



Editorial on decision support system for development of intelligent applications

Shah Nazir¹ · Habib Ullah Khan² · Sara Shahzad³ · Iván García-Magariño⁴

Published online: 29 July 2022

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The creation of intelligent applications for numerous types of industry sectors has been accelerated by recent advancements and decision support systems. Any instrument or system with the ability to support decision-making processes is referred to as a decision support system. Making decisions is a significant and challenging undertaking that ultimately determines success or failure. For instance, in the setting of a corporation or organization, decision support systems assist mid- and upper-level managers in making decisions regarding specific problems that change quickly and are challenging to define. The following papers were considered in this special issue.

Tian et al. (Tian, et al. 2021) have deployed a hybrid deep learning methodology to accurately detect damages in the transmission lines. The proposed architecture integrates a convolution neural network (CNN) and support vector machine (SVM). CNN classifies various kinds of images of power lines, while the degree of damage was computed by SVM with the usage of statistical data. Aadam et al. (Aadam et al. 2022) have performed a study on the evaluation of a unique transformer-grounded paradigm named perceiver for the recognition of various emotions from electroencephalogram (EEG). This structure can accept and process data of different types including audio, images, and video. It was employed on the EEG data obtained from the database called DEAP. Jian (Jian 2022) has proposed a study for the development of an effective decision support system for the human resource management of an organization by the employment of data mining-grounded procedures. The system will be very beneficial for decision-

making and improve business development. Human resources can be managed very effectively along with intelligent decision analysis. Yang et al. (Yang et al. 2022) have conducted research for the effective recognition of various categories of plants with the help of a developed architecture named PlantNet. It is the integration of transfer learning and bilinear convolutional neural network and performs recognition with high accuracy in large-throughput phenotyping requirements. It can be employed very effectively for the recognition of fine-grained plants. C. Tang and J. Zhang (Tang and Zhang 2022) employ a decision support system that determines the matrix decomposition of user ratings by extracting user preference features for hidden factors and the weights of musical pieces upon those k hidden factors using a hidden semantic model. The suggested method assumes that music includes identifiable knowledge and derives the audio attribute values from musical samples.

Wu (Wu 2022) has presented a network security posture assessment paradigm for effective decision-making by the utilization of binary semantic analysis. With the usage of an abstract syntax tree, different characteristics of script files are extracted. Then, a detection system is developed for the unknown samples by considering supervised learning of samples. Huang et al. (Huang et al. 2022) have conducted research to solve the issues of instability and low prediction accuracy by designing a short-term wind production paradigm with the utilization of BiLSTM–CNN–WGAN–GP. With the help of the variational mode decomposition procedure, the data obtained from natural energy are decomposed. Then, the distribution features are generated with the help of BiLSTM. Guo et al. (Guo, et al. 2022) have overviewed the applications of the Byol algorithm for ensuring safety by detecting damages in the wires. It is very convenient to detect damage in a transmission line with the help of various machine learning procedures. With the assistance of intelligent devices, the faults in the power cables can be diagnosed very effectively and efficiently. Wang et al. (Wang et al. 2022a) have

✉ Shah Nazir
snshahnzr@gmail.com

¹ University of Swabi, Swabi, Pakistan

² Qatar University, Doha, Qatar

³ University of Peshawar, Peshawar, Pakistan

⁴ Complutense University of Madrid, Madrid, Spain

developed a model for the diagnosis of heart disease with the usage of Long short-term memory (LSTM) and deep learning (DL). The system uses a decision support system for diagnosing the disease with high accuracy. The research also provided a base for the usage of deep learning-grounded techniques in the detection and diagnosis of various diseases. Arif et al. (Arif et al. 2022) have presented a unique quantum communication system to make the communication among various Internet of Things (IoT)-based devices secure. The suggested model investigates the intensity fluctuations of left- and right-circularly polarized photons via an induced chiral media with time, exhibiting positive and negative phase shifts that produce a time hole.

