

Editorial

Special Issue on Advanced Information Processing Methods and Their Applications

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The rapid development of information technology opens up new opportunities in many areas of human activity. Modernity is characterized by a significant increase in the volume of extracted and processed information, which leads to the problem of developing new approaches to the organization of calculations, including neurocomputing and quantum computing. Digital circuits are also under active development, especially in terms of improving performance and reducing power consumption for use in mobile and embedded devices. New problem-oriented hardware solutions are constantly being developed for a wide variety of applications. Another important application of information technology is in medicine, especially in the context of developing new tools for diagnosing and supporting patients with COVID.

This Special Issue has collected and presented breakthrough research on information processing methods and their applications. Particular attention is paid to the study of the mathematical foundations of information processing methods, quantum computing, artificial intelligence, digital image processing, and the use of information technologies in medicine.

A total of five research papers in various fields of information processing methods and their applications are presented in this Special Issue. Lyakhov et al. [1] introduced a new approach for the determination of atrial fibrillation on electrocardiogram signals based on neural networks with wavelet-based preprocessing. Cariow et al. [2] reported an algorithm for the fast multiplication of Kaluza numbers which are used in various fields of data processing, including digital signal and image processing, machine graphics, telecommunications, and cryptography. Vahabi et al. [3] developed a new design and implementation of novel efficient full adder-subtractor circuits based on quantum-dot cellular automata technology. Minahil et al. [4] proposed patch-wise infrared and visible image fusion using spatial adaptive weights. Isabona et al. [5] developed a multilayer perceptron neural network for optimal predictive modeling in urban microcellular radio environments.

Although submissions for this Special Issue have been closed, more in-depth research in the information processing methods and their applications continues to address the challenges we face today, such as the development of neural network and quantum approaches, search for new effective software and hardware solutions, implementation of advanced methods of information processing in practice.

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