Editorial

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Starting the new year of 2025, this first issue of Volume 22 of Computer Science and Information Systems consists of 17 regular articles. We are grateful for the continuing hard work and enthusiasm of all our authors and reviewers, without whom the publication of the current issue and the journal itself would not be possible.

The first regular article, "Segmentation of COVID-19 CT Lesions in CT Scans through Transfer Learning" by Symeon Psaraftis-Souranis et al., propose a novel deep learning framework designed for the segmentation of lesions evident in Computed Tomography (CT) scans. The results suggest that the incorporation of transfer learning, combined with appropriate pre-processing techniques, can contribute to achieving state-of-the-art performance in the segmentation of lesions associated with SARS-CoV-2 infections.

In the second regular article, "Topic-oriented Sarcasm Detection via Entity Knowledge-based Prompt Learning," Yuhao Zhou et al. investigate an Entity Knowledge-based Prompt Learning (EKPL) model that combines prompt learning and entity knowledge from knowledge graphs for topic-oriented sarcasm detection. Experimental results illustrate that the EKPL model exhibits good performance in the topic-oriented sarcasm detection task.

"A New Course Difficulty Index (CDf): Framework and Application," by Konstantinos Kelesidis et al. proposes new framework for the quantification of course difficulty in academic curricula. For each course, course difficulty index value (CDf) is computed using difficulty indicators that characterize the course as a whole. The difficulty indicators can be tailored to reflect the academic domain considered. The proposed framework and analysis represent a useful tool for academic policy-making and quality assurance.

Zhimin Feng et al., in "Anomalous Traffic Identification Method for POST Messages Based on Gambling Website Templates," propose a POST traffic classification method based on website templates to identify abnormal traffic from gambling websites. POST message data is collected from several gambling sites, extracting features and creating a Gambling Website Single POST Message Dataset (GSPD). Word2Vec, TF-IDF, hierarchical clustering, support vector machines and particle swarm optimization are utilized to achieve excellent performance on the evaluated test set.

"Formal Transformation of OWL Ontology to a FOKI Generic Meta-Model," authored by Bogumila Hnatkowska et al. presents a meta-model and a set of transformation rules for bi-directional transformation between ontologies expressed in the authors' FOKI framework (which does not use OWL) from previous work, and the OWL standard. The meta-model serves as a bridge in the transformation process. The correctness of the obtained transformation rules was verified on widely available ontologies expressed in OWL.

The article "Multilingual Pretrained based Multi-feature Fusion Model for English Text Classification," by Ruijuan Zhang proposes a novel multilingual pre-training based

multi-feature fusion method for English text classification (MFFMP-ETC) to tackle two challenges faced by current deep-learning approaches: (1) effectively capturing long-range contextual structure information within text sequences, and (2) adequately integrating linguistic knowledge into representations. Results on three datasets show that MFFMP-ETC introduces a new baseline in terms of accuracy, sensitivity, and precision.

In their article entitled "TPBoxE: Temporal Knowledge Graph Completion based on Time Probability Box Embedding," Song Li et al. address the challenges in temporal graph completion of making effective use of special relationships between relations and time series information, and difficulties in fully representing the complex relationships existing in the graph. The proposed model based on time probability box embedding, TPBoxE, is experimentally shown to exhibit better performance than existing state-of-the-art models.

Yong Ren et al., in their article "A Lightweight defect classification Method for Latex Gloves Based on Image Enhancement," present a glove defect classification method that integrates image enhancement techniques with a lightweight model to enhance the efficiency and accuracy of glove defect classification in industrial manufacturing. Experimental results demonstrate that the proposed MobileNetV2 model achieves excellent accuracy, effectively mitigating overfitting phenomena, and exhibits significantly faster training speed compared to the ResNet34 and ResNet50 models.

In "ASAM: Asynchronous Self-Attention Model for Visual Question Answering," Han Liu et al. propose the asynchronous self-attention model (ASAM) that makes use of an asynchronous self-attention component and a controller, integrating the asynchronous self-attention mechanism and collaborative attention mechanism effectively to leverage the rich semantic information of the underlying visuals in addition to textual information, for the task of visual question answering. Experimental evaluation demonstrates that the proposed model outperforms the state-of-the-art, without increasing model complexity and the number of parameters.

