



## SI 27: Recent trends in mobile and wireless applications

Xuefeng Zhu<sup>1</sup>

Accepted: 8 April 2022 / Published online: 27 April 2022

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In recent years, the telecommunication and information industry has seen dramatic changes in its environment. The tremendous growth and advancement in wireless and mobile applications have boosted the emergence of advanced technologies. Wireless and mobile applications have gained significant attention in development and research communities. The considerable improvements will affect the life of both users and scientists of mobile and wireless technologies. This special issue offered an opportunity to present the research results related to mobile and wireless applications. After a thorough peer review, the following articles have been selected.

An intelligent data collection technique based on symmetric mathematics is presented in the paper [1], focusing on the real-time execution of single-channel grouping power utilization. The model selected RC6, SM4, DES, and AES as objects to develop the top-level framework of the symmetric key algorithm. The algorithm ensures the confidentiality and integrity of the power consumption data in the logic structure of smart grid communication. The power consumption data collector is developed based on the STM32F103RBT6 microprocessor.

In the wireless communication system, interference due to random spread spectrum results in faulty communication and a high bit error rate. Therefore, a Gaussian fuzzy algorithm-based wireless network array signal synchronization transmission method is introduced in the paper [2]. This wireless communication network is organized within the code interference suppression method and building, using a Gaussian blur technique.

In the implementation procedure of identification systems, due to the randomness of signal and large calculations, the automatic identification system performs poorly. To resolve this problem, in paper [3], a neuron fuzzy

identification method is presented formulated on a complex nonlinear mathematical model. The S3C:2440 microprocessor is used to construct the hardware architecture of the system. In the software framework, the DSP/BIOS procedure is utilized to describe the identification system of the neuron fuzzy identification system.

In paper [4], a consistency verification technique is proposed based on spectral features and fuzzy c-means to strengthen the validation ability of data communication in Petri net. The proposed technique utilizes a fuzzy neural network clustering Petri net method, testing technique of Petri nets jamming signal to obtain the training set to decide the classification of attribute values, an extraction and selection model for jamming signals, and a filter for the symbol sequence interference. The fuzzy information detection model and matching filter are merged to understand the transmission channel equalization of the Petri net.

Paper [5] used Guided Waves and developed a baseline-free Structural Health Monitoring and management system to detect, localize, and visualize the cracks in the bogie frame. First, the center excitation frequency of the steel bogie frame is determined through finite element simulation. After detection of crack, a wavelet mechanism name Split Spectrum Processing is used to compute the Time of Flight. In the end, this paper implements a direct reversal imaging technique, which integrates the recreated time-reversed counterparts and Guided Waves.

In paper [6], IT absorptive theory is introduced to verify the positive impact of income-increasing effect at different phases of e-commerce absorptive of agricultural products. This paper separates the adoption process of agricultural e-commerce products into three levels low, middle, and high relative to three functional entities information publication, online purchase, and whole process integration. The paper also conducted an empirical analysis of the relation between the income-increasing effect and the e-commerce adoption degree of agricultural products. It is verified that e-commerce adoption of agricultural products has a useful impact on the income-increasing effect.

✉ Xuefeng Zhu  
xfzhu@usst.edu.cn

<sup>1</sup> Shanghai University for Science and Technology,  
Shanghai 200093, People's Republic of China

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**Xuefeng Zhu** recently is an associate Professor at Shanghai University for Science and Technology. He focusses on mobile and wireless applications for energy recovery and environment engineering. He is the guest editor for more than 10 special issues and reviewers for many international journals. Beside he has published more than 40 papers. His H-Index is 16 by google scholar.