Imran et al. (Imran et al. 2022) have suggested a unique approach for anomaly identification that utilizes artificial neural networks (ANNs) that have been improved using the cuckoo search algorithm. A 70:30 split of the NSL-KDD dataset has been used for simulation purposes, with 70% of the data being used for training and 30% being used for testing. Next, the suggested model's accuracy, root-mean-square error, mean absolute error and mean square error are all assessed. Feng et al. (Feng et al. 2022) have examined the human resource labor dispatch paradigm, which is utilized to reduce labor costs and increase the number of staff members for a project's dispatch. To fulfill the expectations of the project and enhance its project dispatch plan, the HR recruiting method is used to estimate the number of employees that need to be hired for the dispatch project. Li (Li 2022) has applied Lasswell's 5 W model, a novel approach to studying news data from five perspectives—disseminator, disseminating channel, dissemination content, audience, and dissemination effect—to assess the news. The Delphi approach is employed to give different indicators ratings and make judgments depending on them. Lastly, an indicator program is designed for the assessment of the present new media's news dissemination effect based on content analysis, searching, and data mining. Rahman et al. (Rahman et al. 2022) have used an Extended Independent Component Analysis-grounded artifact elimination strategy. Here, a moving window method based on multi-class common spatial patterns is suggested to choose the most distinct EEG trial time interval. The outcomes of categorization are enhanced by BiLSTM. The proposed architecture was evaluated by using DEAP and SEED datasets. Han (Han 2022) initially conducted a thorough analysis of the state of physical education in academic institutions before making recommendations for improvements. Additionally, it implies that a scientific assessment of college instruction would offer greater feedback, incentives, and direction. The establishment of a framework for the qualitative assessment of physical education in colleges makes use of artificial neural networks.

Jin et al. (Jin et al. 2022) have created a networking parametric ensemble-based wireless communication strategy to make sure that packets are reliably sent from source to destination in IoT networks. To identify the best nearby device and impose an ideal path for forward communication in IoT networks, the suggested technique binds each member device to get useful data from the surrounding devices, particularly those with minimal hop count values. Li et al. (Li et al. 2022) have provided a particular germ integrity prediction architecture that incorporates the topological architecture branch of inception-v4 and enhances the inception-resnet v1 model. The suggested model expands on the previous model's convolution to explicitly describe the picture attributes for germ rice. The developed method yields a more accurate approximate description of potential space for abstract concepts. Shicong et al. (Shicong et al. 2022) have used the Internet of things to create a remote monitoring and management system for CNC machine equipment (IoT). The goal is to satisfy the needs of the underpinning CNC equipment's information integration requirements. The suggested solution lowers the power requirements for wireless sensor nodes that are employed to track CNC machines. Liu et al. (Liu et al. 2022) have suggested a technique for making decisions that will help assess how the 5G network and AI will operate in situational teaching research in university education. The practical outcome of the research demonstrated that the targeted investigation was successful and that the findings were appropriate. Educators should consider AI-grounded techniques to carry out the goal of teaching smoothly and accurately. Lv et al. (Lv et al. 2022) have created and built a deep learning (DL) architecture that is clever and founded on the notion of stacked self-coding networks. This method incorporates a DL basis for making decisions at the backside. The high-dimensional, sparse, and noisy big data atmosphere of the sports sector may be learned and selected by the suggested paradigm to integrate novel features.

Hu (Hu 2022) has created a design process that is tailored to support machine learning-grounded physical learning. The decision tree of random forest and machine learning classifiers have been extensively tested. The experimental results show that the proposed method outperforms existing approaches in areas of computation speed and assessment weight accuracy. Yu et al. (Yu et al. 2022) have thought about using a decision support system (DSS) to assess the music in games' potential for long-term success. The study's outcomes have demonstrated its effectiveness. Following analysis of the prior research, it was determined that gaming music enhances player accomplishment, sharpens their abilities, and keeps them at ease while playing. He (He 2022a) has provided a thorough analysis of the body of research on the methods,

instruments, and decision-making processes employed in business while using online media. Based on this investigation, new business-effective techniques will be offered. Online media provide a low-risk, simple means for potential customers to show interest in the services or products you offer. Rui (Rui 2022) have investigated the current Ideological and Political (IAP) education assessment systems and submitted a report to highlight their inadequacies, which include availability, clarity, the absence of a clear evaluation mechanism, and monitoring. Additionally, the research looked at the benefits of big data analytics in evaluating IAP education for college students and presented a brand-new assessment approach grounded on big data analytics. Zeng et al. (Zeng et al. 2022) have employed a tree list to visually depict the agricultural data pulled from the specialist dataset and are being used in the designing phase. The geographical data may be simply uploaded by changing the professional dataset, finding the map route, and using the map loading tool. The study relocated the assessment subjects to more provinces and regions to demonstrate the platform's versatility.

