Guest Editorial
Recent Advances in Specific Applications of Communication, Computer Vision, and Networks

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Modern science and technology in all aspects of engineering maintains rapid development. In each year, numerous innovations and inventions spring up, profoundly reshaping and even redefining peoples' lives all over the world. Meanwhile, such advances also encourage and inspire scholars, researchers, and engineers to keep exploring the unknown.

This special issue for *Journal of Internet Technology*, which entitled "*Recent Advances in Specific Applications of Communication, Computer Vision, and Networks*", collects five selected articles from the Ninth International Conference on Electronics, Communications and Networks (CECNet2019). CECNet2019 has been held successfully in Kitakyushu City, Japan, during October 18-21, 2019. CECNet is one of the leading international conference series, which provides an annual, comprehensive global forum for experts and participants from academia to exchange ideas and present results of ongoing research in the most state-of-the-art areas of electronics technology, communication engineering and technology, wireless communications engineering and technology, computer engineering and technology.

For each selected paper, a brief introduction is given below. Readers can download the full manuscript for detailed understanding.

The **1st paper** entitled "Target Detection Method for SAR Images Based on Feature Fusion Convolutional Neural Network" is presented by Yufeng Li, Kaixuan Liu, Weiping Zhao, and Yufeng Huang. In this paper, the authors cope with the problem of detecting targets in complex large scene of synthetic aperture radar (SAR). They design a less layer convolutional neural network (CNN) to make use of the CNN's excellent feature extraction ability, while discarding too many layers in the CNN structure. They also use a more complete SAR dataset that supplementing the training sample information in complex large scenes. Meanwhile, the authors design a multi-level convolution feature fusion network to enhance the detection ability of small targets in large scene. After the joint training of the region proposal network (RPN) and the target detection network, a complete model for SAR image target detection in different complex large scenes is obtained. The experimental results show that the proposed method has a good result on SAR image target detection and has an average precision (AP) value of 0.86 in the validation dataset. This paper is qualified because the proposed method has better robustness and generalization ability and can detect small SAR image targets in complex large scenes.

The **2nd paper** with title "Anomaly Detection in Crowded Scenes Based on Group Motion Features" is brought by Shuqiang Guo, Dongxue Li, and Lili Yao. For computer vision, event detection in crowded scenes is a challenging task, and the authors propose a crowd anomaly detection algorithm based on crown density and velocity features in this paper. According to the motion trajectory of numerous pedestrians, both distance and relative speed between trajectories can be extracted, and the pedestrian groups can be recognized via their spatial relationship. Therefore, anomaly events in crowded scenes can be detected based on variations of group numbers and speed. To demonstrate the effectiveness of the proposed algorithm, a quantitative experimental evaluation has been conducted on multiple, publicly available video sequences. Experiments on four different types of benchmarks show that the proposed method has better performance than state-of-the-art approaches, particularly on anomaly event localization. This paper is qualified because the proposed algorithm can help to detect disaster events in crowded scenes, and effectively sound the alarm.

The **3rd paper** is entitled "Small Sample Image Recognition Based on CNN and RBFNN", and it is co-authored by Biyuan Yao, Hui Zhou, Jianhua Yin, Guiqing Li, and Chengcai Lv. The main contributions of this paper include: firstly, TensorFlow is used to judge the sample, such as a knife; secondly, a Fourier transform is used to judge of whether the dangerous goods are existing in the complex scene based on the color and shape features; thirdly, convolution neural networks (CNN) and radial basis function neural networks (RBFNN) are used to construct identification models for images of objects in six categories. The obtained accuracy of the true and predicted values are 66.67% for training on CNN and 76.67% on RBFNN, for testing 50% on CNN and 44.44% on RBFNN respectively. The results showed that the constructed identification models are able to perform recognition for small-scale image database and reduce the false

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alarm rate. This paper is qualified since the proposed algorithm can play a key role in the applications related to public security, such as security inspection in airport, subway and other transportation systems.

Manuscript entitled "Channel Modeling and Characteristics for High Altitude Platform Stations Communication System" is the **4th paper**, which is co-authored by Mingxiang Guan, Zhou Wu, Yingjie Cui, and Mingchuan Yang. The high altitude platform stations (HAPS) locate and operate between the ground and various communication satellites, keeping synchronization with the rotation of the earth and can stay in the air for a long time. HAPS has the advantages of flexible layout, wide application, low cost, safety and reliability. In this paper, the authors analyze the angular spectrum of multipath scattering distribution in the HAPS mobile channel, considering both the elevation and azimuth spread at mobile terminals. A broadband HAPS mobile channel model based on tapped delay line in a wide area environment is established, and the HAPS mobile channel characteristic system is constructed by software simulation. This paper is qualified because the proposed HAPS mobile channel characteristic system can provide channel models and parameters in different environments for the broadband HAPS mobile communication system and its ground simulation and verification system.

The **5th paper** "A Method for Acquiring Network Information from Linux Memory Image in Software-Defined Networking" comes from Shumian Yang, Lianhai Wang, Shuhui Zhang, Dawei Zhao, and Lijuan Xu. Software defined network (SDN) is a novel network architecture which separates the control plane from the data plane of a network. SDN accelerates the development of network technology due to its openness, programmability and centralized control. Aiming at the various security attack problems in SDN, the authors make use of physical memory forensic analysis method, in order to extract and analyze the digital evidence including running status of the computer, the behavior characteristics of the user, network information, opened file and register. The proposed method can obtains the network information from the physical memory image file in real-time, including the address resolution protocol (ARP), network configuration information, and the network connection information. By testing and verifying under Ubuntu Kylin 14.04, the proposed method can provide some clues for the security of the controller, southbound and northbound interfaces under the new network architecture. This paper is qualified because the acquisition of network information through physical memory image files can be applied to the investigation and forensics, so as to check the information security threats, various computer network crime cases, and the abnormal behavior detection under the new network architecture.

Guest Editors

Özlem Boydak was born in Turkey. She was graduated from both Mechanical Engineering and Electrical Engineering from Yildiz Technical University in Istanbul in 2004. She gained her master's degree from Mechanical Engineering department of Bogazici University, which is one of the best universities of Turkey. Now, she is a phD candidate of Mechanical Engineering at Marmara University in Istanbul and she is also an academician at Istanbul Medeniyet University. She also worked as R&D engineer at international companies previously. She has many international publications. She serves as a reviewer for many international journal and conferences. Her research interests include energy, energy production cycles, rankine cycle, renewable energy, production of electricity, product development and manufacturing methods.

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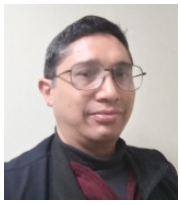

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