

Editorial

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In the current third issue of *Computer Science and Information Systems* for 2023, we are happy to announce the impact factors of our journal, updated for 2022: the new two-year IF 1.4, and the five-year IF 1.2. We would like to thank all our authors and reviewers, whose work in their cutting-edge domains continues to increase the impact of our journal. We hope to continue this trend and that the issue in front of you, our dear reader, will offer interesting articles and ideas in both emerging and more established research areas.

This issue consists of 13 regular articles and 4 articles in the special section “Advances in Intelligent Data, Data Engineering, and Information Systems” containing selected and extended versions of papers published in *Proceedings of the 25th European Conference on Advances in Databases and Information Systems (ADBIS), 2021*. We are once again grateful for the hard work and enthusiasm of our authors and reviewers, without whom the current issue, as well as the publication of the journal itself, would not be possible.

In the first regular article, “Landslide Detection Based on Efficient Residual Channel Attention Mechanism Network and Faster R-CNN,” Yabing Jin et al. apply target detection models such as Faster R-CNN to landslide recognition and detection tasks, and propose the Efficient Residual Channel soft thresholding Attention mechanism algorithm (ERCA). ERCA aims to reduce the background noise of images in complex environments by means of adaptive soft thresholding to improve the feature learning capability of deep learning target detection algorithms.

The second regular article, “Tourism Recommendation based on Word Embedding from Card Transaction Data” by Minsung Hong et al. utilize well-known Doc2Vec techniques in the domain of tourism recommendation, using them on non-textual features, card transaction data, to recommend tourism business services to target user groups visiting a specific location, in order to tackle the challenges of missing ratings and spatial factors.

Jiyeon Kim et al., in “Read between the Interactions: Understanding Non-interacted Items for Accurate Multimedia Recommendation” address the problem of multimedia recommendation that additionally utilizes multimedia data, by challenging the common assumption that all the non-interacted items of a user have the same degree of negativity. The authors classify non-interacted items of a user into two kinds – unknown and uninteresting – and propose a novel negative sampling technique that only considers the uninteresting items as candidates for negative samples.

The article “Class Probability Distribution Based Maximum Entropy Model for Classification of Datasets with Sparse Instances” by A. Saravanan et al. proposes a maximum entropy model based on class probability distribution is for classifying sparse data with fewer attributes and instances, introducing a novel way of using Lagrange multipliers for estimating class probabilities in the process of class label prediction.

In “Comprehensive Risk Assessment and Analysis of Blockchain Technology Implementation Using Fuzzy Cognitive Mapping,” Somayeh Samsamian et al. identify and categorize a comprehensive set of risks regarding blockchain implementation. Critical risks are defined by performing a two-stage fuzzy Delphi method based on the experts’ opinions. Then, possible causal relationships between considered risks are identified and analyzed using the fuzzy cognitive mapping method. Finally, the most important risks are ranked based on the degree of prominence and the relationships between them. The methodology is applied to an enterprise resource planning system as a case study.

“RESNETCNN: An Abnormal Network Traffic Flows Detection Model,” by Yimin Li et al., proposes RESNETCCN – an intrusion detection model that fuses residual networks (RESNET) and parallel cross-convolutional neural networks. Benefits of the proposed architecture include more effective learning of data stream features and use of oversampling, which contribute to better detection of abnormal data streams in unbalanced data streams.

Adelina Diana Stana and Ioana Şora, in “Logical Dependencies: Extraction from the Versioning System and Usage in Key Classes Detection” propose a language-independent method to collect and filter dependencies from version control systems, and use it to identify key classes in three software systems. Dependencies extracted from source code are also used, independently and in combination with version-control dependencies. The combination of the two methods offers small improvements to using any single one, and version-control dependencies are shown to be comparable to source-code dependencies.

“A Hierarchical Federated Learning Model with Adaptive Model Parameter Aggregation” authored by Zhuo Chen et al. proposes a newly designed federated learning (FL) framework for the participating nodes with hierarchical associations. In the framework, an adaptive model parameter aggregation algorithm is used to dynamically decide the aggregation strategy according to the state of network connection between nodes in different layers.

In “Point of Interest Coverage with Distributed Multi-Unmanned Aerial Vehicles on Dynamic Environment,” Fatih Aydemir and Aydin Cetin aim to effectively cover points of interest (PoI) in a dynamic environment by modeling a group of unmanned aerial vehicles (UAVs) on the basis of a learning multi-agent system. Agents create an abstract rectangular plane containing the area to be covered, and then decompose the area into grids, learning to locate in a way to maximize the number of PoIs to plan their path.

Jimmy Ming-Tai Wu et al., in “The Effective Skyline Quantify-Utility Patterns Mining Algorithm with Pruning Strategies,” propose two algorithms, FSKYQUP-Miner and FSKYQUP, to efficiently mine skyline quantity-utility patterns (SQUPs). The algorithms are based on the utility-quantity list structure and include an effective pruning strategy which calculates the minimum utility of SQUPs after one scan of the database and prunes undesired items in advance.

In their article “Probabilistic Reasoning for Diagnosis Prediction of Coronavirus Disease based on Probabilistic Ontology,” Messaouda Fareh et al. address the prediction of COVID-19 diagnosis using probabilistic ontologies under the difficulties introduced by randomness and incompleteness of knowledge. The approach begins with constructing the entities, attributes, and relationships of the COVID-19 ontology, by extracting symptoms and risk factors. The probabilistic components of COVID-19 ontology are developed by creating a Multi-Entity Bayesian Network.

“The Proposal of New Ethereum Request for Comments for Supporting Fractional Ownership of Non-Fungible Tokens” by Miroslav Stefanović et al. introduces a new standard for Ethereum blockchains that would support fractional ownership of non-fungible tokens, in order to make blockchain technology applicable to an even wider number of use cases.

Finally, “A Novel Multi-objective Learning-to-rank Method for Software Defect Prediction” authored by Yiji Chen et al. proposes two multi-objective learning-to-rank methods, which are used to search for the optimal linear classifier model and reduce redundant and irrelevant features, for use in software defect prediction within the more general domain of search-based software engineering.

