



Topical collections on machine learning based semantic representation and analytics for multimedia application

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Received: 16 May 2022 / Accepted: 16 May 2022 / Published online: 8 June 2022
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Multimedia analysis is one of the most important branches of artificial intelligence, which focuses on the description, measurement and classification of patterns involved in multimedia data. In the past years, great progress has been achieved in both the theories and applications of multimedia analysis. A typical multimedia analysis system is composed of preprocessing, feature extraction, classifier design and post-processing. Nowadays, we have entered a new era of big data, which offers both opportunities and challenges to the field of multimedia analysis. We should seek new multimedia analysis theories to be adaptive to big data. We should push forward new multimedia analysis applications benefited from big data. The accepted papers are summarized as follows.

Wei [1] combines the essence of e-government influencing factor data to improve the machine learning algorithm and uses the EM algorithm to derive the parameter estimation formula of the data in the case of missing data to improve the accuracy of data analysis. Zhou and Jiao [2] set up the functional structure of this paper based on the neural network model structure and build an intelligent analysis system for signal processing tasks based on the LSTM recurrent neural network algorithm. Zhao and Li [3] analyze the new characteristics of the relationship between enterprises and suppliers in the supply chain and which indicators should be selected as the basis for evaluating suppliers from the perspective of cooperation and development, which more comprehensively reflects the characteristics of the new enterprise–supplier relationship in the supply chain environment. Chen et al. [4] construct the

functional structure of the system according to the landslide feature extraction requirements and design a set of optimization schemes for landslide feature data collection and control measurement suitable for field operations. Yang et al. [5] study the target recognition method of small UAV remote sensing image, combine fuzzy clustering method to construct the intelligent remote sensing image target recognition model, combine it with the UAV structure, realize remote sensing recognition by UAV and design experiments to analyze the effect of remote sensing recognition.

A Levy flight optimized gray wolf support vector machine (LGWO-SVM) shale gas geosteering identification method based on gamma spectrum dataset was proposed by Li et al. [6]. Zhong et al. [7] study innovation capability from the perspective of machine learning. Compared with the existing statistical methods, it is a novel model, to the best of our knowledge, to evaluate the city's innovation capability in terms of machine learning. In order to remove the noise in point cloud data, improve randomness for choosing the segmentation center and obtain robust curvature information of the point cloud data and accurate segmentation results, the improvements are made by Sun et al. [8] to the conventional spatial segmentation algorithms. Wu et al. [9] use the AdaBoost face detection algorithm based on Haar characteristics to detect the presence of a face and use the face feature point localization algorithm to obtain the required face feature points. To balance performance and complexity, an efficient but lightweight network is proposed by Yu and Zhu [10]. The designed network utilizes the global branch and the mask branch to extract the feature. The former can extract global feature efficiently. The latter can remove the changeable background based on the proposed mask-mapping module, which can map mask to feature map and adjust feature map dynamically.

In order to prevent the node from continuously monitoring its state, a self-triggering control strategy is proposed by Yang and Yao [11]. Sun [12] conducts simulation tests

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through the system and compares the output results with the actual situation after system simulation to verify the effectiveness of the model in this paper. Zhao et al. [13] perform the person temporal consistency detection procedure for each individual of the collective activities. Ye et al. [14] analyze the inherent relationship between convolutional neural networks and sparse representation and propose an improved convolutional neural network model for image synthesis in response to problems with current methods. Hu et al. [15] start from the geometric flow characteristics of the image and propose a Gaussian algorithm to process human motion images, and apply it to the video human motion tracking of machine learning methods.

Wu et al. [16] analyze the application of artificial intelligence auxiliary equipment based on machine learning in the cognitive learning process and propose a collaborative filtering method based on fusion of global and local parameters. Zhao and Li [17] explore the main factors influencing the financial impact of SMEs and the benefits of the supply chain budget in solving problems expenditure of SMEs; support vector machine is mainly based on solving the main credit risks of small- and medium-sized enterprises, such as poor information transparency, low credit and various risk unknown factors. The fitness function was used by Yang et al. [18] to compare and analyze the models, while the original data and feature reconstruction data were used to simulate and analyze the models. Wang and Xia [19] build an intelligent system that can be used for enterprise analysis with the support of machine learning technology, use embedded algorithms to improve the traditional algorithm structure and combine machine learning to optimize and analyze data processing. Wang et al. [20] carry on a comparative research on government media selecting three different types of government media which include China's Police Online, Central Committee of the Communist Youth League and China's Fire Control in the context of public health emergencies. Wang et al. [21] introduce logistic regression theory and propose a vehicle detection method based on logistic regression.

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