

Editorial

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Starting 2023, this first issue of Volume 20 of Computer Science and Information Systems features 13 regular articles and three special sections: “Engineering of Computer Based Systems” (5 articles), “Management of Digital EcoSystems” (4 articles) and “Parallel and Distributed Computing and Applications” (3 articles). As is already customary, we are thankful for the hard work and enthusiasm of our authors, reviewers, and guest editors, without whom the current issue and the publication of the journal itself would not be possible.

This issue marks a milestone in the publication of our journal – due to general lack of demand we are switching to publishing in electronic form only. Not without sadness we express special gratitude to our long-time partner, printing house Sigra Star, for being with us from the start and providing high-quality and timely printing services for the better part of the last 20 years.

The first regular article, “Homomorphic Encryption Based Privacy-Aware Intelligent Forwarding Mechanism for NDN-VANET” by Xian Guo et al. tackles security and privacy issues faced by machine-learning solutions for intelligent forwarding strategies in vehicular ad-hoc networks (VANET). The article proposed PABRFD, a privacy-aware extension of the BRFD smart receiver forwarding decision solution for named data VANETs (NDN-VANET). PABRFD achieves this by using homomorphic encryption (HE) and a secure Bayesian classifier to resolve the security and privacy issues of information exchanged among vehicle nodes.

In the second regular article, “Cloud-Based ERP Construction Process Framework in the Customer’s Perspective,” Seung-Hee Kim et al. provide a theoretical foundation for standardized research on cloud enterprise resource planning (ERP) construction methods, as well as a practical guideline. The article provides a detailed overview, comparison of cloud and on-premise ERP, and classification of process frameworks for implementing cloud ERP into infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), content-as-a-service (CaaS), and software-as-a-service (SaaS).

Qasim Khalid et al., in “SBEO: Smart Building Evacuation Ontology” propose a reusable ontology for indoor spaces, based on three different data models: user, building, and context. The ontology provides a common representation of indoor routing and navigation, describes users’ characteristics and preferences, grouping of individuals and their role in a specific context, hazards, and emergency evacuation. Evaluation demonstrates that SBEO is flexible, comparable to other ontologies in the field, and that it successfully addresses the information needs of context-aware route recommendation systems for emergency evacuation in indoor spaces.

The article “” by Xin Xu et al. considers the influence of sentimental intensity to improve extraction accuracy in the task of emotion-cause pair extraction (ECPE) from textual input. This is achieved through the proposed SEE-3D model based 3D convolutional

neural networks and sentiment analysis, which combines clustering of emotion clauses, application of a pre-trained sentiment analysis model to compute emotional similarity, and fusion of similar features.

In “Solving the P-Second Center Problem with Variable Neighborhood Search,” Dalibor Ristić et al. tackle a variant of the well-known and highly studied problem pertaining to the identification of p of the potential n center locations in such a way as to minimize the maximum distance between the users and the closest center (p -center problem). The variant, p -second center problem, minimizes the maximum sum of the distances from the users to the closest and the second closest centers. The solution is found using the proposed variable neighborhood search algorithm.

“TS-GCN: Aspect-level Sentiment Classification Model,” by Shunxiang Zhang et al., addresses the problem of aspect-level sentiment classification (ASC), which refers to determining sentiment polarity of aspect words in the text. The proposed model, TS-GCN (truncated history attention and selective transformation network-graph convolutional networks) combined BERT and BiLSTM text feature extraction models, selective transformation networks for predicting implicit words, and graph convolutional networks for sentiment classification.

Hua-Yi Lin, in “Secure Cloud Internet of Vehicles Based on Blockchain and Data Transmission Scheme of Map/Reduce” addresses the issues surrounding personal information security in vehicle-to-vehicle transmission of information in open environments. The study combines blockchain to ensure the security of vehicle-based information transmission, elliptic curve Diffie–Hellman (ECDH) key exchange protocol, as well as a secure conference key mechanism with direct user confirmation combined with the back-end cloud platform Map/Reduce.

“Reinforcement Learning-based Adaptation and Scheduling Methods for Multi-source DASH” authored by Nghia T. Nguyen et al. studies video streaming from multiple sources in the dynamic adaptive streaming over HTTP (DASH) framework. The article proposed proposes two algorithms for streaming from multiple sources based on the reinforcement learning (RL) paradigm: RL-based adaptation with greedy scheduling (RLAGS) and RL-based adaptation and scheduling (RLAS). The efficiency of the proposed algorithms is demonstrated through extensive simulations with real trace data.

In “Analyzing Feature Importance for a Predictive Undergraduate Student Dropout Model,” Alberto Jiménez-Macias et al. extend a previous study that proposed a predictive model to identify students at risk of dropout from the beginning of their university degree by analysing feature importance for dropout segmented by faculty, degree program, and semester in the different predictive models, as well as proposing a dropout model based on faculty characteristics. Results suggest that variables related to grade point average (GPA), socioeconomic factors and pass rate of courses have a more significant impact on the model than other factors.

Gozde Karatas Baydogmus, in “Solution for TSP/mTSP with an Improved Parallel Clustering and Elitist ACO,” design a low-cost and optimized algorithm for the traveling salesman problem (TSP) by using GPU parallelization, machine learning, artificial intelligence approaches. This is achieved in three stages: clustering the points in the given dataset with K-means clustering, finding the shortest path using the ant colony approach in each of the clusters, and connecting each cluster at the closest point to the other.

In their article “Sternum Age Estimation with Dual Channel Fusion CNN Mode,” Fuat Türk et al. address the problem of adult age determination through sternum multidetector computed tomography (MDCT) images using artificial intelligence algorithms. The authors propose a dual-channel convolutional neural network (CNN) architecture, which is able to predict the age groups defined as 20–35, 35–50, 51–65, and over 65 with 73% accuracy over sternum MDCT images.

Finally, “Self-Service Kits to Scale Knowledge to Autonomous Teams – Concept, Application and Limitations” authored by Alexander Poth et al. propose a self-service kit (SSK) approach that fosters team autonomy while enabling successful knowledge spread and sharing throughout a large organization. The methodology is presented and instantiated in an enterprise context which faces the challenges of handling similar topics and reinventing the wheel, at the same time needing to distill practices to make them shareable.