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Editorial

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This fourth and final issue of Computer Science and Information Systems for 2023 consists of 13 regular articles, and two special sections: "Digital Ecosystems – State of the Art and Challenges" (4 articles), and "Soft/Edge Computing for Imaging and Remote Sensing Applications." We thank the guest editors of the special sections, as well as all our authors and reviewers, whose hard work and enthusiasm made possible the publication of the current issue, as well as the our journal in general.

The first regular article, "M^2F^2-RCNN: Multi-Functional Faster RCNN Based on Multi-Scale Feature Fusion for Region Search in Remote Sensing Images," by Shoulin Yin et al. combines a feature extraction network based on ResNet50, a path aggregation network with a convolution block attention module (CBAM), RoIAlign, and an improved non maximum suppression to build an improved RCNN model for regio search in remote sensing images.

In the second regular article, "SRDF_DAG: An Efficient End-to-End RDF Data Management when Graph Exploration Meets Spatial Processing," Houssameddine Yousfi et al. propose new strategies to support spatial operators within a particular TripleStore that relies on graph fragmentation and exploration and guarantees a good compromise between scalability and performance.

Eyad Kannout et al., in "Towards Addressing Item Cold-Start Problem in Collaborative Filtering by Embedding Agglomerative Clustering and FP-Growth into the Recommendation System" introduce a frequent pattern mining framework for recommender systems (FPRS) – a novel approach to address the items' cold-start problem by employing several strategies to combine collaborative and content-based filtering methods with frequent items mining and agglomerative clustering techniques.

The article "Sentence Embedding Approach Using LSTM: Auto-Encoder for Discussion Threads Summarization" by Abdul Wali Khan et al. introduces the LSTM autoencoder as a sentence embedding technique to improve the performance of an automated discussion thread summarizing system (DTS) for online discussion forums.

In "PARSAT: Fuzzy Logic for Adaptive Spatial Ability Training in an Augmented Reality System," Christos Papakostas et al. present a novel adaptive augmented reality training system that teaches the knowledge domain of technical drawing. The novelty of the system is that it proposes using fuzzy sets to represent the students' knowledge levels more accurately in the adaptive augmented reality training system.

"Explaining Deep Residual Networks Predictions with Symplectic Adjoint Method," by Xia Lei et al., proposes a provably faithful explanation for ResNet using a surrogate explainable model, a neural ordinary differential equation network (Neural ODE). First, ResNets are proved to converge to a Neural ODE and the Neural ODE is regarded as a surrogate model to explain the decision-making attribution of the ResNets. Then, the

decision feature and the explanation map of inputs belonging to the target class for Neural ODE are generated via the symplectic adjoint method.

Hai Bang Truong and Van Cuong Tran, in "A Framework for Fake News Detection Based on the Wisdom of Crowds and the Ensemble Learning Model" propose an ensemble classification model to detect fake news based on exploiting the wisdom of crowds. The social interactions and the user's credibility are mined to automatically detect fake news on Twitter without considering news content. The proposed method extracts the features from a Twitter dataset and then a voting ensemble classifier is used to determine whether news is fake or real.

"Deep Learning-Based Sentiment Classification in Amharic Using Multi-Lingual Datasets" authored by Senait Gebremichael Tesfagergish et al. examines various deep learning methods such as CNN, LSTM, FFNN, BiLSTM, and transformers, as well as memory-based methods like cosine similarity, to perform sentiment classification using the word or sentence embedding techniques.

In "Heart Sounds Classification using Adaptive Wavelet Threshold and 1D LDCNN," Jianqiang Hu et al. present an automated heart sound classification method using adaptive wavelet threshold and 1D LDCNN (One-dimensional Lightweight Deep Convolutional Neural Net21 work). The method exploits WT (Wavelet Transform) with an adaptive threshold to de-noise heart sound signals (HSSs), and uses 1D LDCNN to realize automatic feature extraction and classification for de-noised heart sounds.

Abdulaziz Anorboev et al., in "Ensemble of Top3 Prediction of Image Pixel Interval Method Using Deep Learning," propose a multi-step strategy to improve image categorization accuracy with less data. The approach constructs numerous datasets from a single dataset by separating images into pixel intervals based on the type of dataset. Then, the model is trained using both the original and newly constructed datasets.

In their article "Intrusion Detection Model of Internet of Things Based on Deep Learning," Yan Wang et al. introduce a hybrid parallel intrusion detection model based on deep learning called HPIDM, featuring a three-layer parallel neural network structure. The model combines stacked LSTM neural networks with convolutional neural networks (CNNs) and the SK Net self-attentive mechanism, allowing HPIDM to effectively learn temporal and spatial features of traffic data.

"BI-FERH: Blockchain-IoT Based Framework for Securing Smart Hotel" by Quanlong Guan et al. proposes a blockchain-IoT based framework for securing smart hotels (BI-FERH) to enhance the security of hotel information systems. The high performance BI-FERH architecture takes advantage of real-time data transmission capabilities offered by IoT devices. Sensitive data generated by IoT devices is protected in BI-FERH, enhancing tamper-proof capabilities.

Finally, "Digital Remote Work Influencing Public Administration Employees Satisfaction in Public Health Complex Contexts" authored by Maria Sousa et al. studies the question of whether digital remote work in times of COVID-19 influenced the satisfaction of public administration employees. An online survey was conducted in the Portuguese public administration for a sample of 70 individuals, producing various interesting conclusions.