In their article "Medical Images Anomaly Detection for Imbalanced Datasets with Multi-scale Normalizing Flow," Yufeng Xiao et al. propose a novel unsupervised medical image detection model named Multi-Scale Normalizing Flow (MS-NF), in order to tackle the large number of features and parameters for the task of anomaly detection in medical images. After extracting multi-scale feature maps and normalizing flow to transfer the anomalies into a normal distribution in the latent space, channel and spatial convolutional attention mechanisms are integrated into the model. Experimental results show that MS-NF improves the pixel-level AUC index by 9% compared to existing medical image detection models.

"PSBD-EWT-EGAN: Heart Sound Denoising Using PSBD-EWT and Enhancement Generative Adversarial Network," by Jianqiang Hu et al., presents a heart sound signal (HSS) denoising method which uses Parameterless Scale-space Boundary Detection (PSBD), the Empirical Wavelet Transform (EWT) and Enhanced Generative Adversarial Network (EGAN) to remove noise signals that corrupt HSSs. Experimental results show that the proposed method achieves significant improvements over the state-of-the-art.

In their article entitled "Academic Research on Fuzzy Systems: A Country and Regional Analysis from its Origins in 1965 to 2023," Carlos J. Torres-Vergara et al. present a bibliometric study encompassing 185,673 documents from the Web of Science, that explores tendencies and trends, and identifies the most prolific and important countries in

fuzzy systems research and its evolution. Since its inception in 1965, the field has grown significantly, with its epicentre originally in the USA and England, and moving first to Europe and then to Asia, following global trends in other fields of study.

The article "Mapping-Based Approach to Integration of Technical Spaces," by Vladimir Dimitrieski et al. address software integration issues and introduce a novel mapping-based approach for structured, automated, and reusable integration of software components and systems. An automated development process for the integration adapters at a higher level of abstraction is presented, based on model-driven software development principles. A tool called AnyMap is introduced, as well as a visual domain-specific modeling language for specifying mappings and generating adapters, with the approach demonstrated on a practical use case.

Congyin Cao et al., in their article "Linear Projection-Based Noise Filtering Framework for Image Denoising," tackle the challenges of image denoising approaches related to incorporating crucial structural information from perspectives other than local space, such as local manifolds and global structures, by proposing a novel linear projection-based noise filtering (LPNF) framework grounded in linear projection learning theory. The framework learns a linear projection for noise filtering by incorporating multiple structural information sources: local spatial, local manifold, and global structures.

In "Multimodal Deep Learning-based Feature Fusion for Object Detection in Remote Sensing Images," Shoulin Yin et al. propose a multimodal deep learning-based feature fusion for object detection in remote sensing images. In the new model, a cascade region-based convolutional neural network (RCNN) is the backbone network, while a parallel cascade RCNN network is utilized for feature fusion to enhance feature expression ability. In order to solve the problem of different segmentation shapes and sizes, the central part of the network adopts multi-coefficient cascaded hollow convolution to obtain multi-receptive field features without using pooling and preserving image information.

In their article "Improved Session Recommendation Using Contrastive Learning based Tail Adjusted Repeat Aware Graph Neural Network," Daifeng Li et al. study the interactions between users and items in session-based recommender systems from a new perspective. A novel contrastive learning based tail adjusted repeat aware graph neural network (CLTAR-GNN) is proposed to tackle the problems of long-range dependencies, order information loss, and data sparsity. A tail adjusted repeat (TAR) mechanism captures users' repeat-explore behaviors in both short-head and long-tail session items, while a self-attention (SA) network with position embedding is incorporated to overcome sequence information loss issues.

Finally, "Unraveling the Organisational Debt Phenomenon in Software Companies," by Muhammad Ovais Ahmad et al. assesses the extent of knowledge, factors, and consequences of organizational maladjustment in software organizations. A survey performed in three organizations identified several highly visible issues such as complex code, inconsistent UI, unclear requirements, and outdated processes. These themes often emerge due to exponential growth, prioritizing speed over quality, lack of cooperation and coordination, and outdated processes.