Wang et al. (Wang et al. 2022b) have studied the two soil creatures' non-smooth structures, and two bionic plungers have been developed to deal with the issues mentioned. First, a comprehensive study is carried out to identify the primary plunger failure modes through research and analysis of the growth of the global plunger. Later, employing the non-smooth theory, two bionic plungers with improved friction and wear minimization capabilities are created. Yin et al. (Yin et al. 2022) have proposed a decision support system (DSS) for frozen soil thaw settlement coefficient projection to address potential gradient compatibility issues that might result in distortion of the rock pile part of the roadbed and endanger public security. The MIMO-D2D system is used to generate the forecast, which enhances the signal transmission dimension, boosts system throughput, and efficiently distributes assets. Xu and Liu (Xu and Liu 2022) have looked into how big data is used to influence network public opinion in both schools and higher educational institutes. It is examined in light of the present climate of online public opinion among college students. The suggested strategy employs dynamic monitoring to provide extensive guiding metrics for new media that are multi-level and detailed. Ke et al. (Ke et al. 2022) have suggested a target detection technique grounded on the previously known tennis ball impact area. The tests and assessments demonstrate that the procedure is capable of detecting targets with greater precision and efficiency. Additionally, the suggested algorithm enhances the effectiveness and dependability of the tennis impact by precisely tracking and judging the impact area of tennis sports. Liu and Xi (Liu and Xi 2022) have created suitable supplemental teaching strategies for basketball

throwing so that learners may increase their scoring average throughout everyday basketball practice and prevent damage. According to our analysis, putting more focus on core muscle training can help sportsmen increase their shooting percentage by improving their ability to regulate their core muscles.

Xue et al. (Xue et al. 2022) have suggested using the YOLOv5 network to detect objects in remotely sensed images. The network structure may be deeper to obtain more knowledge about big entities by enhancing the backbone extraction network, and the recognition impact can be increased by including an attention mechanism and an output layer to boost feature identification and characteristic merging. Liang (Liang 2022) has put out a better LSTM architecture grounded on the online and audiovisual atmosphere that, by including an attention mechanism in the LSTM layer, increases the predictive power of neural networks. To provide an engaging classroom atmosphere in colleges and universities, the attention mechanism is built on a decision support system that regulates access to various educational materials. Gao (Gao 2022a) has created an interactive educational paradigm based on the data initially collected from the Internet of Things (IoT). IoT technology is being utilized to research the interactive teaching style of English in an attempt to enhance English education. Several sensors were utilized to compare the students' voice and pronunciation to the software's default tone and dialect to enhance the English language correction of the students' speaking and pronunciation. Wang et al. (Wang et al. 2022c) have evaluated meaningful segmentation and identification techniques using the Fuzzy Analytical Hierarchy Process (FAHP). The study ranked six criteria and three possibilities using the FAHP technique along with - fuzzy geometric mean scores. In circumstances involving many decisions with ambiguous situations, the FAHP technique is typically applied. Dong et al. (Dong et al. 2022) have suggested research that will take into account Multi-Criteria Decision Making (MCDM) for AI-based development and implementation of English multimode online reading. To make the practical task easier, this research presents an implementation of the super decision tool. This will enable academics to identify and create fresh approaches to the problem.

Gao (Gao 2022b) has examined the issues with somatosensory performance and participation in augmented reality techniques, concentrating on expression VR. The primary work contains: A naïve Bayes motion detection approach grounded on a joint vector is first presented to address the issue that the gesture-based technique cannot respond to the meaningful uninterrupted gesture stream in actual usage scenarios. Together with the joint vector, the method utilizes a decision-making framework for feature representation of skeleton and movement. Fu

et al. (Fu et al. 2022) have concentrated on how important information technology is to improving music instruction. Modern technology advances are accelerating and successfully extending music instruction. Numerous elements have been found in the literature to aid learners in using an effective technology approach for educational objectives. He (He 2022b) has used a deep learning-based target identification approach to make it more suited for tiny target recognition jobs in football game scenarios by creating new multi-scale characteristics and altering the creation rules of anchor points in the acquired movies. The generating processes are dependent on a sophisticated object tracking decision support tool. Chao et al. (Chao, et al. 2022) have carried out a study to demonstrate the contribution of different joint training techniques for resolving various transmission faults. These techniques may be put into place to effectively address a variety of transmission-related problems, including power and resource allocation, available bandwidth, flexibility, and many others. The current research has adopted several of the most important elements from the relevant research after thoroughly reviewing it.

Funding The authors have not disclosed any funding.

Data Availability Enquiries about data availability should be directed to the authors.

Declarations

Conflict of interest The authors declare no conflict of interest.

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