Editorial

Lorna Uden*

School of Computing,
Faculty of Computing and Digital Technologies,
Staffordshire University,
Mellor Building, College Road,
Stoke-on-Trent, ST4 2DE, UK
Email: L.uden@staffs.ac.uk
*Corresponding author

Iraklis Varlamis

Department of Informatics and Telematics,
Harokopio University of Athens,
9, Omirou Street, 177 78, Tavros, Athens, Greece
Email: varlamis@hua.gr

Biographical notes: Lorna Uden is a Professor Emeritus of IT Systems in the Faculty of Computing, Engineering and Technology at Staffordshire University. Her research interests include technology learning, HCI, activity theory, big data, knowledge management, web engineering, multimedia, artificial intelligence, e-business, service science and innovation, mobile computing, cloud computing, neuroscience, social media, intelligent transport systems, internet of things and problem-based learning.

Iraklis Varlamis is a Professor in Data Management in the Department of Informatics and Telematics at Harokopio University of Athens, Greece. He holds a PhD from Athens University of Economics and Business, Greece, and an MSc in Information Systems Engineering from UMIST UK. His research interests vary from data mining and the use of semantics in web mining to social network analytics and knowledge extraction from social media and the news. He is collaborating with several start-ups, companies, and government bodies as a technology mentor. He is the scientific coordinator in several H2020 and Erasmus+ projects.

Welcome to V19N2 issue of *IJWET*. This issue consists of five papers.

The first paper, the study of Bantupalli Nagalakshmi and Sumathy Subramanian, titled 'An efficient multi-objective task scheduling in edge computing using adaptive honey badger optimisation' proposes a multi-objective-based task scheduling approach for edge computing, introducing the adaptive honey badger optimisation algorithm (AHBA) to address scalability and capacity challenges. By integrating opposition-based learning (OBL) with the honey badger algorithm (HBA), AHBA maintains population diversity and enhances convergence toward optimal solutions. The proposed approach, evaluated based on makespan, cost, energy consumption, and resource usage, demonstrates promising results compared to existing metaheuristic-based approaches. The research not only contributes to the advancement of task scheduling in edge

computing but also underscores the potential of nature-inspired algorithms in addressing complex optimisation problems, aligning with the evolving demands of modern computing paradigms.

The second paper of this volume is titled 'A cultural industry text classification method based on knowledge graph information constraints and knowledge fusion' and is authored by Xue Ji. The study proposes an innovative text classification method for the cultural industry that is grounded in knowledge graph information constraints and knowledge fusion. The method addresses various challenges faced by traditional text classification algorithms due to the inherent diversity, complexity, and unstructured nature of cultural texts, which present variations in language expressions, professional terminology, and the presence of noise and redundancy. By constructing a knowledge graph tailored to the cultural industry text, entities, and relationships are extracted and supervised, facilitating effective feature extraction and representation. Leveraging optimised encoding and decoding layers alongside a knowledge fusion module incorporating attention mechanisms, the proposed method demonstrates superior performance in terms of classification accuracy compared to existing approaches. Furthermore, the integration of knowledge graph information constraint technology and knowledge fusion enhances the model's capacity for comprehensive analysis, offering promising avenues for advancing text classification in the cultural industry and providing valuable insights for practical applications.

The third paper presents the innovative approach to stock market prediction by V. Nagarjun Yadav, S. Pazhanirajan and T. Anil Kumar, which is titled 'DLSTMFRNN – a newly developed network-based deep long short-term memory and recurrent neural network for stock market prediction'. Although it is recognised as the barometer of financial trade, the prediction of stock market is beset by the inherent volatility and nonlinearity of price series, influenced by multifarious factors including economic conditions, investor sentiment, and political events. Addressing the challenges posed by the unpredictable nature of SM, this study proposes DLSTMFRNN, a novel deep long-short term memory fused recurrent neural network designed specifically for reliable stock market prediction. By integrating deep long-short term memory (DLSTM) with recurrent neural network (RNN), DLSTMFRNN leverages the strengths of both networks to enhance prediction accuracy. In the pre-processing, input time series data undergoes missing value imputation and feature extraction utilising the Soergel metric for feature selection. The experimental results demonstrate the efficacy of DLSTMFRNN, achieving minimal mean absolute percentage error (MAPE), mean squared error (MSE), root mean square error (RMSE), and relative absolute error (RAE), underscoring its potential as a robust tool for SM prediction. As a result, DLSTMFRNN, offers a promising solution to the complex problem of SM prediction, thus advancing the frontier of financial prediction methodologies.

The fourth paper in this volume presents an 'Automatic text summarisation system for scientific papers on the basis of T5 model, on-the-fly constructed corpus and citations' and is authored by Mawloud Mosbah. As the field of natural language processing (NLP) continues to evolve, offering a plethora of applications ranging from information retrieval to machine text summarisation, the demand for automatic document summarisation has never been more pressing. Leveraging the advancements in deep neural networks and transfer learning, this paper introduces a novel summarisation prototype based on the T5 model, trained on a limited on-the-fly constructed corpus supplemented with citations as external semantic information. The proposed prototype

addresses the challenges posed by limited data by harnessing the power of transfer learning with the T5 model and constructing a dynamic corpus from online scientific databases engines. Additionally, citations are utilised as external semantic resources, extracted from documents citing the paper to be summarised via Google Scholar citation index. This innovative approach not only ensures high-quality results within a reasonable training time but also allows for dynamic upgrades in performance over time. By embracing the extensible nature of the web and leveraging available online services, such as Google Scholar citation index, the prototype promises to deliver informative and evolving summaries of scientific papers, thereby advancing the frontier of automatic text summarisation in the digital era.

The fifth paper is titled 'A real-time semantic segmentation method for small objects using attention mechanism' and is authored by Shijie Guan and Haojie Yu. To address the challenges of existing real-time segmentation models, which often struggle with small object segmentation due to limited visual information and the low resolution of small objects, this paper proposes a novel network architecture, DA-STDCNet (STDCNet based on dual attention), which enhances the ability to accurately capture and segment various small targets in images. By integrating a dual attention mechanism and optimising the STDCNet model structure, our approach achieves significant improvements in small object segmentation. Specifically, the incorporation of a spatial information branch and the integration of spatial and channel attention mechanisms enhance feature extraction and global context feature extraction capabilities, respectively. Additionally, the introduction of the focal Tversky loss function prioritises small target areas during training. Experimental results on the cityscapes dataset demonstrate the effectiveness and speed of the proposed model.