report interesting comparison over well-know UCI datasets using a baseline machine learning algorithm.

The next block including very interesting applied papers. The first selection including papers in the context of law, government and economics. We open this selection with an interting paper from Alemayehu & Fang on the analysis of legislative bills via controversy analysis. The proposed method solves the challenge as an expectation and maximization optimisation problem by modifying the variables to translate the problem con constrained to unconstrained optimization. The proposed algorithms is tested with a dataset containing the US Congres legislative bills. The next article, by Miok, et al. also cover a data analysis problem in legislative and gouvernmental applications. In this case, the study covers cross-lingual sentiment analysis for the participation of representatives in six national parliaments (Bulgarian, Czech, French, Slovene, Spanish, and United Kingdom). The application tries to identify

age, gender, and political orientation of speakers based on these features. A third article in this selection, signed by Yathongkhum, et al., show an classification problem in the analysis of economical and financial news. The proposed approach combines baseline classifiers with a novel method called the Category Associated Feature Set (CAFS) classifier, which transforms text input from the lexicon-space into the entity-space and discovers associations between entities and classes. The results show a comparative performance with existing method but improving the classification results in out-of-domain datasets. We close this selection of articles with a contribution from Omar & Auso, in which the authors conduct a statistical survey on the role of consultative leadership on administrative development in the context of developing countries, specifically the Iraqi Ministry of Interior Affairs. The results of the study analyses the correlation between consultative leadership and administrative development.

The second group of application papers have in common the exploration of the feature spaces and the selction of the optimal one for the task at hand. Xue et al. present a new method to use feature-level masks in self-supervised transformers in an interesting time series application problem for the estimation of the remaining useful live in industrial equipment. The proposed approach leverages the uses of an encoder/decoder architecture to obtain the correlation among the different features. Secondly, Yan, et al. propose a new method for on-line advertising and optimization of click-though rate (CTR) also using feature interaction, in this particular case a multi-semantic learning network, named MeFiNet. The presented method uses the Squeeze & Excitation method to extract the importance distribution in the semantic space to concatenate it with the original feature embeddings to train a deep learning network.

In other general application section we include the following papers: Zhang, et al. present a new knowledge-augmented Gated Recurrent Unit (GRU) to improve the short-term user interest module. The mnethod also adopts a collaborative item aggregation method to enhance the item co-occurrence module. This new method is applied to sequential recommendation problems based on deep learning networks. The authors Sang, et al., present an interesting application problem of facial recognition with partial occlusion addressed from the perspective of multi-label classification. The approach leverages multi-label attributes to conduct a data augmentation process compensating the limited amount of information per sample. The article also extends the experimental part by including other soft biometric features and other semantic attributes. In their part, Yasmin, et al. present a methodology to estimate software development effort using development-centric features from a crowdsourcing platform. The approach compares different machine elarning algorithms and different performance metrics. Besides the comparison among the different algorithms, an interesting insight show which features are more determinant for the accurate estimation of the effort. In Jeon, et al., the authors introduce a new neural network-based method that combines named entity recognition, edge weight updating, and a triplet loss function for the problem os entity normalization, aiming at technical documentation problems. The paper includes the application of this method to the patent filings in semiconductor devices of the United States Patent and Trademark Office (USPTO). We close this issue with Ponya, et al. who present us an improved version of Adaboost ensamble applied to the classification of schizophrenic patients using EEG neuroimage. The proposed approach combines several machine learning methods in a pipeline, including a two-layerAdaboost in the core. The problem is also tested in benchmark dataset of different time-series signals that share aspects of noise and outliers with EEG signals.

With our best wishes,

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