Guest Editorial Preface

Special Issue on Intelligence Algorithm in Edge Computing

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Edge Computing paradigm is regarded as capable of satisfying the resource requirements for the emerging mobile applications such as virtual and augmented reality. It has been widely applied in fields such as traffic management, medical health, smart homes and energy. Through uniform architecture design, big data technologies can change the unstructured data in Edge computing systems to structured data and unify the data of different systems to more effectively mine the data. Integration of big data technologies will provide a better technological basis for developing Edge computing systems. To effectively integrate big data technologies into Edge computing systems and transmit useful information, artificial intelligence is being introduced. This will improve the applicability of the massive information from big data in the Edge computing systems.

This special issue is intended to report those high-quality papers on the integration of big data and artificial intelligence technologies into Edge computing systems. After a thorough reviewing process, we have been delighted to accept 6 research papers for the special issue.

The paper "Reliability Enhancement Algorithm of Human Motion Recognition based on Knowledge Graph" by Yongwei Wang and Feng Feng studies the problem of uneven spatial distribution of human motion image and low peak signal-to-noise ratio (PSNR) of image reliability enhancement, and proposes a reliability enhancement algorithm for human motion recognition based on knowledge graph. Multi-scale information enhancement method is used to enhance and recognize the reliability of human motion image. The experimental results show that the method has the advantages of good reliability, high signal-to-noise ratio of image enhancement and high accuracy of human motion recognition.

The paper "Reliability Analysis of Multi-objective Spatio-temporal Segmentation of Human Motion in Video Sequences" by Yan Hu studies the problem of uneven distribution of edge contour of multi-target human motion image in video sequence, which leads to the decline of target detection ability, and proposes an algorithm of multi-target spatial-temporal segmentation of human motion in video sequence based on edge contour feature detection and block fusion. The experimental results show that the detection and recognition ability of human motion target is improved.

The paper "Anomaly Detection for Nodes under the Cloud Computing Environment" by Yang Lei and Ying Jiang proposes a method of anomaly detection for nodes under the cloud computing environment. The experimental results show that the method in this paper can detect the anomalies of single node and associated node under the cloud computing environment effectively.

The paper "An Improved Sine Cosine Algorithm with Levy Flight" by Yu Li, Yiran Zhao and Jingsen Liu proposes a levy flight sine cosine algorithm (LSCA) to solve optimization problems. In the update equation, the levy flight is introduced to improve optimization ability of SCA. By

generating a random walk to update the position, this strategy can effectively search for particles to maintain better population diversity.

The paper "Research on a New Convolutional Neural Network Model Combined with Random Edges Adding" by Jin Zhang, Sen Tian, XuanYu Shu, Sheng Chen and LingYu Chen proposes a random edge adding algorithm to improve the performance of the convolutional neural network model. This algorithm takes the convolutional neural network model as a benchmark, and randomizes backwards and cross layer connections with probability p to form a new convolutional neural network model.

The paper "Application of Optimized Partitioning Around Medoid Algorithm in Image Retrieval" by Yanxia Jin, Xin Zhang and Yao Jia analyzes the disadvantages of the PAM (Partitioning Around Medoid) clustering algorithm in image data classification and the excessive consumption of time in the computation process of searching clustering representative objects using the PAM clustering algorithm. PF-PAM algorithm, which is an improved PAM algorithm, is proposed and applied in image retrieval.

In conclusion, the papers presented in this Special Issue demonstrate the fruitful research in the field of Intelligence Algorithm in edge computing. We wish to thank both the authors and the reviewers for their hard work in helping us assemble this Special Issue, and also would also like to express our sincere gratitude to the Editor-in-Chief, Prof. Nik Bessis, for providing this opportunity and lots of guidance throughout the process.

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